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2010-2011
CATALOG

TSC
Texas State
Technical College™

Texas State Technical College Waco Career Offerings

Golf Course & Landscape Management
- Golf Course & Landscape Equipment Technician
- Landscape Design

Air Conditioning & Refrigeration Technology **
Building Construction Technology
Drafting & Design Technology
- Architectural/Civil Drafting
- Mechanical/Electronics Drafting

Advertising Design & Print Technology
- Printing Specialization

Digital Media Design
Media Communication & Information Technology
Web Design & Development Technology
- Web Designer
- Web Developer

Dental Assistant
Food Service/Culinary Arts
Pharmacy Technician

Computer Maintenance Technology
- Home Technology Integration

Computer Networking & Systems Administration
- Microsoft
- System Administration

Computer Science Technology
- Client/Server
- Graphics, Gaming and Simulation – Programers
- Graphics, Gaming and Simulation – Artists

Digital Media Design
High Performance Computing
Network Security Technology
Telecommunications Technology
- Global Communication Systems Installer
- Radio Communication Electronics
- Teleconferencing Systems

Web Design & Development Technology
- Web Designer
- Web Developer

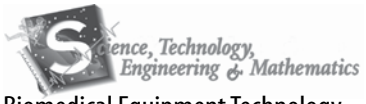
Electronics Technology
Instrumentation, Computerized Controls & Robotics
- Computerized Control Systems (Instrumentation)
- Robotic Systems

Laser Electro-Optics Technology
- Nanotechnology

Industrial Systems & Engineering Technology
- Facilities Engineering & Management Technology
- Industrial Maintenance Technology
- Plumbing & Pipefitting

Mechanical Engineering Technology **
- Machining **

Welding Technology



Biomedical Equipment Technology
- Medical Imaging Systems Technology

Chemical/Environmental Laboratory Technology
- Pharmacy Technician

Drafting & Design Technology
- Architectural/Civil Drafting
- Mechanical/Electronics Drafting

Electrical Power & Control Technology
- Electrical Construction & Service
- Electrical Systems
- Fuel Cell Technology
- Lineman Apprentice
- Solar Energy

Environmental Health & Safety Technology
- Environmental Compliance Technician
- Health Physics
- Safety Compliance Technician

Geospatial Technology
- Geographical Information Systems Analyst
- GIS Web Specialist
- Geomatics (Land/Civil Surveying)

Industrial Systems & Engineering Technology
- Facilities Engineering & Management Technology
- Industrial Maintenance Technology
- Plumbing & Pipefitting

Mechanical Engineering Technology **
- Machining **

Aircraft Pilot Training Technology
- Air Traffic Control
- Aircraft Dispatch Technology

Avionics Technology
Auto Collision & Management Technology
Automotive Technology
- Toyota Training & Education Network (T-TEN)

Aviation Maintenance Technology
Diesel Equipment Technology
- Agriculture Equipment
- Construction Equipment
- Heavy Truck * *
- John Deere Construction
- Marine (Palacios only)
- Outdoor Power Equipment

**Also offered at Ft. Bend

TSTC Texas State Technical College

2010-2011
GENERAL CATALOG ANNOUNCEMENTS

Equal opportunity shall be afforded within the Texas State Technical College System (TSTC) to all employees and applicants for admission or employment regardless of race, color, gender, religion, national origin, age, or disability. TSTC complies with the Texas Equal Opportunity Plan.

TSTC will make reasonable accommodations for persons with disabilities. TSTC's policy is that, in all aspects of its operations, each person with a disability shall be considered for admission or access to or treatment or employment in its programs and activities in accordance with Part 84 of Title 45, the regulation implementing Section 504 of the Rehabilitation Act of 1973.

Texas State Technical College Waco is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award Associate of Applied Science degrees and Certificates of Completion. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097; or call 404-679-4500 for questions about the accreditation. Students may review accreditation records in the TSTC Office of the President.

TSTC reserves the right to limit the enrollment of any program and to make any changes in the provisions of this catalog when such action is deemed to be in the best interest of the student or TSTC. TSTC reserves the right to change any of this catalog's provisions, without notice or obligation, in keeping with the policies of the Board of Regents and in conformance with the laws of the State of Texas. This catalog is not a legal document and does not constitute a contract between TSTC and the user. The catalog may also be found on TSTC's Web site at www.tstc.edu. TSTC curriculum and courses are subject to change. Please check with your department chair, advisor or the TSTC Web site for a current listing. If you require this document in an alternative format, please contact the TSTC Deaf/Disabled Student Services Office.

Volume 34
Texas State Technical College Waco
3801 Campus Drive • Waco, Texas 76705
254.799.3611 • 800.792.8784 • 254.867.3323 (TTY) • www.waco.tstc.edu

TSTC
Texas State Technical College

Contents

+ Also offered at Ft. Bend Technical Center

A letter from the President

It is my pleasure to introduce you to Texas State Technical College Waco. For 45 years, TSTC Waco has been providing top-quality technical education for Texas and Texans. The college is nationally recognized for the number and quality of our technology graduates. With more than 40,000 TSTC graduates employed throughout the state and nation, our tradition of excellence is strong.

TSTC Waco is committed to providing you with a highly specialized and advanced technical education that can lead to great career opportunities. TSTC offers technical associate degrees, certificate programs, and workforce mastery skills that give our students a competitive edge in the job market. Our students gain extensive hands-on experience in laboratories learning by doing, spending nearly 60 percent of their time working with the tools, technology and equipment they will use in their future careers.

Upon successful completion of the curriculum, you can look forward to outstanding career opportunities, as technicians are in high demand. The number of jobs in the market these days requiring technical training, certifications or associate degrees is outpacing the number of people available to fill them, so TSTC students are especially in demand! TSTC offers career training for the future by providing solid basics and advanced technology applications and processes. Our faculty members are experts in their fields, bringing real-world industry experience into the classroom and labs.

In addition to our faculty, our strong partnerships with business and industry put TSTC graduates at the top of employers' hiring lists. TSTC has more than 900 industry advisory committee members, ensuring our students always receive the latest available training. These industry partners help design our curriculum, matching our instruction to industry needs, helping ensure our graduates will be work-ready from their first day on the job.

Experts indicate that technical positions are the largest and fastest growing employment groups for the 21st century. New and exciting jobs are being created in a variety of industries, including solar, wind technology, fuel cell, aviation, and robotics. That means more employment opportunities for those individuals with technical training and skills.

But first, you must make the commitment to your future, and I hope you will consider a technical education. I can assure you that dedication to your education at TSTC will be an investment with generous returns.

Sincerely,

Elton E. Stuckly Jr., Ed.D.
President

Texas State Technical College Waco Administration

Elton E. Stuckly Jr., President
A.A.S., Texas State Technical College
B.A., University of Texas at Tyler
M.S., University of Texas at Tyler
Ed.D., University of Mary Hardin-Baylor

Rob Wolaver, Executive Vice President
B.S., Tarleton State University
M.A.T., Tarleton State University

Paul Woodfin, Vice President for Administrative & Financial Services
B.B.A., Texas A&M University

Carrie Gayeske, SPHR, Vice President of Human Resources
B.A., University of Texas at Austin

Ron Sanders, Vice President for Student Learning
B.A., Howard Payne University

Institutional Purpose and Goals

Statement of Purpose

TSTC's purpose or mission is described in Vernon's Texas Education Code Section 135.01:

"The Texas State Technical College System is a coeducational two-year institution of higher education offering courses of study in technical-vocational education for which there is a demand within the State of Texas.

"The Texas State Technical College System shall contribute to the educational and economic development of the State of Texas by offering occupationally-oriented programs with supporting academic coursework, emphasizing highly specialized advanced and emerging technical and vocational areas for certificates or associate degrees. The Texas State Technical College System is authorized to serve the State of Texas through excellence in instruction, public service, faculty and manpower research and economic development. The system's economic development efforts to improve the competitiveness of Texas business and industry include exemplary centers of excellence in technical program clusters on the system's campuses and support of educational research commercialization initiatives. Through close collaboration with business, industry, governmental agencies and communities, including public and private secondary and postsecondary educational institutions, the system shall facilitate and deliver an articulated and responsive technical education system.

"In developing and offering highly specialized technical programs with related supportive coursework, primary consideration shall be placed on industrial and technological manpower needs of the state. The emphasis of each Texas State Technical College System campus shall be on advanced or emerging technical programs not commonly offered by public junior colleges."

Strategic Goals

Texas State Technical College Waco strives to be nationally known as one of the premier providers of technical education. TSTC Waco is a learning community created and supported to educate students in established and emerging technologies. The core business of TSTC is learning, application and research of technical knowledge.

We believe that every student can reach new levels of academic and technical expertise that will facilitate entry into the technical workforce. We are committed to the success of our students. We fulfill dreams.

The following strategic initiatives will guide our decision-making and help us focus our resources and energies. We are building on the strengths the College currently possesses.

Initiative 1 - Student Learning

1. Develop and implement a flexible learning environment
2. Provide opportunities for students to be partners in the learning environment

Initiative 2 - Collegial Culture

1. Encourage faculty and staff innovation
2. Implement a comprehensive professional development program that emphasizes life-long learning for faculty and staff
3. Communicate multi-directionally—across the institution—as well as top-down and bottom-up

Initiative 3 - Leadership

1. Develop leaders that value the learning community
2. Provide a comprehensive orientation to all new employees on the mission and uniqueness of TSTC
3. Promote diversity

Initiative 4 - Excellence through Assessment

1. Continuously improve in all areas of the College
2. Complete Southern Association of Colleges and Schools Self-Study
3. Disseminate assessment outcomes to College, local, state, and national audiences

Vision and Values

The Texas State Technical Colleges will be a leader in strengthening the competitiveness of Texas business and industry by building the state's capacity to develop the highest quality workforce.

Excellence	Achieving the highest quality in all we do.
Leadership	Developing visions and strategies for a desired future, and aligning and energizing people to achieve those visions.
Innovation	Creating and implementing new ideas and methods.
Collaboration	Working cooperatively with other organizations and within our own system.
Responsiveness	Providing appropriate programs and services in a proactive, flexible, and timely manner.
Accountability	Measuring our performance and using the results for improvement.
Stewardship	Ensuring our programs and services add value to our students and communities throughout the state, and operate in accordance with the public trust for which we are responsible.

The TSTC System

Texas State Technical College (TSTC) was established in 1965 as the James Connally Technical Institute (JCTI) of Texas A&M University to meet the state's evolving workforce needs. This college was located in Central Texas at the former James Connally Air Force Base in Waco. At the time, Governor John Connally predicted that it would be "the most sophisticated technical-vocational institute in the country."

In 1967, JCTI expanded to include a South Texas campus in Harlingen. In 1969, the colleges separated from Texas A&M University and became an independent state system, with the name Texas State Technical Institute (TSTI) and its own Board of Regents. Additional campuses were created in 1970 in Amarillo in the Panhandle of Texas and in Sweetwater in West Texas. As the demand for quality technical education continued to grow, extension centers were established in McAllen (1983), Abilene (1985), Breckenridge (1989), Brownwood (1991), and Marshall (1991). In 1991, TSTI was renamed Texas State Technical College (TSTC). In 1999, the extension center in Marshall became an independent college of the system.

Today, serving as the corporate college for Texas, TSTC offers new and emerging and customized curriculum at four colleges: TSTC Harlingen, TSTC Marshall, TSTC Waco, and TSTC West Texas, which has campuses in Abilene, Breckenridge, Brownwood, and Sweetwater. In addition, programs and customized training are offered at partnership centers throughout the state.

TSTC is the only state-supported technical college system in Texas. TSTC's statewide role and mission: TSTC's statewide role and mission is to efficiently and effectively help Texas meet the high-tech challenges of today's global economy, in partnership with business and industry, government agencies, and other educational institutions. TSTC has high graduation rates, exceptional postgraduate success rates, and an outstanding record in graduating individuals from diverse cultural and socioeconomic backgrounds. More than 30,000 students are served each year through traditional degree programs, short-term continuing education and corporate training programs.

Among TSTC's strengths are its emphasis on "learning by thinking and doing" and its strong relationships with business and industry, state-of-the-art laboratories, residential campuses, and student-centered philosophy:

"We believe in people. We believe people desire to be responsible and productive citizens. We believe technology is a force to be explored and channeled by people in a productive and responsible manner for the benefit of all humankind. Therefore, we believe all people should be provided with the educational opportunity to learn the skills necessary to perform meaningful work and, thereby, pursue their goals as responsible citizens contributing to the welfare and success of their families, communities, state, nation, and world."

Governance and Accreditation

The TSTC System is governed by a nine-member Board of Regents and operated under the direction of a systemwide Chancellor. These Regents, who provide a statewide perspective, are appointed by the governor to six-year terms. The Board meets quarterly to provide leadership and enact policies for the successful management and operation of the system. The colleges operate under the rules and regulations of the Texas Higher Education Coordinating Board.

The Texas State Technical College System Chancellor is
Bill Segura, Ph.D.

The TSTC System Board of Regents include:
Rolf R. Haberecht, Ph.D, Chairman of the Board;
Joe M. Gurecky, Vice Chairman;
Gene Seaman, Executive Committee Place 1;
Penny Forrest, Executive Committee Place 2;
Joe K. Hearne, Member;
J. V. Martin, Member;
Linda McKenna, Member;
Mike F. Northcutt, Member; and
Ellis M. Skinner II, Member.

Texas State Technical College Waco is accredited to award Associate of Applied Science degrees and Certificates of Completion by the Commission on Colleges of the Southern Association of Colleges and Schools at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about accreditation. Students may review accreditation records in the TSTC Office of the President.

TSTC is a member of the American Association of Collegiate Registrars and Admissions Officers and is listed in that association's Report of Credit Given.

Equal opportunity shall be afforded within the Texas State Technical College System (TSTC) to all employees and applicants for admission or employment regardless of race, color, gender, religion, national origin, age, or disability. TSTC complies with the Texas Equal Opportunity Plan.

Notes:

2010-2011 College Calendar

Fall 2010

April 5	Registration begins for returning students
April 12	Registration begins for new students
Aug.19	Last day to register for Fall
Aug. 30	First class day
Sept. 6	Student & Staff Holiday
Oct. 8	Last day to apply for graduation
Oct. 22	Professional Development Day—Classes canceled
Nov. 12	Last day to withdraw with "W"
Nov. 25-26	Student & Staff Holiday
Dec. 10	End of semester

Campus Closed for Winter Break, Dec. 24, 2010 to Jan. 2, 2011

Spring 2011

Nov. 15	Registration begins for returning students
Nov. 22	Registration begins for new students
Jan. 7	Last day to register for Spring
Jan. 10	First class day
Jan. 17	Student & Staff Holiday
Feb. 18	Last day to apply for graduation
March 7-11	Spring Break
March 31	Industry Career Day
April 1	Last day to withdraw with "W"
April 1-2	College Preview & Open House
April 29	End of semester

Summer 2011

April 4	Registration begins for returning students
April 11	Registration begins for new students
May 6	Last day to register
May 9	First class day for 15-week Summer term
May 30	Student & Staff Holiday
June 17	Last day to apply for graduation
July 4	Staff & Student Holiday
July 22	Last day to withdraw with "W" grade
Aug. 19	End of term

*** for an expanded calendar go to www.waco.tstc.edu**

Admissions Information

Personal Interviews and Campus Tours

Prospective students and their families are strongly encouraged to visit TSTC before registering for classes. During a campus visit, each prospective student is assigned to an Admissions Advisor or education and career specialist (ECS), who serves as a personal contact to help in the transition to college. These staff members assist prospects and applicants throughout the application, testing and registration processes. Contact Recruiting Services to schedule a personal interview and campus tour.

TSTC Waco presents College Preview & Open House annually, designed especially for prospective students who want to learn more about the College. These events, also open to parents, families, and friends of current and prospective students and alumni, feature various displays and presentations for instructional departments, as well as facility tours. You can also benefit from counseling and career assessment sessions, and housing and financial aid representatives are available for questions. Recruiting Services can provide you with information on College Preview & Open House. Call toll-free (800) 792-8784, or direct at (254) 867-2360.

Admission Requirements

General Admission Requirements

Students who apply for admission into college credit programs may be admitted to any college within the Texas State Technical College System under any of the following categories. These apply to students in college credit programs.

- *Graduate from a high school* accredited by a state department of education and/or a recognized regional accrediting association.
- *Transfer from another college, university, or other higher education institution* that is regionally accredited.
- *Complete a GED Certificate* (General Education Development), as certified by a state education agency.
- *Meet international student criteria.* Potential students who are not United States citizens must present proper documentation for an appropriate visa category. Additional information relating to academic background and financial support, as well as a personal interview, may be required for admission. See "International Students" under the Admission Procedures section for further information.
- *Meet individual approval criteria.* Potential students who do not meet any of the above requirements and are age 17 or older and no longer attending high school may be admitted through individual approval.
- *Meet exceptional admission criteria.* Potential students who are under age 17 may be admitted through the exceptional admission program under one of the following categories, provided they present sufficient evidence that they can do college-level work as determined by the institution.
  - Age 16 or older and currently enrolled in high school without a diploma or GED, or age 16 and a graduate of an unaccredited or home high school.
  - Age 16 and no longer attending high school, or age 15 or younger.

In addition, all applicants must submit scores from an approved Texas Higher Education Assessment (THEA) test, a TSTC-administered placement test, or provide appropriate documentation of THEA exemption or waiver.

Additional Program Admission Requirements

Some college credit programs have additional requirements that must be met before students may be admitted into those particular programs. These may include minimum scores on the admission placement test or other departmental tests, a physical standards statement assessing their physical capabilities for the program, letters of recommendation, or other program-specific requirements. Contact the College Records Office to learn if any additional requirements apply to the programs in which you are interested.

Additional TSTC Waco Admission Requirements and Immunization Information

Meningococcal meningitis is a bacterial infection that can cause severe swelling of the brain and spinal cord. Although it is rare, permanent disabilities can occur such as amputation, brain damage, hearing loss, seizures and even death.

TSTC Student Health Services highly recommends the Meningitis vaccine to any student having one or more roommates, or anyone in an at-risk group such as those with asthma, bronchitis, HIV or cancer. Symptoms are severe: headache, high fever, vomiting, stiff neck and sensitivity to light. SHS will direct students to agencies who stock the vaccine for Meningitis.

All first-time students or transfer students enrolling in public, private or independent institutions of higher education on or after Jan.1, 2010, who plan to live in single-student housing (Lavaca Hall, Red River or Village Oaks Apartments) are required to be vaccinated for Bacterial Meningitis at least 10 days prior to move in and provide appropriate documentation.

Students residing in housing must show documentation of vaccination including:

- Month, day and year vaccination was administered with the signature or stamp of the physician or his/her designee, or public health personnel, or
- An offcial immunization record generated from a state or local health authority, or
- An offcial record received from school offcials, including a record from another state.

A student, or a parent or guardian of a student, is not required to submit evidence of receiving the vaccinations against bacterial meningitis under the following circumstances if they submit the following to the institution:

- An affdavit or a certifcate signed by a physician who is duly registered and licensed to practice medicine in the United States, stating that in the physician's opinion, the vaccination required would be injurious to the health and well-being of the student; or
- An affdavit signed by the student stating that the student declines the vaccination for bacterial meningitis for reason of conscience, including a religious belief. A conscientious exemption form from the Texas Department of State Health Services must be used.

While TSTC Waco does not require all students to be immunized (except for the Dental Assistant program and those residing in housing), it is also recommended you receive immunizations for Rubeola (measles), Mumps, and Rubella and Tetanus/Diphtheria

Additionally, the Texas Department of State Health Services requires that all students enrolled in health-related courses (pursuing a certificate in Dental Assistant) which involve direct patient contact submit to the College Records Office and the Dental Assistant Program at time of registration a signed physicians' record documenting all immunizations listed: Diphtheria-tetanus, Measles, Mumps, Rubella, Varicella, Hepatitis B, and Tuberculin Purified Protein Derivative (PPD) skin test that is current within the 12 month period prior to enrollment. All immunizations, with the exception of Hepatitis B must be complete prior to registration. Students may be enrolled provisionally for up to two semesters until the Hepatitis B series is completed. The first Hep. B dose must be given prior to registration.

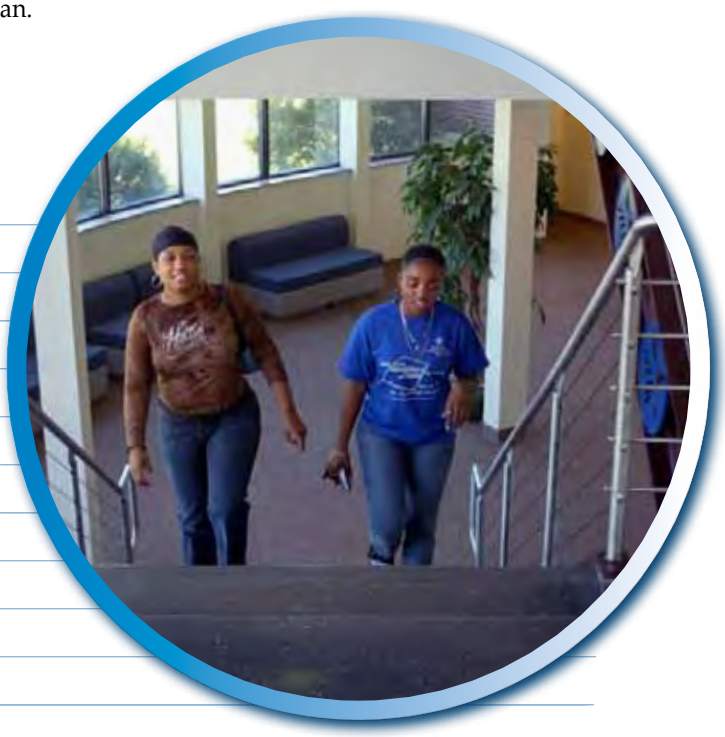
Students who apply for the Aircraft Pilot Training program must provide the College Records Office a current Class II Medical record. Starting with the fall 2004 semester, all new students must have successfully completed all sections of the Texas Higher Education Assistance (THEA) Test and all remedial courses before registering for classes in the Aircraft Pilot Training Technology.

Students entering Network Security Technology will be subject to a criminal background check. The paperwork for this check may be obtained by contacting the program.

It is strongly recommended that all students also receive the following immunizations: Hepatitis B series, Poliomyelitis (Polio), Hepatitis, and a current Tuberculosis test (PPD), prior to enrollment in college, especially for those students who will be residing in campus housing.

It is possible immunizations may be required of all students in times of an emergency or epidemic in a county where the commissioner of public health has declared such an emergency or epidemic.

For more information on immunizations and related health risks, or local providers of immunizations, contact TSTC Waco Student Health Services at (254) 867-3820 or your physician.



Notes:

Admission Procedures

General Admission Procedures

These procedures apply to students enrolling in college credit programs.

1. Complete an online application at www.tstc.edu. Once the application has been submitted, report promptly any changes to the information in it (for example, name, address, starting term, major, etc.).
2. Note that proof of Texas residency is required to obtain resident tuition rates.
3. Depending on the category under which the applicant qualifies for admission, submit the following additional documents.
   (a) High school graduate: an official copy of high school transcript
   (b) College or university transfer: official transcripts from ALL institutions of higher education attended previously
   (c) GED: a copy of GED certificate or official score report
   (d) Individual approval students: individual approval form
   (e) Exceptional admission students:
   - Age 16 or older and currently enrolled in high school without a diploma or GED, or age 16 or older and a graduate of an unaccredited or home high school: exceptional admission form signed by parent or guardian and high school representative; qualifying scores in writing and/or reading and/or mathematics on approved assessment instruments
   - Age 16 and no longer attending high school, or age 15 or younger: exceptional admission form signed by parent or guardian and high school representative; qualifying scores in writing, reading, and mathematics (Note: An information session with a TSTC official is also required. Contact the College Records Office for more information.)

   (f) International students: see "International Students" in this section for details
4. Submit scores from the TSI test or an approved alternative test, take a TSTC-administered placement test. If needed, make arrangements to take an assessment test by contacting Counseling & Testing.

All documents submitted by applicants who do not register for the term indicated on the admission application will be retained for one year in the College Records Office. At the end of one year, all records are discarded unless the applicant has notified the College Records Office of continued interest in attending TSTC. All documents become the property of TSTC and are not returned to the students.

Former TSTC Students

College credit students who were previously enrolled at TSTC but have not attended TSTC for more than one year must reapply by completing the admission enrollment procedures and providing the appropriate required documents.

International Students

College credit applicants who do not hold United States citizenship or permanent resident status should request a packet for international admissions. These applicants should also consult with the Registrar to identify their student status and to determine the specific documents they may need to provide. The following documentation may be required.

1. Application for admission and student health services form
2. College entrance testing, depending on major field of study
3. Immunization records
4. English translations of all secondary and/or postsecondary transcripts
5. Official TOEFL (Test of English as a Foreign Language) score report showing a minimum score of 15-30 in Reading, 14-30 in Listening, 22.5-4.0 in Speaking and 2.5-5.0 in Writing on a Web-based exam (applies to applicants from countries in English is not the primary language)
6. Current affidavit of financial support to indicate ability to pay fees and reside in the United States while attending school
7. Valid visa, passport, and I-20 (applies to applicants already in the United States)

Due to delays in international communications, international applicants are encouraged to complete all admission requirements at least 90 days prior to the expected entry date. When TSTC receives all the required documents, the applicant will be issued an acceptance letter and an I-20MN.

International students must adhere strictly to United States Immigration and Naturalization laws. Therefore, they must:

1. be enrolled as full-time students and maintain satisfactory progress in their coursework;
2. maintain an I-94 on file in the College Records Office;
3. carry medical and hospitalization insurance;
4. not obtain federal financial aid (except students holding I-151 to I-551 visas); and

5. comply with all TSTC regulations and laws of the United States.

Failure to comply with any of the above regulations may result in termination from TSTC and deportation.

Academic Fresh Start

Texas Education Code 51.929 entitles residents of Texas to seek admission to public institutions of higher education without consideration of courses undertaken ten or more years prior to enrollment. This bill has been called the "right to academic fresh start" and it gives students the option of electing to have coursework taken ten or more years prior to the starting date of the semester in which the applicant seeks to enroll either counted as usual or ignored for admission purposes.

Applicants who elect to apply for admission under this law and who are admitted as students may not receive any course credit for courses undertaken ten or more years prior to enrollment. The Admissions Office may be contacted for further information regarding academic fresh start.

Academic fresh start can only be applied for and granted prior to initial enrollment. Applicants to TSTC who wish to apply for fresh start should **complete** the Academic Fresh Start form available at the College Records.

Early Admission/Concurrent High School/Dual Credit

TSTC has agreements with many high school districts that permit eligible high school students to earn college credit while concurrently satisfying high school graduation requirements. Upon approval by the high school principal or designee and acceptance to TSTC through the exceptional admission program, a student may enroll in college courses taught either at the high school or at TSTC. State regulations allow a student to take a maximum of two college credit courses per semester. Some fees may be waived in selected courses.

Students must earn passing grades in all college courses that they have attempted in order to maintain satisfactory academic progress. Enrollment in developmental courses is not permitted for a student enrolling under the exceptional admission program (concurrent high school or dual credit).

College credits earned through the exceptional admission program will be accepted by most institutions on the same basis as other college credit. There is a possibility, however, that a specific college may add additional requirements for transfer purposes.

Participation in the exceptional admission program may make some students ineligible for University Interscholastic League competition in certain areas, depending on the course taken.

Contact the Tech Connect office at (254) 867-4860 or your high school counselor for more information.

Assessment Testing

Prior to enrollment in credit courses, students must comply with assessment testing requirements by submitting their scores on the THEA test or approved alternative test. See "Assessment and Testing Requirements" in the Scholastic Information section.

Assessment requirements for continuing education and workforce training programs are different from those described in this section. Contact Workforce Development for more information.

Registration for Classes

After the above requirements are met, students may register for credit classes. Consult with your advisor or educatoinal and career specialist and review the TSTC course schedule for more information on these classes. Contact Workforce Development for registration information for continuing education and workforce training programs.

Tuition and Fees

A college education is one of the most important investments a person can make. TSTC is committed to providing access to everyone who can benefit from such an education.

The cost of attending TSTC varies depending on a variety of factors, such as a student's residency status, whether or not the students lives on campus, the program of study, and any other services that the student may need. The Financial Assistance section of this catalog defines the types of financial aid that may be available to help pay these costs. This assistance can help provide the financial support students need for tuition, housing, books, and other educational items. It is not intended to completely fund a student's education.

The tuition and fees information in this catalog is subject to change without notice.

Tuition

A student's tuition is determined by residency status, the number of hours taken, and whether the courses are for college credit or for continuing education or workforce training.

Tuition Rates 2010-2011 :

- Resident of Texas: $67 per semester credit hour for the fall 2010 term. Resident of Texas tuition will increase in spring 2011 to $72 per semester credit hour.
- Non-resident of Texas: $188 per semester credit hour for the fall 2010 term. Non-resident of Texas tuition will increase in the spring 2011 to $225 per semester credit hour.

Designated Tuition Rate 2010-2011:

- $46 per semester credit hour for both resident and non-resident of Texas

Contact Student Accounting for information on tuition rates for continuing education and workforce training programs.

As defined by the Texas Higher Education Coordinating Board, a resident of Texas is a citizen, national, or permanent resident of the United States or an alien (foreign or international student) who has been permitted by Congress to adopt the United States as his/her domicile while in this country and who has otherwise met the state requirements for establishing residency for tuition purposes. In Texas, students enrolling in an institution of higher education must have resided in Texas for the 12 months immediately preceding the time of enrollment to be classified as a resident for tuition purposes; otherwise, they are classified as non-residents. Certain non-U.S. citizens who have resided in Texas for at least 36 months and have graduated from a Texas high school may be considered for classification as a resident for tuition purposes. Contact the College Records Office for more information regarding the residency of minors, dependents, members of the armed forces, or other special circumstances.

Tuition Rebate for Certain Undergraduates

In accordance with State law, a qualified student is eligible for a rebate of a portion of the undergraduate tuition the student has paid if the student:

1. is awarded a baccalaureate degree from a Texas public general academic teaching institution;
2. has attempted no more than three hours in excess of the minimum number of semester credit hours required to complete the degree, including transfer credits and course credit earned exclusively by examination; and
3. has been a resident of Texas and entitled to pay resident tuition at all times while pursuing the degree.

The amount of the rebate is $1,000 or the amount of undergraduate tuition paid by the student to the institution awarding the degree, whichever is less. If the student paid additional undergraduate tuition to other Texas public institutions of higher education, the student may qualify for an additional rebate by providing the degree-granting institution with proof of such payments. In any case, the amount of the rebate is a maximum of $1,000.

A student who has transferred from another institution of higher education must provide the degree-granting institution with an official transcript from each institution attended so that the total number of hours attempted by the student can be verified.

If the student has an outstanding student loan, including an emergency loan, owed or guaranteed by the State, including the Texas Guaranteed Student Loan Corporation, the degree-granting institution will apply the rebate to the student's loan. If a student has more than one outstanding loan, the institution will apply the rebate to the loans as directed by the student. If the amount of the rebate exceeds the amount of the loan indebtedness, the student will receive the excess amount.

Information pertaining to the Tuition Rebate Program is presented to all first-time students during pre-enrollment orientation sessions Additional information pertaining to the Tuition Rebate Program for undergraduate students may be found in the online TSTC Waco catalog at www.waco.tstc.edu, or from Student Accounting located in the TSTC Waco Student Services Center, 3801 Campus Drive, Waco, Texas, 76705; additionally, Iris Cunningham may be contacted at (254) 867-3786, or by e-mail at iris.cunningham@tstc.edu.

Fees

Students' fees are determined by a variety of factors, as described in the accompanying table. Not all of these fees apply to continuing education and workforce training programs. Contact Student Accounting for more information.

Student Payments

Student charges for Tuition and Fees are due and payable on or before either the first class day of the term or the first class day for courses in which students are enrolled. All tuition and fees may be paid by cash, check or credit card at the cashier's office or online through the student's WebAdvisor account. The Installment Payment Plan and Student Financial Aid constitute additional forms of payment; however, all payment arrangements must be formally completed before the first class day to avoid de-registration from classes.

Past Due Accounts

A student with a past due unpaid balance is considered to have a delinquent status. The delinquent student may not register for subsequent terms, receive credit for work done that term, receive grades and transcripts, or add courses. Delinquent accounts may be turned over to a collection agency, potentially affecting students' personal credit ratings. Students with delinquent accounts are responsible for any charges associated with the collection of delinquent accounts.

Cash

All tuition and fees may be paid in cash.

Personal Checks

All tuition and fees may be paid by personal check at the cashier's office or online through the student's WebAdvisor account. Students who pay by check or who cash checks at TSTC must present a valid TSTC identification card and a valid Texas driver's license. Students may cash personal checks of up to $150 per day or checks from their parents or legal guardians up to $150 per day. Checks from parents or legal guardians are to be made out to "Texas State Technical College."

Credit and Debit Cards

All tuition and fees of $5 or more may be paid by credit or debit card. Students paying with credit or debit cards may make payments at the cashiers or online through WebAdvisor at http://mytstc.edu.

Installment Payment Plan

College credit students may pay their registration charges (state tuition and designated tuition), campus housing, and meal plans on an installment payment plan. In accordance with State law, these students may pay their state and designated tuition in installments for the fall and spring semesters and for summer terms.

In order to validate the payment plan option, the initial payment and signed Installment Agreement must be returned to the Student Accounting Office at the time of registration.

For 15-week term:
1/3 prior to the beginning of the term plus the $10 installment plan fee
1/3 prior to the 6th class week
1/3 prior to the 11th class week

For 12-week or longer term:
1/3 prior to the beginning of the term plus the $10 installment plan fee
1/3 prior to the 5th week
1/3 prior to the 9th week

Less than 12-week term:
1/2 prior to the beginning of the term plus the $10 installment plan fee
1/2 before the class week prior to the halfway point of the term

A student who elects to pay in installments will:

1. pay a $10 installment plan fee;
2. be responsible for making payments on or before the due dates established at the time of registration;
3. be charged a late fee of $25 for each payment made more than seven business days after the payment is due;
4. be unable to obtain official copies of his/her student records until the debt is paid in full;
5. be at the risk of being dropped or barred from attend ing classes until the debt is paid or acceptable arrange ments are made with the TSTC Business Office; and
6. be responsible for payment of any remaining balance if he/she withdraws from the college.

Fees & Waivers

TYPE OF FEE	AMOUNT OF FEE (2009-2010)	NOTES
Non-Resident E-Learning Fee	$222 per semester credit hour	For out-of-state residents enrolled in distance learning credit courses. Courses are exempt from all other state and designated tuition.
Testing Center Exam Fee	Cost of exam	Applies to tests taken at TSTC Testing Centers and to TSTC Challenge Exams; includes fee for test administration
Program-specific Fees and Costs	Varies	For some credit programs
Continuing Education/Workforce Training Fees and Costs	Varies	For some continuing education/workforce training courses
Out-of-State Resident and Worker Continuing Education Tuition	At least twice the Continuing Education tuition rate for the associated course-section	For non-residents who are brought from outside the state by their employers to attend the course
Credit Award Evaluation Fee	$25 per evaluation	Applies to evaluation of CEUs and/or experiential learning for the purpose of awarding TSTC semester credit
External Certification of Specialty	Cost of exam	
Allied Health Malpractice Insurance	Cost of insurance	For students in allied health programs
Student Medical Health and Accident Insurance	Cost of insurance	Optional, unless required by program
Library Fines	10 cents per book per day Lost item: cost or replacement plus 10 percent processing fee	$1 per video or DVD per day

Waivers and Exemptions

Students classified as Texas Residents for purposes of tuition assessment may be eligible to have all or part of their tuition and/or designated tuition if they qualify for one of the waivers or exemptions. Contact the appropriate office for additional information and to determine eligibility.

WAIVERS & EXEMPTIONS FOR RESIDENTS	OFFICE
Students who graduate early from a Texas high school	Student Accounting, Student Services Center (254) 867-4803
Students who are the highest ranking graduate of their high school class (Valedictorian)	Student Accounting, Student Services Center (254) 867-4803
High school graduates who received AFDC benefits while in high school	Student Accounting Office, Student Services Center (254) 867-4803
Texas veterans or dependents of Texas veterans who were killed in action or died while in service	Veteran's Services, Student Services Center (254) 867-4817
Children of POWs and MIAs as certified by the U.S. Department of Defense	Student Accounting Office, Student Services Center (254) 867-4803
Children of disabled Firefighters or Peace Officers as certified	Student Accounting Office, Student Services Center (254) 867-4803
Blind or deaf students as certified by the Department of Assistive and Rehabilitative Services—Rehabilitation Services, Blind and Deaf-Blind Services, and Deaf and Hard of Hearing Services	Student Accounting Office, Student Services Center (254) 867-4803
Students employed as Certified Educational Aides as authorized	Financial Aid Office, Student Services Center (254) 867-4814
Students in foster or other residential care as certified by the Texas Department of Protective and Regulatory Services	Student Accounting Office, Student Services Center (254) 867-4803

Students classified as Residents or Non-residents for purposes of tuition assessment may be eligible to have all or part of their state tuition and/or designated tution waived if they qualify for one of the waivers or exemptions listed. Contact the appropriate office for additional information and to determine eligibility.

WAIVERS & EXEMPTIONS FOR RESIDENTS OR NON-RESIDENTS	OFFICE
High School students enrolled in class sectons for dual high school and college credit may have state and designated tuition waived or reduced	College Records Office, Student Services Center (254) 867-2361
Students enrolled in more than one Texas public institution of higher education at the same time may have a reduction in minimum state tuition charges	College Records Office, Student Services Center (254) 867-2361
Senior citizens 65 years of age or older may audit courses without payment of state and designated tuition	College Records Office, Student Services Center (254) 867-2361
Citizens 55 years of age or older may have state tuition waived upon verification of age.	College Records Office, Student Services Center (254) 867-2361
TSTC employees, their spouses and/or their dependents have a reduction in state tuition and a waiver of designated tuition	Student Accounting Office, Student Services Center (254) 867-4803 Human Resources (254) 867-4810

Students classified as Non-residents of Texas for purposes of tuition assessment may be eligible to pay resident rates if they qualify for one of the waivers or exemptions listed. Contact the appropriate office for additional information and to determine eligibility.

Military personnel stationed in Texas and their spouses and children	College Records Office, Student Services Center (254) 867-2361
Individuals employed at least half time as teachers or professors at Texas institutions of higher education and their spouses and children	College Records Office, Student Services Center (254) 867-2361
Individuals employed at least half time as teaching or research assistants at Texas institutions of higher education and their spouses and children	College Records Office, Student Services Center (254) 867-2361
Students whose families transferred to Texas as a part of the State's plan for economic development. Employer company must be certified as eligible by the Texas Higher Education Coordinating Board	College Records Office, Student Services Center (254) 867-2361
Students who receive a competitive scholarship of at least $1,000	Financial Aid Office, Student Service Center (254) 867-4814
Students who reside in a county or parish of Arkansas, Louisiana, New Mexico, or Oklahoma that is adjacent to Texas where a current reciprocity agreement is in effect with a college or university in the out-of-state county or parish	No such agreements at TSTC Waco.
Students from Mexico or Canada enrolled through a Texas Higher Program	Education Coordinating Board approved Exchange College Records Office, Student Services Center (254) 867-2361
Students from Mexico who demonstrate financial need	College Records Office, Student Services Center (254) 867-2361
Non-immigrant aliens residing in Texas in accordance with NATO treaties and their spouses and children	College Records Office, Student Services Center (254) 867-2361

Notes:

Emergency Tuition Loan

College credit students who are unable to pay their state and designation tuition at the time of registration because of financial hardship may be eligible for emergency tuition loans. A student who is unable to repay the emergency tuition loan on the date due may apply for a possible extension for repayment. Contact the Financial Aid Office for more information.

Meal Plans

New students, 21 years old or younger on the first day of their first semester, that reside in Lavaca Hall, Red River or Village Oaks are required to purchase the IM525 Meal Plan for their first two semesters at TSTC. The cost is $495. Students can upgrade to the IM1025 meal plan ($975) or IM1025 meal plan ($1,425). The Student Cafeteria is located in the Student Services Center.

For more information on meal plans contact the TSTC Cafe or Student Accounting in the Student Services Center.

Housing
Campus Living

Red River Apartments

2-Bedroom, 1-Bath private
(1 occupant/bedroom)..... $1,380/semester/person

2-Bedroom, 1-Bath shared
(2 occupants/bedroom).....$1,060/semester/person

(Furnished with 2 twin beds, 2 closets, built-in chests and desk, vanity, sofa, chair, coffee table, end table, dinette, full-size stove, refrigerator; utilities included, internet and extended cable provided; and on-site laundry facilities)

Lavaca Hall

Private Room (1 occupant).....$1,190/semester

(Community bathroom facilities on each floor; furnished with twin bed, study desk and chair, 2 closets with built-in shelving; utilities, extended cable and local phone service provided; microwaves and small refrigerators permitted; laundry facility; and community kitchen in building)

Fees Paid Only Once: Security Deposit (R)–$150; $100 refundable
Moving/Transfer Fee (NR)–$50/move. There is no application fee required for Red River and Lavaca Hall. Prices subject to change.

Brazos Community

Wood Frame (Unfurnished)

2-Bedroom Duplex.....	$320/mo.
3-Bedroom Duplex.....	$355/mo.
2-Bedroom Single.....	$365/mo.
3-Bedroom Single.....	$385/mo.
4-Bedroom Single.....	$415/mo.

Brick Veneer (Unfurnished)

3-Bedroom Small.....	$485/mo.
4-Bedroom Small.....	$510/mo.
3-Bedroom Large.....	$510/mo.
4-Bedroom Large.....	$535/mo.

Fees Paid Only Once: Application Fee (NR)–$15; Security Deposit (R)–$300; Moving/Transfer Fee (NR)–$250; Residential Student Housing Pet Fee (per pet, 2 max.)–$500 ($300 refundable if pet damage does not exceed $200 non-refundable portion of fee)

TSTC will only consider Campus Living Housing Applications submitted with Application Fee and cannot guarantee assignments.

Notes:

Note: If Campus Living Housing is not available at move-in and the student does not wish to wait for a unit, the Deposit is fully refundable.

(R)—Refundable in accordance with TSTC's refund policy;
(NR)—Nonrefundable
Prices subject to change.

Village Oaks Apartments

(Rates based on 8-month contract)

The Village Oaks Apartments complex, located on campus, is privately managed and operated by Campus Living Villages.

Efficiency
(2 occupants) $3,176/person
($1588/semester or $397/month; unfurnished)
2-Bedroom
(Shared-4 occupants)..... $2,912/person
($1,456 semester or $364/month; furnished)
2-Bedroom
(Private-2 occupants)..... $4,368/person
($2184/semester or $546/month; furnished)
4-Bedroom
(4 occupants)..... $3,256/person
($1,628/semester or $407/month; furnished)

(Local phone service, water/sewer, water heating, on-site amenities and first $25 of monthly electric bill per apartment included; all rooms pre-wired for Internet connections through the College; cable and phone outlets provided).

Fees Paid Only Once: Security Deposit of $225 ($150 is refundable); Application Fee $75 (NR)

Contact Village Oaks management about 12-month contract rates.

The Village Oaks Apartments Campus Living Villages Inc. lease agreement governs for Village Oaks residents.

New Web site: **www.villageoaksTSTC.com**

Refunds

Refunds for Changes in Enrollment

The following definitions apply when calculating refunds for changes in course enrollments.

- Reduction in course load occurs when a student drops a course(s) having more credit hours than he/she adds, resulting in the student being enrolled in fewer credit hours overall.
- Withdrawal occurs when a student completely ends his/her enrollment at the college for the current term.
- Credit courses are courses for which a student is eligible to earn semester credit hours toward an institutional award, certificate or associate degree. Credit courses also include support courses required for the student's enrollment, such as developmental education, etc.

Refunds for Drops/Reduction in Course Load

Students who drop credit courses and reduce their course loads while remaining enrolled at the college will have their state and designated tuition refunded, based on the official drop date recorded by the College Records Office. Students who concurrently add and drop the same number of credit hours will not be charged or refunded for these simultaneous transactions.

Refunds for semester credit courses are calculated using a formula based on the number of weeks scheduled for a term or class. Students who are enrolled in semester credit hour courses who drop a class or withdraw from school prior to the first class day will receive a 100% refund.

Students in semester credit hour courses who officially withdraw from school or drop a course after classes begin will have their state and designated tuition and fees refunded according to the following schedule unless the fees are specifically designated as non-refundable.

Length of Class Term in weeks	Last Class Day for 70 % refund	Last Class Day for 25% refund
2 or less	2	n/a
3	3	4
4	4	5
5	5	6
6	5	7
7	7	9
8	8	10
9	9	11
10	9	12
11	10	14
12	12	15
13	13	16
14	13	17
15	14	19
16 or longer	15	20

Class days are defined as calendar days during which classes are normally scheduled and not the specific days a particular class meets.

Refunds for Federal Financial Aid Recipients

Special refund requirements apply to students who receive federal aid that is classified as "Title IV" funds. Title IV funds include awards such as Federal Pell Grants, Federal Supplemental Educational Opportunity Grants (FSEOG), William D. Ford Federal Direct Loans and Federal Stafford Loans, and PLUS loans, and other federal awards. Students must attend classes to remain eligible for federal financial aid. Students who are considering withdrawing from all classes before completing 60% of the semester should contact Financial Aid to learn how this would affect their financial aid.

If a student reduces a course load or withdraws from TSTC, the college and/or the student may be required to return federal funds awarded to the student. The student may be eligible for a refund of a portion of the state and designated tuition paid to TSTC for that term. If the student received financial assistance, the refund is returned to the grant, scholarship, or loan sources from which the assistance was received.

A federal formula dictates the amount of Title IV aid that must be returned to the federal government by the college and the student. This formula applies to a student who is receiving Title IV funds if that student withdraws from the college on or before the 60% point in time in the term. The percentage of Title IV aid to be returned is equal to the number of calendar days remaining in the term divided by the number of calendar days in the term. Scheduled breaks of five consecutive days or more are excluded from this calculation.

If any funds are to be returned after the refund of Title IV aid, they are used to repay TSTC funds, state funds, and other private sources. If there is an unpaid balance, then all aid sources are repaid before any funds are returned to the student. Funds released to a student due to a credit balance on the student's account do not relieve the student's obligation to repay Title IV funds when the student withdraws.

Order of Return of Title IV Funds

A school must return the Title IV funds to the programs for which the student received aid during the payment period or period of enrollment as applicable, in the following order, up to the net amount disbursed from each source:

1. Unsubsidized Federal Stafford Loan
2. Subsidized Federal Stafford Loan
3. Unsubsidized Direct Stafford loans (other than PLUS Loan)
4. Subsidized Direct Stafford Loan
5. Federal Perkins Loan
6. Federal PLUS Loan
7. Direct PLUS Loan
8. Federal Pell Grant Program for which a return of funds is required
9. Academic Competitive Grants for which a return of funds is required
10. National Smart Grants for which a return of funds is required
11. Federal Supplemental Educational Opportunity Grants (FSEOG) for which a return of funds is required
12. Other Title IV Aid
13. Other Federal, State, Private, or Institutional Aid
14. The Student

For more detailed information on the entire refund procedures for Financial Aid students or about the calculation of refund amounts, contact Financial Aid and Student Accounting.

Bookstore Refunds

Textbooks are eligible for refunds if they are returned during the first nine class days of the term and are accompanied by the sales receipt.

- A 20 % restocking fee will be charged on text book returns the first nine class days unless proof of drop or schedule change is provided.
- Original receipt is required.
- Books must be in original condition. Books NOT in their original condition (Unwrapped or marked in textbook), will receive a 50% refund off original purchase price.
- Returns after the first nine class days will require proof of drop or schedule change, textbooks will be purchased at 50% of the purchase price. No exceptions.

Tools, supplies, and electronics are non-refundable, unless they are defective. If they are defective, the items must be returned within 15 days of purchase and must be accompanied by the sales receipt in order to receive a refund. Refunds or exchanges allowed for apparel within 30 days of purchase, receipt is required and items must be in original condition.

Campus Living Housing Refunds

The Security Deposit may be refunded after you move from your assignment and after each of the following have been completed: room/home inspection, clearance with the Campus Living Office, return of all keys, and fulfillment of lease agreement (Lavaca Hall and Red River residents). No reduction in housing fees can be made for late entry during a registration period. Damages, cleaning charges and any unpaid rent are charged against the deposit.

If housing is not available or student does not qualify, all security deposits will be refunded. In the event you do not attend TSTC, submit a written notice to the Campus Living Office at least 30 days prior to the first day of class in order to obtain a deposit refund. Approximately four weeks are required to process refunds. The security deposit is forfeited unless the payments for the entire contract period have been paid in full for those assigned to Lavaca Hall or Red River Apartments.

There are limited reasons that a student may break a lease agreement. Should circumstances arise that necessitate a cancellation, the student will need to contact the Campus Living Office. Even with an approved reason, students must comply with the proper check-out procedures before the agreement can be terminated. Any refund of housing fees will be on a pro-rated basis, dependent upon the time of the cancellation of the housing agreement. A 30-day move-out notice is required, and rent charges stop the day the keys are returned for houses and duplexes.

The Village Oaks Apartments Campus Living Villages Inc. lease agreement governs refunds for Village Oaks residents.

Refund of Other Fees

No refunds are given for installment plan fees. No refunds are given for health insurance, malpractice insurance, and other miscellaneous student-requested fees after expenses have been incurred by the college.

Notes:

Financial Assistance

TSTC's philosophy is to provide financial assistance to students who would otherwise be unable to pursue a postsecondary education. However, the primary responsibility for paying the cost of a college education rests with the student and his/her family. Funds are available through the Financial Aid Office to supplement those resources. TSTC Financial Aid Office staff are available to assist students with financial aid questions and concerns.

Several types of financial assistance are available to TSTC students. These include grants, which are free money awarded to students with the most financial need and which do not have to be repaid; scholarships; part-time on-campus or community service employment; and loans, which must be repaid.

Applying for Financial Assistance

When to Apply

The key to obtaining financial assistance is to *apply early*. To ensure that an aid package is available and ready, TSTC recommends that the completed file be received in the Financial Aid Office according to the following schedule:

To enroll in the:	**Apply for financial assistance by:**
Fall term	June 1
Spring term	October 1
Summer term	March 1

Applications completed by these deadlines are processed for available funds on a first-come first-served basis. Late applicants may not have funds available on registration day, when payment for state and designated tuition is due.

Since financial assistance is not always available at registration, it is recommended that students make alternative arrangements to pay registration expenses. Contact the Financial Aid Office for information.

How to Apply

Instructions for Financial Aid

Step One: Submit the FAFSA (Free Application for Federal Student Aid), based on the appropriate year's income information at www.fafsa.ed.gov.

- TSTC Waco's Federal School Code number is 003634.
- If you wish to complete a paper FAFSA to mail to the processing center, or for us to submit electronically for you, you may obtain the application in the financial aid office.
- If you wish to apply for a Federal Direct Student loan, please indicate this on question No. 31 on the FAFSA. All loans will be processed through the Federal Direct Student Loan Program. For information on what steps you must complete in order to receive loan funds, please visit: http://www.waco.tstc.edu/financialaid/mpn.php.

Step Two: You will receive a Student Aid Report (SAR) in the mail from the processing center within 2-3 weeks after you submit your FAFSA electronically, or if you provided your e-mail address, you will receive an e-mail with a link to your SAR in no more than five days.

- Please review the information on the SAR and contact the financial aid office if you discover any errors.
- If your file contains discrepancies, or is selected for verification by the United States Department of Education, you will be required to submit additional documentation to the Financial Aid Office.
- You will receive an award letter when your aid has been processed, along with instructions on how to complete the process for a Federal Direct Student Loan.

Step Three: Officially declare a major in the College Records Office. A major cannot be declared until all required transcripts are received by that office.

Note: Financial aid will not be credited to your student account until all transcripts are received.

Step Four: Pre-register. If you register early, your financial aid, if processed, will be credited to your student account prior to the start of the term.

Note: Aircraft Pilot Training (APT) students must submit a copy of their Class II Medical Certificate before any financial aid can be credited to their student account. APT student budgets are adjusted to reflect flight costs. Any APT student who does not fly for a term may lose the budget adjustment.

Types of Financial Assistance

A variety of resources are available for financial assistance at TSTC. Some of these are included in the following list. Contact the Financial Aid Office for more complete information and assistance.

Federal Pell Grant

This federal aid program provides financial assistance for obtaining a postsecondary education. It is intended to be the base of a student's financial aid package. Eligibility is based on a student's financial need.

Federal Supplemental Educational Opportunity Grant (FSEOG)

This federal aid program helps college students who have exceptional need. The amount of the FSEOG varies according to the availability of other grants, scholarships, loans, and student employment. FSEOG funds are limited and are awarded on a first-come, first-served basis.

Federal Academic Competitive Grant (ACG)

The ACG is available to undergraduate students who have successfully completed a 'rigorous secondary school program of study.' Eligibility is determined upon TSTC's receipt of the processed FAFSA. Student should complete and file the FAFSA.

Texas Public Education Grant (TPEG)

This state program provides financial assistance in obtaining a postsecondary education. Eligibility is based on a student's financial need and awards are made on a first-come, first-served basis.

Toward Excellence, Access & Success (TEXAS)

These state awards pay state and designated tuition for certain students who have graduated from Texas public or accredited private high schools within the preceding 16 months. Students must have completed the recommended or advanced high school curriculum and be able to show financial need. Students who do not meet the criteria for the TEXAS Grant may be eligible for the TEXAS Grant II.

Leveraging Educational Assistance Programs (LEAP, SLEAP)

Priority for these awards is given to full-time students with financial need. Within this group, priority is given to students whose complete files are in the Financial Aid Office by the application deadline. Funds are disbursed only during the fall term and are awarded on a first-come, first-served basis.

Federal and State Work-Study Program (FWSP)

Work-study programs are designed to stimulate and promote part-time on-campus employment of students, particularly those who need financial assistance. Funds are available to the college to help create job opportunities for eligible students; however, these funds are limited and students must apply early.

Federal Loans

Various types of federal loans are available, including the Federal Direct Subsidized Stafford, Federal Direct Unsubsidized Stafford, and Federal Direct Parent Loan. To be certified for a loan, students must first apply for the Federal Pell Grant, as described earlier in the Financial Assistance section. Because changes occur frequently in federal regulations, call or visit the Financial Aid Office for details regarding loan amounts, eligibility criteria, repayment responsibilities, etc.

Department of Assistive and Rehabilitative Services

The Department of Assistive and Rehabilitative Services (DARS) provides financial assistance to students whose significant physical or mental disabilities have resulted in substantial vocational disabilities. Learning disorders are among the eligible conditions. In order to provide training assistance, DARS must determine that such training is necessary for employment and that the individual has a good chance of success in the chosen program. Applicants must submit an application and be tested and counseled before eligibility is determined. The amount of DARS assistance depends on available funds and individual need. A full-time DARS representative is on campus to assist DARS clients while attending TSTC. Contact your local Department of Assistive and Rehabilitative Services office for an application and more information.

Trade Adjustment Assistance (TAA)

The Trade Adjustment Assistance (TAA) Program is a federal program established under the Trade Act of 1974, as amended. The TAA Program provides aid to workers who lose their jobs or whose hours of work and wages are reduced as a result of increased imports. Interested applicants should contact the Texas Workforce Commission Office in the county of their residence.

Workforce Investment Act (WIA)

The Workforce Development Board in your area may offer payment of tuition and/or other expenses to students who qualify for this program. Interested applicants should contact the nearest Workforce Center or call 1-800-457-5600 or 1-800-457-5633. Applications for the program should be made as far in advance of registering as possible.

Veterans' Benefits (G.I. Bill)

TSTC is approved for training veterans and their eligible dependents under the provisions of various laws commonly called the G.I. Bill. A veteran with remaining entitlement may receive a monthly check, which varies in amount based on class load and the type of eligibility that the veteran has. A spouse or child of a veteran may receive benefits under certain conditions. The DD form 214 and all official college, university and military transcripts may be required. Veterans who may be eligible for assistance under any of the Department of Veteran's Affairs programs should contact the TSTC Waco Veterans Certification Officer located in College Records.

Scholarships

Each year a number of individuals, businesses, and organizations provide scholarships for TSTC students. These allow students to be recognized for their hard work, as well as for their need for assistance. Most of these scholarships, which vary in amount, are available to students after they complete one or two terms. A partial listing of TSTC scholarships is included in the accompanying table. Contact the Financial Aid Office for additional information and a complete list of available scholarships.

Waivers and Exemptions

TSTC is authorized to grant tuition and fee waivers to qualified resident and non-resident students based on Texas Higher Education Coordinating Board rules. For details, see "Tuition Waivers and Exemptions" in the Tuition and Fees section of this catalog.

Notes:

Financial Aid Standards of Academic Progress

The following standards of academic progress are adopted for the purpose of determining continuing student eligibility for financial aid. These provisions apply only to those students who are receiving or applying for financial aid. Progress will be reviewed at the end of each term to determine that the student is making satisfactory progress. This review will include all periods of the student's enrollment, even those for which the student did not receive financial aid. Students are expected to be continually aware of their grades. A student who is placed on probation or suspension may be notified in writing by the financial aid office; however, failure to receive notification will not change the student's financial aid status.

Maintaining Eligibility for Financial Aid

A student must maintain at least a 2.0 GPA in each term for which aid is approved, and must maintain at least a 2.0 cumulative GPA for all courses, including remediation studies. A transfer student begins enrollment at TSTC in good standing and will be monitored from that point. Based on the hours attempted each term, a student must successfully complete the number of credits outlined in the following chart:

Credit Hours Attempted:	Minimum Credit Hours to be Completed:
More than 12 credit hours	75%
9 to 12 credit hours	8 credits
6 to 8 credit hours	6 credits
Less than 6 credit hours	100%

Successful completion means a student has received a minimum grade of D. Courses in which students receive grades of F, IP (in progress) and W (withdrawal) are not considered completed courses. Students enrolled in required remediation (developmental studies) as indicated by testing or as recommended by counseling, may receive financial aid for no more than 27 semester hours of remedial courses. All remedial courses attempted, including failures, incompletes and withdrawals are counted toward the 27 semester hour maximum.

Repeat courses will not be funded unless the course is needed to meet graduation requirements. Audit courses, continuing education and those courses for which a student enrolls after the census (official) class date are not considered for funding.

Failure to Meet Financial Aid Standards of Academic Progress

The first time that a student fails to maintain the minimum satisfactory progress requirements he or she will be placed on Financial Aid Probation for the next term of enrollment. While on probation, a student may receive all financial aid for which they are eligible. Students who are placed on financial aid probation are encouraged to attend the ACTS (Another Chance to Succeed) program. The ACTS program is a five-week continuing education course that has been designed to assist students on financial aid probation in improving their academic performance.

A student who fails to meet the standards of academic progress during the term of probation will be placed on financial aid suspension, and will lose eligibility for all financial aid for their next term of enrollment.

In order to regain financial aid eligibility, a student must enroll on at least a half-time basis for one term at TSTC, pay the expenses related to that enrollment, and maintain the required standards of academic progress. After a student complies with these requirements, he or she will again be eligible to receive aid for their next term of enrollment.

Appeal Process Related to Standards of Academic Progress

A student who is on financial aid probation may not file an appeal. A student who is placed on financial aid suspension may file an appeal, based on mitigating circumstances, to the Director of Financial Aid. A student may normally receive only one appeal during enrollment at TSTC.

Maximum Time Frame for Receiving Financial Aid

Students may receive financial assistance for up to 150 percent of the certificate or degree programs' required credit hours. Students who change programs or who enter new programs after graduation should consult with the Financial Aid Office to confirm their continuing eligibility for financial aid.

Refunds for Financial Aid Recipients

Refunds for financial aid recipients depend on the students' withdrawal dates. For example, students withdrawing before the 60% date of the semester may owe the college money. For more information, see "Refunds for Federal Financial Aid Recipients" in the Refunds section of this catalog.

Scholarship List

Sponsor	Major	Eligibility/Requirements
Advertising Club	ADP	Must have a portfolio review of senior-level work. This scholarship not awarded every year.
Clampitt Paper/Henry Phillips	ADP	Must be a Texas resident currently enrolled in an accredited 2- or 4- year print technology or management program
Nolan Moore Memorial/Printing Industries of America PIA	ADP	Must be a student who is a legal resident of Texas, either entering or enrolled in a post-secondary print technology
Central Texas Print Association	ADP	Must have a 3.0 GPA and have completed at least 12 credit hours
TSTC Auto Body	ACM	Letter demonstrating academic achievement, leadership skills, attendance, and a recommendation based on class performance
Air Conditioning Today	ACR	3.0 term GPA, 2.5 cumulative GPA, and 500 word essay on goals and needs
Aviation Maintenance	AER	Must have 1 completed term, have financial need verified by the TSTC Financial Aid Office, be enrolled full-time, have a 2.0 GPA, submit a TSTC transcript, and have supporting documents showing community service and campus involvement
Alpha Eta Rho	APT	Must have completed a least 2 terms, have a cumulative 3.0 GPA, and be enrolled full-time
Doug Boultinghouse	APT	Must have completed a least 2 terms, have a cumulative 3.0 GPA, and be enrolled full-time
George P. Brown	APT	Must have completed a least 2 terms, have a cumulative 3.0 GPA, and be enrolled full-time
Lee Bruecher	APT	Must have completed a least 2 terms, have a cumulative 3.0 GPA, and be enrolled full-time
WIX Filtration	AUT	Must have 1 completed term. Letter requesting scholarship, need for scholarship, and what it will be used for with instructor's recommendation.
North Texas Biomedical Assoc.	BET	Must be a member of the North Texas Biomedical Association.
MYMETA	BET	See BET department
CHT Alumni	CHT	Must have 1 term completed, and a minimum cumulative 2.0 GPA required
Sasol, USA	CHT	Must have completed at least 2 terms (18 hrs. or more) and be enrolled full-time, with a cumulative 2.0 GPA
GE Water and Process Technologies	CHT	Must have completed at least 2 terms (18 hrs. or more) and be enrolled full-time, with a cumulative 2.5 GPA
Lynn Francis Memorial	CMT	Must be 3rd or 4th semester student with a 3.0 GPA, of good moral character, recommended by CMT chair. $500 per semester for 2-3 semesters awarded by the family of Lynn Francis.
Harlan M Fentress Memorial	DET	Must have completed 2 term and have a cumulative 3.0 GPA

Sponsor	Major	Eligibility/Requirements
Dallas Peterbilt/ J.D. McGee Scholarship	DET	Must have completed at least 1 term. Letter requesting scholarship, need for scholarship, and what it will be used for with DET instructor's recommendation.
Alcoa Foundation	DET	Must have completed at least 1 term, letter requesting scholarship, need for scholarship, and what it will be used for with DET instructor's recommendation
CEM	DET	Must have completed at least 1 term. Letter requesting scholarship, need for scholarship, and what it will be used for with DET instructor's recommendation
Dow Chemical / Instrumentation	ECR	Must have completed 1 term and have cumulative 3.0 GPA
American Society of Safety and Engineers	EHS	Must have completed at least 2 terms, have a cumulative 3.0 GPA, be enrolled full-time and submit a 500-word safety-related essay
Rosemary Henderson Memorial	EHS	Must have a cumulative 3.0 GPA and enrolled as a full-time student
South Texas Chapter Health	EHS	Must plan to begin or be working full-time toward associate degree in health physics or related Physics Society field.
Waco Restaurant Association	FSC	FSC major, award based on need
East Texas Restaurant Association	FSC	Must be from East Texas region
RL Buckle	LET	Scholarship money given as a loan to pay back to scholarship fund
Assoc. of Energy Facilities Engineers	MET	Must submit an application, essay and letter of recommendation from faculty member or employer. (North Texas Chapter) Based on need.
GTE	TEL	Must have completed 2 terms and have a cumulative 3.0 GPA
M&M Mars	WLT	Must have a cumulative 3.0 GPA and enrolled as a full-time student

Notes:

Scholastic Information

Grading Standards

TSTC measures student achievement of skills, knowledge, and competencies through a system of grading standards. Four grades (A, B, C, D) indicate that credit was received and a grade was awarded. One mark (CR) indicates that credit was received but no grade was awarded. One grade (F) and various other marks indicate that no credit was received and no grade was awarded.

The following system of final grades and marks is used by TSTC to report student performance for each course attempted and/or credited toward graduation. Contact College Records for additional information.

Grade	Interpretation	Grade Points
A	Excellent/Superior Performance Level	4
B	Above Required Performance Level	3
C	Minimum Required Performance Level	2
D	Below Required Performance Level	1
F	Failure to Meet Performance Requirements	0
P	Pass/Meets Required Performance Level (For use in a developmental course or a specialized course and may be used, at the discretion of a college, for up to six credit hours in a program)	Not Computed
IP	In Progress (For use when a student has not had sufficient time to complete the course due to the registration date, extended illness, or other circumstances beyond the student's control. A grade of IP will be changed to a grade of F if the student does not complete the course requirements by a date specified by the faculty member, or within one year, whichever is less)	Not Computed
IM	Incomplete-Military Leave (For use by students who are called to active military service near the end of a term. A grade of IM will be changed to a W if the student does not complete the course requirements within two years of the date the IM grade was awarded	Not Computed
W	Withdrawal	Not Computed
CR	Credit (represents credit for courses that are accepted toward program completion and graduation as a result of transfer from other institutions or programs, advanced standing evaluation, credit by examination, articulation agreements, or other validations of course-required knowledge and skills)	Not Computed
AUD	Audit of Course	Not Computed
S	Satisfactory (for use in Continuing Education courses and programs)	Not Computed
UN	Unsatisfactory (for use in Continuing Education courses and programs)	Not Computed
X	No Grade Assigned	Not Computed
FA	Failing (prior to September 1988)	0
I	Incomplete (prior to September 1988)	Not Computed
U	Unsatisfactory (prior to September 1988)	0
WF	Withdrew Failing (prior to September 1988)	0
WP	Withdrew Passing (prior to September 1988)	Not Computed

Grade Point Averages

Grade points earned for each course are determined by multiplying the number of points for each grade by the number of credit hours the course carries. For example, a student who takes a three-hour course and earns an "A" accumulates 12 grade points for that course (3 hours X 4 points for an A = 12 points). A student's grade point average is computed by adding the grade point values for all college-level courses for which grade point values may be computed (A, B, C, D, F, FA, U, WF), and dividing this total by the number of credit hours attempted during the same period. Only hours for which grades are awarded are used in calculating the grade point average (GPA).

Term Grade Point Average

The Term GPA is computed for all TSTC college-level courses with grades of A, B, C, D, and F recorded during a specific term. Developmental education courses are excluded from the Term GPA calculation.

Cumulative Grade Point Average

The Cumulative GPA is computed for all college-level courses using all grades and grade points earned since enrolling at TSTC. Developmental education courses are excluded from the Cumulative GPA calculation. The Cumulative GPA is used to qualify students for graduation and for graduation honors. The Cumulative GPA appears on the TSTC official transcript.

Standards of Progress Grade Point Average

A Term and Cumulative Standards of Progress GPA is computed using all TSTC college-level and developmental education courses. The Standards of Progress GPAs are used for determining scholastic standing, term scholastic honors and financial aid eligibility. See 'Financial Aid Standards of Academic Progress' in the Financial Aid section for more information.

Scholastic Standing

TSTC's scholastic standards are based on a philosophy of advancing student progress toward successful course and program completion. The criteria for scholastic standing are designed to monitor student progress so that faculty and staff can intervene and assist students who have difficulty meeting minimum requirements.

Scholastic standing is computed at the end of each enrollment period and is based on the Standards of Progress (SOP) Term and Cumulative GPAs.

Good Standing

A student who maintains minimum 2.00 standards of progress cumulative and term grade point averages will be in good academic standing.

Scholastic Probation

A student whose standards of progress cumulative or term grade point average is below 2.00 at the end of an enrollment period is placed on scholastic probation. A student may continue on scholastic probation by achieving a minimum standards of progress term grade point average of 2.00 at the end of the enrollment period. A student is removed from scholastic probation when the standards of progress cumulative and term grade point averages are 2.00 or higher.

Scholastic probation is a serious warning that the quality of the student's work must improve in order for the student to continue enrollment in the college. Students on scholastic probation are required to meet with a counselor or advisor prior to registration and may be required to enroll in special programs or courses in order to improve grade point average. After counseling with Career Guidance staff, the student may be permitted to enroll in a new program while on scholastic probation.

Scholastic Suspension

Scholastic suspension occurs when a student on scholastic probation fails to maintain minimum academic standards. A student on scholastic probation who fails to achieve a standards of progress term grade point average of 2.00 or higher will be suspended for one calendar year. A suspended student may appeal for a waiver of a suspension to the instructional dean or designee. Any student who is scholastically suspended will be permitted to reapply for admission one calendar year from the scholastic suspension term. A student who re-enters the college after having been suspended will be placed on scholastic probation status and will be subject to the minimum requirements governing scholastic probation.

Scholastic Honors

Full-time students (those enrolled for 12 or more credits) who earn SOP Term GPAs of 4.0 are placed on the President's List. Full-time students who earn SOP Term GPAs of 3.5 to 3.99 are placed on the Dean's List.

Phi Theta Kappa: International Honor Society of Two-Year Colleges

Invitation to membership in the international honor society, Phi Theta Kappa, is extended by TSTC Waco's Alpha Omega Omega chapter. Students enrolled in one of TSTC's associate degree programs with at least 12 hours of course work and a Cumulative GPA of 3.5 or higher are eligible for induction. Members must maintain a Cumulative GPA of 3.0 or better to enjoy full rights of membership. If you meet these general eligibility standards, contact Marta Getman at (254) 867-3029 for more information.

Grade Reports

Students are expected to monitor their academic progress. Final grade reports are provided to students at the end of each term on the TSTC Web site via WebAdvisor at https://webadvisor.tstc.edu. Students should review the grade reports for accuracy. All requests for review or correction must be submitted to the College Records Office within 12 months of the close of the semester in which the course was taken.

Grade Changes

Student grades are among the most important records kept by the college. Policies and procedures ensure the privacy and integrity of student grade records. The following policies and procedures must be followed to request a grade change.

- A grade change must be requested within one year of the issuance of a grade.
- A grade may be changed due to an error, a student completing course work previously graded "IP" (In Progress), or a fact-supported finding by appropriate members of the administration or appeal committee operating in accordance with established college procedures.
- A grade cannot be changed to a "W" (Withdrawal) unless doing so is in conjunction with an administrative drop or withdrawal from the college that is approved in accordance with college procedures.
- A change of grade form must be completed, noting the reason for the grade change, and signed by the student's instructor and the Vice President for Student Learning.
- Upon receipt of the completed and signed grade change form, the College Records Office makes the official change to a student's transcript record.
- A copy of the change of grade form is placed in the student's permanent file for audit purposes.

Academic Appeal

It is the intent of Texas State Technical College Waco to maintain the academic integrity of all instructional programs while affording students with a fair process for appealing grades. Please consult your Student Handbook for procedure.

Transcript of Credit

The transcript of credit is an official statement of the student's complete academic record accumulated at TSTC. Upon a written or Web request to any TSTC college, the College Records Office will release official transcripts to the student or to a third-party that is authorized by the student to receive the transcript. Normally, the minimum time for processing such requests is 24 hours; however, transcripts requested at the end of a term require approximately one week for processing. Students who request transcripts prior to the end of a term, with current courses and grades to be included in the transcripts, must clearly note the current work as part of the request.

Copies of student transcripts from other colleges or universities will not be released through TSTC. These transcripts must be requested from the institutions at which the credit was earned.

Official transcripts may be withheld if any financial obligations to TSTC have not been paid or if official transcripts have not been received from previously attended institutions. Students who have not complied with all exit requirements will not be provided with transcripts.

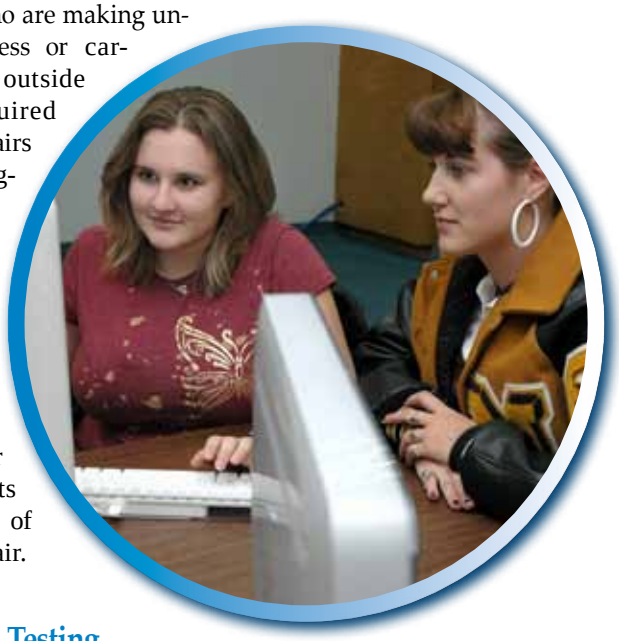
Classification

Students are classified as freshmen if they have earned less than 30 hours of college credit. They are classified as sophomores if they have earned 30 to 72 hours of college credit.

Course Load

Students in good standing may register for course loads equivalent to those specified in their instructional programs.

Students may register for less than normal loads but must register for a minimum of 12 credits to be considered full-time. Students who are making unsatisfactory progress or carrying excessive outside work may be required by department chairs or advisors to register for less than normal loads.



Students may register for up to 18 credits with the approval of the faculty advisor. Enrollment for more than 18 credits requires approval of the department chair.

Assessment and Testing Requirements

Before enrolling at TSTC, all students must present scores on one of the approved Texas Success Initiative (TSI) tests, and present evidence of TSI completion from another Texas college or university. Additional placement testing may be required for entry into specific courses or programs.

Before receiving an Associate Degree or Level II Certificate, all students must either present passing scores on an approved TSI test, complete their required remediation program or be exempt from the TSI requirements. In general, students may meet TSI standards by completing the capstone developmental education courses with a grade of C or better in the skill areas of reading, writing and mathematics by participating in and completing a developmental education activity specified on students' individual TSI plans, or by re-testing and passing an approved TSI test. Additional information regarding TSI completion requirements may be obtained from the Center for Assessment.

Students who are not exempt from TSI requirements and who do not obtain passing scores on the appropriate tests must adhere to the following:

- **Associate of Applied Science Degree programs:** must participate in developmental education programs during each enrollment period until all TSI requirements are met.
- **Level II Certificate programs (43 or more semester credit hours):** may be required to participate in developmental education programs.
- **Level I Certificate programs (42 or less semester credit hours):** must participate in developmental education programs at major departments discretion.

Students who enroll first in a Level I Certificate program and then change to a Level II Certificate or an Associate of Applied Science Degree program must meet the requirements of the new program.

Test Standards

The following table provides the minimum passing scores on approved TSI tests.

	Reading	Writing	Math
THEA	230	220	230
Accuplacer	78	80 with Essay Score = 5	63
Compass	81	59 with Essay Score = 5	39
Asset	41	40 with Essay Score = 5	38
Writing Essay		6	

Note: *Test score information is subject to change. Confirm required scores at the Center for Assessment.*

Students with disabilities will take a test approved for TSI purposes with appropriate accommodations. Contact the Deaf/Disabled Student Services Office for additional information.

Non-native English speakers are required to be assessed in reading, writing, and math skills. An alternative test such as TOEFL may be used to determine the level of English proficiency. Depending upon scores, students will enroll in non-credit English as a Second Language (ESL) courses, academic ESL courses, developmental courses in reading and math, and/or college-level courses as appropriate until such time as their English proficiency allows testing on an approved TSI instrument. Contact the Center for Assessment for more information.

Testing Schedule

Accuplacer

TSTC Waco uses the Accuplacer as an Alternative Test to meet Texas Success Initiative (TSI) Requirements. The Accuplacer is a Computer-Based Test which allows examinees to receive their Test Scores immediately upon completion of the test. The Accuplacer is administered at 9 a.m. and 1:30 p.m., Monday through Friday. Late testing is offered at 5 p.m. on Mondays and Thursdays. The fee for the Accuplacer is $30 and can be paid by cash, check, money order or credit card.

Students that meet the minimum passing standards for the Accuplacer in all subject areas have met the THEA requirement in those areas. Students who do not make a passing score in one or more subject areas on the Accuplacer will be required to complete developmental course work. Students that fail in one or more subject areas may retest by taking the THEA Test, or an approved alternative test such as Accuplacer, Asset or Compass.

TSI

The Texas Success Initiative (TSI) is mandated by the Texas Legislature. This program is designed to ensure that all students attending Public Institutions of Higher Education in Texas have the necessary reading, mathematics and writing skills for college level work. All students entering public colleges and universities in the state of Texas, including those with previous college hours, must have taken the THEA (Texas Higher Education Assessment) or an approved Alternative Test before registering at Texas State Technical College Waco unless exempt.

For information on exemptions, THEA Registration Bulletins are available in the Center for Assessment in the Student Services Center. The THEA Test Fee is $29 and this fee must be mailed in with the Registration. Online THEA Registration is available at: www.thea.nesinc.com.

Test Scores must be available before registration. Students who have not taken THEA or an Approved Alternative Test will not be permitted to enroll unless they are eligible for exemption.

Quick THEA

TSTC Waco administers the Quick THEA by special requests for large group testing. The fee for the Quick THEA is $29 payable by money order to be sent in with the test and $10 payable to TSTC Waco for test administration.

There is a 30 day waiting period before retaking Quick THEA. Students who fail to make the minimum passing scores on Quick THEA must wait 30 days before they are allowed to retake the Quick THEA. Students can register for the THEA Test or an approved alternative test such as Accuplacer, Asset or Compass.

Non-passing Scores

Students who test below the minimum passing standards will be assigned to an individual TSI plan, which will provide specific course and/or non-course activities for completing TSI requirements.

There is no restriction on the number of times students may retake a TSI approved test in order to achieve passing scores. However, it is in students' best interest to complete the developmental education program or activity on their individual TSI plans for the sections of the test they have failed before they retake the test.

Students whose scores on their initial test fall below specified minimums listed below will be required to re-test in order to meet TSI standards.

ACCUPLACER

Reading Comprehension	61
Elementary Algebra	42
Sentence Skills	62

ASSET

Reading Skills	35
Elementary Algebra	30
Writing Skills	35

COMPASS

Reading Skills	64
Algebra	23
Writing Skills	44

THEA

Reading	201
Mathematics	206
Writing	205

Students who do not achieve passing scores on their first attempt complete TSI standards and may satisfy requirements for each skill area in reading, writing and mathematics with any of the following methods:

1. Complete the capstone developmental education course with a grade of C or better for a specific skill area. The capstone developmental education courses are:
   READ 0200, Reading Skills II
   WRIT 0200, Writing Skills II
   DMTH 0200, Intermediate Algebra

2. Re-test on an approved TSI test in a specific skill area and achieve a passing score. Contact the Center for Assessment for information on specific college procedures and schedules for testing and re-testing.

3. Achieve a mastery level in PLATO for a specific skill area. Contact the Center for Assessment for information on PLATO. (Not available at all TSTC colleges).

4. Complete the specific development activity on the individual student TSI plan.

Test Exemptions

1. Students who meet the following score standards for ACT, SAT, or TAKS tests may be exempt from TSI requirements in a specific area, if the tests have been taken within the approved time frame. Students must provide official scores to the College Records Office prior to enrollment in order to qualify for this exemption.
   - **ACT:** composite score of 23, combined with a minimum of 19 on both the English and/or and the mathematics tests; test date no more than five years prior to enrollment
   - **SAT:** combined verbal and math score of 1070, with a minimum of 500 on the verbal and mathematics tests; test date no more than five years prior to enrollment
   - **TAKS:** score of 3 on the writing essay test and 2200 on the English Language Arts test, and/or 2200 on the math test, and test date no more than three years prior to enrollment.

2. Students who have graduated with an associate or higher degree from a Texas public institution of higher education meet the TSI requirement and are not required to test. Students are responsible for providing official transcripts from the degree-granting institution.

3. Students who have completed TSI requirements or have been exempted at another institution of higher education are provided an official TSI transcript which is submitted and indicates TSI completed status.

4. Students from private or out-of-state institutions of higher education who have completed college-level coursework equivalent to TSTC's TSI Academic Core

Component Courses are exempt from testing requirements provided official transcripts are submitted.

5. Students who are retired or have been honorably discharged from active duty in the armed forces of the United States, the Texas National Guard or a reserve component of the armed forces of the United States on or after August 1, 1990, are TSI exempt. Testing is required to determine appropriate placement.

6. Students currently serving on active duty in the armed forces of the United States, the Texas National Guard, or service in a reserve component of the armed forces of the United States with at least three years service prior to enrollment at TSTC are TSI complete and may be required to test to determine placement. Students on active duty must present a letter from their commanding officer or current duty papers for each semester of enrollment.

Testing and remediation policies are subject to change without notice. Contact the Counseling & Testing Center for more information.

TSI Core Component Courses

TSTC has designated the following academic courses as core component courses for TSI reporting. Students who transfer from regionally accredited institutions of higher education with grades of C or higher in courses that are equivalent to these TSTC courses will be considered to have satisfied TSI requirements. Students must submit official transcripts indicating successful completion of these courses.

WRITING
- ENGL 1301 Composition I
- ENGL 2311 Technical & Business Writing
- ENGL 2314 Technical & Business Writing I

READING
- GOVT 2301, 2302 U.S. Government
- HIST 1301, 1302 U.S. History
- HUMA 1301 Introduction to Humanities
- PSYC 2301 General Psychology
- SOCI 1301 Introduction to Sociology

MATHEMATICS
- MATH 1314 College Algebra
- MATH 1316 Plane Trigonometry
- MATH 1332 Contemporary Mathematics I
- MATH 1333 Math for Liberal Arts

Advising

TSTC believes advising is essential to student success, and, therefore, the college supports student progress with designated advisors. All new students are to contact an Admissions Advisor to begin the advising process, either prior to or upon completing the admissions requirements. Students are encouraged to call for appointments; however, admissions advisors are available for walk-ins on a first-come first-served basis.

TSTC provides advising assistance for the following:

- enrollment and financial aid processes;
- career counseling, assessment, and goal-setting;
- course selection and scheduling;
- degree planning;
- referrals to counselors, faculty advisors, and other student and instructional services; and
- job search and placement assistance.

TSTC also offers a variety of courses and programs that provide new students with a comprehensive introduction to TSTC, college life, and available advising opportunities. Admission advisors and education and career specialists can provide information relating to these courses and programs.

Degree and Program Planning

Credentials

TSTC offers programs of study leading to the Associate of Applied Science degree and the Certificate of Completion. All programs are approved by the Texas Higher Education Coordinating Board.

- Associate degree programs are designed to train technicians who work with professionals. Because technicians must be able to understand the profession and translate ideas into actual processes, the technical programs combine theory and laboratory classes with laboratory and shop experience. The curricula are usually based on mathematics and sciences. All graduates of associate degree programs show they are competent in oral communications and the use of computers by satisfactorily completing at least one course in which

oral communication and basic computer skills are covered. Graduates of these programs receive Associate of Applied Science degrees.

- Certificate programs are designed to produce the skilled workers needed by modern industry. Skill programs emphasize laboratory and shop experience, rather than theory. All graduates of certificate programs show they are competent in oral communication and the use of computers by satisfactorily completing at least one course in which oral communications and basic computer skills are covered. Graduates of these programs receive Certificates of Completion.

Institutional Awards

TSTC offers technical training in defined skill sets which can be grouped in various combinations to meet specific job requirements for business and industry. These skills training pathways are designed to allow students and/or incumbent workers to enter, exit and re-enter TSTC training while they continue to work or pursue further training. Credits earned in these pathways may be applied to college credit Certificates of Completion and/or Associate of Applied Science degree. Completers in these training pathways receive the Marketable Skills Achievement Award or a Technical Skills Mastery Certificate.

Degree and Certificate Plans

A degree or certificate plan includes a set of courses that are required to earn a specific degree or certificate. Electives are approved by the student's faculty advisor and indicated in the plan. Course credit may be earned at TSTC, transferred from another college or university, or awarded through examination.

Courses may be substituted if they are approved by the chairperson of the student's major field of study and the Vice President for Student Learning. No condition guarantees that a course substitution will be approved. Each request is decided on its own merit.

Credits earned at other colleges and universities must be approved for transfer credit by the chairperson in the student's major field of study. Credit for courses in related areas may also require approval from the chairperson of that program area. Before consideration of transfer credit can begin, the student must be eligible to return to the last institution in which he or she was enrolled, official transcripts from all the institutions the student attended must be in the College Records Office, and a grade of C or better must have been earned in the course(s).

A student is certified for graduation only when credit has been earned for all courses in the degree or certificate plan and any appropriate course substitution and/or transfer credit authorizations are on file.

Although advisors are available to assist them, students are responsible for keeping track of their progress toward meeting program requirements. Contact your faculty advisor for assistance.

Change of Major

Students who wish to change majors should meet with an advisor. Students must meet the entry requirements if specified. Students receiving financial aid should check with the Financial Aid Office before changing their major.

To change majors, students must follow these procedures.

Obtain a change of major form from the current department chairperson, and secure that person's signature on the completed form.

Secure the approved signature from Advising, Retention & Testing.

1. Complete the change of major form, including obtaining all required signatures. Students may be required to meet additional admission criteria for the new major.
2. Ensure the form is completed. Return the completed form to the College Records Office for processing.

Additional Degrees and Certificates

Credit hours may be applied toward more than one degree and/or certificate, as long as those hours meet requirements of those credentials.

Graduation and Commencement

Within five years of initial enrollment in credit courses at Texas State Technical College, a student may graduate with a degree or certificate according to the catalog requirements in effect at the time of first enrollment at Texas State Technical College, provided the degree, certificate, the program, and requisite courses are still being offered. If a student fails to complete within five years all requirements of the catalog in effect at the time of initial enrollment, the student will be required to graduate under a catalog not older than five years. Exception to this requirement may

be approved in extenuating circumstances by the Vice President for Student Learning.

To obtain a diploma, a student must apply for graduation and satisfy all financial obligations to the college. Diplomas are issued after final grades have been recorded on the student's permanent record and the student is certified as a graduate.

Graduation Requirements

Students are notified of their eligibility for graduation when they achieve the following requirements.

1. All TSI-related requirements are met (associate's only).
2. All required course work is satisfactorily completed.
3. At least 25% of the total required credit hours are earned at the college granting the degree or certificate.
4. The student's cumulative grade point average is 2.0 or higher.
5. The student's grades in all major courses are C or better.
6. All transfer credits accepted by TSTC and applied to the degree or certificate are approved by the faculty of the program.
7. The student has no pending disciplinary issues as defined in the college student handbook.

Commencement Ceremonies

Since graduation ceremonies and receptions are generally held before graduate certification occurs, students are permitted to participate in these events only upon the recommendation by faculty. Students are required to wear the regalia designated by TSTC during commencement ceremonies.

Graduation Honors

Students receiving associate degrees or certificates of completion who earn Cumulative GPAs of 4.0 receive TSTC Board of Regents' Honors.

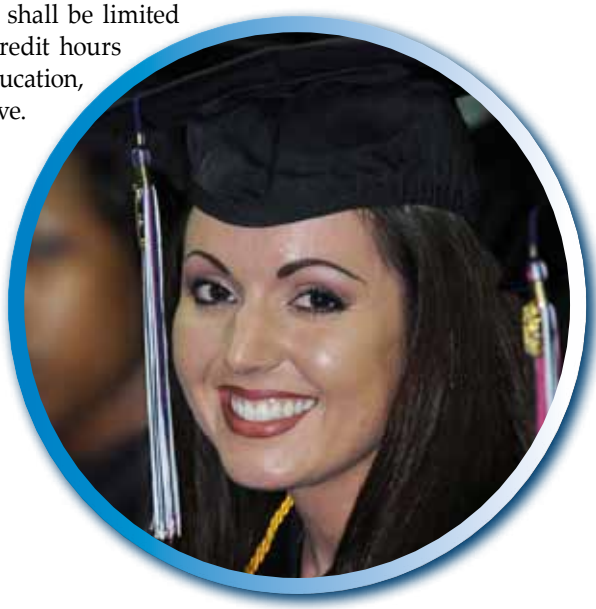
Students receiving associate degrees or certificates of completion who earn Cumulative GPAs of 3.50 to 3.99 receive Honors.

Graduate Guarantee

If an associate degree or certificate of completion graduate or marketable skills achievement award or technical skills mastery completer is judged by his/her employer to be lacking in technical job skills identified as exit competencies for the program under which the student graduated or completed, TSTC will provide the graduate with up to 12 tuition-free semester credit hours of additional skill training, in accordance with the following.

1. The graduate must have earned the degree, certificate or award since May 1992 in a technical or occupational program or the pathway published in the TSTC catalog.
2. The graduate must have earned at least 75% of the total credits of the associate degree or certificate of completion at TSTC, and must have completed the degree or certificate of completion within five years of initial enrollment.
3. The graduate must be employed full-time in an area directly related to the program concentration, as certified by the Vice President for Student Learning.
4. The employment must have commenced within 12 months of graduation or completion.
5. The Graduate Guarantee process must be initiated in writing to the TSTC Office of the President, by either the graduate or the employer.
6. The employer must certify in writing that the employee is lacking entry-level skills identified by TSTC as program exit competencies and must specify the areas of deficiency within 90 days of the graduate's initial employment.
7. The employer, Vice President for Student Learning, career counselor, and appropriate chairperson will develop a written educational plan for retraining.
8. Retraining will be limited to 12 semester credit hours related to the identified skill deficiency and to those classes regularly scheduled during the period covered by the retraining plan.
9. All retraining must be completed within one calendar year from the time the educational plan is agreed upon.
10. The graduate and/or employer will be responsible for the cost of books, insurance, uniforms, fees, and/or other course-related expenses.
11. The guarantee does not imply that the graduate will pass any licensing or qualifying examination for a particular career.

A student's sole remedy against TSTC and its employees for skill deficiencies shall be limited to 12 semester credit hours of tuition-free education, as described above.



Curriculum

Degree and certificate programs at TSTC comprise a sequence of courses that prepare students for a particular career field. These course sequences are referred to as a program's curriculum plan and are listed alphabetically in the instructional program section of the catalog. Included in these curriculum plans are several types of courses, including: foundation courses, technical education courses, and academic/general education courses. All curriculum plans also include a capstone course which serves as end points for each program and are designed to assess the technical skills acquired during the entire program and simulate workplace job requirements.

Course Types

Foundation Courses- All programs begin with TECH 1100 & 3 CTEX Seminars.

Core Courses- Information Technology, Graphic Communication, and Electrical/Electronics specify several first year classes that are in common among the programs in their career cluster.

Technical Courses- Include major and specialization courses in the primary instructional program.

Academic/General Education Courses- 15 SCH are required for AAS degrees.

Elective Courses- These may be listed as either technical (WECM-XXXX) or academic (ACGM-XXXX).

Capstone Course- Occurs in the last semester and is designated in each degree plan with the * symbol.

Course Sequencing: Prerequisites and Corequisites

Curriculum plans are listed in a recommended sequence by semester. Due to transfer credits, scheduling conflicts, or student status, a student may not be able to register for all courses as they are listed in the model plan. Examining courses prerequisites and corequisites will help students determine where there is flexibility in a program to meet their needs. Course prerequisites and corequisites are listed in the Course Description section of the catalog. It is important to note that students must complete all designated prerequisites listed by a course before registering for that course. Students must register for corequisite courses during the same term. Students are responsible for taking courses in sequence and at the proper level. Failure to adhere to prerequisite and corequisite requirements may result in the student being withdrawn from the courses.

Foundation Courses (TECH)

All curriculum plans begin with the foundation courses which introduce students to their chosen career field and provide them with skills to be successful in it. TECH 1100- Tech Success is the course that all students take their first semester, but care must be taken to register for the section that lists your program area as it will contain information specific to your career. As part of the graded requirements for the TECH 1100 class, students must complete three (3) CTEX 10XX Tech Success Seminars. These seminars are intended to enhance personal success factors identified in the admissions process and communicated with you by the admissions counselors.

Technical Workforce Education Courses (WECM)

Technical or workforce education courses constitute the majority of classes a student will take at TSTC. Although most technical courses differ by program, some career clusters have core curriculum classes during the first year. This allows students to change their major within the larger career field without losing significant credits. Information Technology, Graphic Communication, and Electrical/Electronics are the three career fields that currently have a technical core. All curriculum plans include a capstone course which will assess the technical skills acquired during the entire program and simulate workplace job requirements. The capstone class occurs in the last semester and is designated in each degree plan with the * symbol.

Academic General Education Courses (ACGM)

Under TSTC's accreditation, associate degree programs must contain a basic core of general education courses. This basic core must contain a minimum of 15 semester credit hours and include at least one course from each of the following areas: communication, humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics.

Specific core course requirements are included within each associate degree plan. Where options are available in the curriculum, the course will be listed as ACGM X3XX along with a description of the course type. Listed below are the most widely accepted classes in the State of Texas that fit in each subject area. Courses regularly scheduled on the TSTC Waco campus are designated with an (*) symbol.

Course	Course Title	Prerequisite
Communication		
COMM 1307	Introduction to Mass Communication	
*ENGL 1301	Composition I (WRIT 0200 or Required Placement Scores)	
ENGL 1302	Composition II (ENGL 1301)	
*ENGL 2311	Technical & Business Writing (ENGL 1301)	
SPCH1311	Introduction to Speech Communication	
SPCH1315	Public Speaking	
SPCH 1321	Business & Professional Communication	
Mathematics/Natural Sciences		
*BIOL 1406	Biology for Science Majors I	
*BIOL 1408	Biology for Non-Science Majors I	
*CHEM 1405	Introduction to Chemistry I (DMTH 0200 or Required Placement Scores)	
*CHEM 1406	Introduction to Chemistry I for Allied Health (DMTH 0200 or Required Placement Scores)	
CHEM 1411	General Chemistry I (MATH 1314)	
ENVR 1401	Environmental Science I	
*GEOL1403	Physical Geology	
*MATH 1314	College Algebra (DMTH 0200 and Required Placement Scores)	
*MATH 1316	Plane Trigonometry (MATH 1314)	
*MATH 1332	Contemporary Mathematics I (DMTH 0200 or Required Placement Scores)	
MATH 1342	Elementary Statistical Methods (MATH 1314)	
*PHYS 1310	Fundamentals of Physics (DMTH 0200 or Required Placement Scores)	
*PHYS 1315	Physical Science I	
*PHYS 1401	College Physics I (MATH 1314)	
Humanities/Fine Arts		
ARTS 1301	Art Appreciation	
ENGL 2321	British Literature (ENGL 1301)	
ENGL 2326	American Literature (ENGL 1301)	
ENGL 2331	World Literature (ENGL 1301)	
*ENGL 2341	Forms of Literature (ENGL 1301)*GEOG 1302 Cultural Geography	
*HUMA 1301	Intro. to Humanities (ENGL 1301)	
PHIL 1301	Introduction to Philosophy	
Social/Behavioral Sciences		
*ECON 2301	Principles of Macroeconomics	
ECON 2302	Principles of Microeconomics	
GOVT 2301	American Government I (READ 0200 or Required Placement Scores)	
GOVT 2302	American Government II (READ 0200 or Required Placement Scores)	
HIST 1301	U.S. History I (to 1877) (READ 0200 or Required Placement Scores)	
HIST 1302	U.S. History II (since 1877) (READ 0200 or Required Placement Scores)	
*PSYC 2301	General Psychology (READ 0200 or Required Placement Scores)	
*SOCI 1301 Sociology (READ 0200 or Required Placement Scores)		

Developmental Education Courses

TSTC provides developmental studies for students who need assistance with basic academic skills, according to the Texas Success Plan filed with the Texas Higher Education Coordinating Board. Developmental studies services include preparation for TSI testing, diagnostic testing of students' basic skill levels, and training in the basic skills of reading, writing, and mathematics for each program's entry level standards and other areas requested by department chairpersons.

Developmental education courses are not counted as credit toward graduation. However, they are used along with the credit courses for determining course load, scholastic standing, term honors, and satisfactory academic progress for financial aid. Withdrawal from any developmental course may require the approval of the Director of Supplemental Educational Services. Students who are taking developmental education courses required on their TSI Plan or pre-requisite issues may not drop their only developmental course without withdrawing from all courses. The following developmental education courses are offered at TSTC.

Course	Course Title	Prerequisite
Mathematics		
DMTH 0804	Basic Arithmetic	
DMTH 0050	Basic Mathematics DMTH 0804 or Required Placement Scores	
DMTH 0100	Introductory Algebra DMTH 0050 or Required Placement Scores	
DMTH 0200	Intermediate Algebra DMTH 0100 or Required Placement Scores	
Reading		
READ 0050	Basic Reading Skills	
READ 0100	Reading Skills I READ 0050 or Required Placement Scores	
READ 0200	Reading Skills II READ 0100 or Required Placement Scores	
Writing		
WRIT 0050	Basic Writing Skills	
WRIT 0100	Writing Skills I WRIT 0050 or Required Placement Scores	
WRIT 0200	Writing Skills II WRIT 0100 or Required Placement Scores	

Credit Award for Assessments and Training

Credit awards for Texas State Technical College (TSTC) courses based on credit by examination or non-traditional training and experiences is available to students who plan to enroll at TSTC and to currently enrolled students. TSTC awards credit for various examinations published by the College Board, including the College Board Advanced Placement Program (AP) and the College Level Examination Program Subject Exams (CLEP-S). TSTC also awards credit for training received while in the United States Armed Services, for credit earned through the International Baccalaureate Diploma Program, and for credit earned in high school dual credit courses. Students may also be eligible to receive credit awards for other types of training and experience subject to review and approval by the appropriate college official.

General Rules and Regulations

The total number of semester credit hours awarded for Credit Awards may vary depending upon the student's program of study; however, the total credit awarded (including transfer credits) cannot exceed 75% of the total credits required for the student's declared program of study. At least 25% of the total credits in a TSTC student's certificate or AAS degree plan must be earned through regular SCH instruction at a TSTC college or at another institution of higher educaton in partnership with TSTC. To receive Credit Awards, students must be enrolled at TSTC and have completed a minimum of six semester credit hours of non-developmental course-work at TSTC. New students who request and meet the standards for Credit Awards will be granted credit pending completion of six non-developmental semester credit hours at TSTC. While credit may be awarded by TSTC for external exams and training, this credit may not satisfy requirements for a specific program of study. Students should check with program advisors to determine if accepted Credit Awards will meet program requirements. A grade of CR (credit) will be assigned for any course in which Credit Awards are received. This grade is not computed in the grade point average, and the credit does not count toward calculation of student load for a term. The student is responsible for obtaining documentation of external exam scores and/or other training and submitting it to the Registrar's Office at a TSTC College. Scores for the College Examination Program (CLEP) and Advanced Placement (AP) examinations, as well as other Credit Award documentation, should be received prior to enrollment for use in course advisement and placement. Students must complete the appropriate Credit Award Request form with appropriate documentation to initiate the Credit Award process. Payment of any fees associated with Credit Award program must be received before credit can be posted to the student's transcrip

CLEP Subject Area Exams

The College Level Examination Program (or CLEP) is a series of tests offered by College Board. The tests cover a variety of subject areas including business, science and mathematics, history and social sciences, foreign languages, and composition and literature. CLEP exams are offered on most college and university campuses.

TSTC awards course credit for the following CLEP Subject Exams providing the minimum score has been obtained on the specific test. TSTC does not award credit for the CLEP General Exams. CLEP Scores are valid for ten (10) years from the test date.

CLEP Subject Test Name	Minimum Score	Credits	TSTC Course(s)
Principles of Accounting	50	6	ACCT 2301, 2302,2401, 2402
General Biology	50	8	BIOL 1406, 1407
Introductory Business Law	50	3	BUSI 2301
General Chemistry	50	8	CHEM 1411, 1412
Principles of Macroeconomics	50	3	ECON 2301
Principles of Microeconomics	50	3	ECON 2302
English Composition with Essay	50	6	ENGL 1301, 1302
English Literature	50	6	ENGL 2322, 2323
American Literature	50	6	ENGL 2327, 2328
American Government	50	3	GOVT 2305
History of U.S. I	50	3	HIST 1301
History of U.S. II	50	3	HIST 1302
Humanities	50	6	HUMA 1301, 1302
College Algebra	50	3	MATH 1314
Trigonometry	50	3	MATH 2413
Calculus w/ Elementary Functions	50	4	MATH 2413
Pre Calculus	50	3	MATH 2312
Introductory Psychology	50	3	PSYC 2301
Human Growth and Development	50	3	PSYC 2314
Introductory Sociology	50	3	SOCI 1301
Spanish Language	50	6	SPAN 1311, 1312
Spanish Language	55	12	SPAN 1311, 1312, 2311, 2312

Advanced Placement

Advanced Placement (AP) exams are offered by the College Board to students who complete AP courses while enrolled in high school. The exams cover a variety of subject areas including business, science and mathematics, history and social sciences, foreign languages, and composition and literature.

TSTC awards course credit for the following AP Exams, providing the minimum score has been obtained on the specific test. AP scores are valid ten (10) years from the test date.

AP Test Name	Minimum Score	Credits	TSTC Course(s)
Art, History of	3	3	ARTS 1303
Art, History of	4	6	ARTS 1303, 1304
Biology	3	4	BIOL 1406
Biology	4	8	BIOL 1406,1407
Chemistry	3	4	CHEM 1411
Chemistry	4	8	CHEM 1411, 1412
Computer Science A	3	3	COSC 1301, ITSC 1302, 1307
Macroeconomics	4	3	ECON 2301
Microeconomics	4	3	ECON 2302
English Language	3	3	ENGL 1301
English Language	4	6	ENGL 1301, 1302
English Literature`	3	3	ENGL 2322,

AP Test Name	Minimum Score	Credits	TSTC Course(s)
English Literature	4	6	ENGL 2322, 2323
U. S. Government & Politics	3	3	GOVT 2305
U. S. History	3	3	HIST 1301
History of U. S.	4	6	HIST 1301, 1302
Music Theory	3	3	MUSI 1306
Statistics	3	3	MATH 1342
Calculus AB	3	3	MATH 2312
Calculus AB	4	4	MATH 2413
Calculus BC	3	4	MATH 2414
Physics B	3	8	PHYS 1401, 1402
Physics C	3	8	PHYS 2425, 2426
Psychology	3	3	PSYC 2301

Credit for Military Training

Students who received training while in the United States Armed Services may receive credit for that training, provided appropriate documentation is provided and the training is equivalent to a course or courses offered by TSTC. Credit awarded for military training is based on the recommendations from the American Council on Education (ACE) in its **Guide to the Evaluation of Educational Experiences in the Armed Services** and must be approved by the appropriate TSTC department chair for the specific subject area.

"The Military Registries provide quality assurance and policy guidance to the U.S. Army, Navy, and Marine Corps in support of the Army/ACE Registry Transcript Service (AARTS) and the Sailor/Marine/ACE Registry Transcript (SMART). More than 2,300 colleges and universities recognize these ACE-endorsed transcripts as official documentation of military experiences and accurate records of applicable ACE credit recommendations."

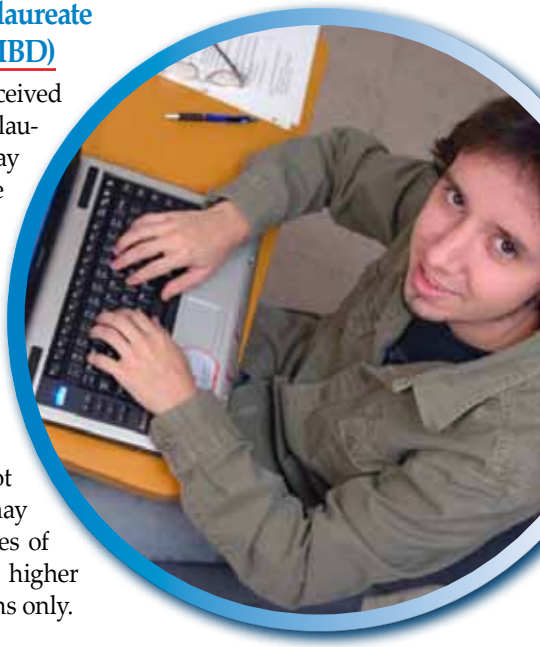
Students who wish to receive credit for military training should obtain a transcript from the Defense Activity for Non-Traditional Education Support (DANTES). This agency maintains the educational records of the service members who have completed DANTES Subject Standardized Tests (DSSTs), CLEP examinations, USAFI (United States Armed forces Institute), and GED tests.

Before July 1, 1974, the results of courses and tests taken under the auspices of USAFI (United States Armed Forces Institute, disestablished 1974) are also available from the DANTES Program:

DANTES Program
The Chauncey Group International
P. O. Box 6605
Princeton, NJ 08541-6605

There is a $10.00 fee charged for each transcript from DANTES.

International Baccalaureate Diploma Program (IBD)



Students who have received an International Baccalaureate Diploma (IB) may receive TSTC course credit for the following exams with scores of four (4) or higher on either standard level (SL) or higher level (HL) examinations. Students who have taken IB exams but do not have an IB diploma may receive credit for scores of five (5) or higher on higher level (HL) examinations only.

IBD Exam Name	Minimum Score With IB Diploma	Minimum Score Without IB Diploma	Credits	TSTC Course(s)
Biology (HL)	4	5	8	BIOL 1406, 1407
Biology (SL)	4	n/a	8	BIOL 1406, 1407
Chemistry (HL)	4	5	8	CHEM 1411, 1412
Chemistry (SL)	4	n/a	8	CHEM 1411, 1412
Economics (HL)	4	5	6	ECON 2301, 2302
Economics (SL)	4	n/a	6	ECON 2301, 2302
English Language A1 (HL)	4	5	6	ENGL 2322, 2323
English Language A1 (SL)	4	n/a	6	ENGL 2322, 2323
Mathematics (HL)	4	n/a	6	MATH 1314, 1316
Math Methods (SL)	4	n/a	3	MATH 1314
Math Studies (SL)	4	n/a	3	MATH 1324 or 1325
Philosophy(HL)	4	5	3	PHIL 1301
Philosophy (SL)	4	n/a	3	PHIL 1301
Physics (HL)	4	5	4	PHYS 1401
Physics (SL)	4	n/a	4	PHYS 1401
Psychology (HL)	4	5	3	PSYC 2301
Psychology (SL)	4	n/a	3	PSYC 2301

Credit Award for Continuing Education Units and Experiential Learning

Students who have successfully completed continuing education (CEU) courses offered by a TSTC college are eligible to apply for semester credit hour technical course credit. CEU coursework must be demonstrated to be substantially the same as the equivalent semester credit coursework. Students must sign and submit a Continuing Education Hours (CEU) Course Equivalency Evaluation form to the instructional administrator of the appropriate technical program in which the course(s) are managed.

Experiential learning allows students to receive college credit for equivalent educational experiences acquired through earlier schooling situations, work/on-the-job training or life experiences. Upon approval of the appropriate department chair and/or dean, a student may develop a petition for a course or courses offered by TSTC to gain college-level credit. Petitions are reviewed by the appropriate department chair and/or dean and submitted to the Vice President for Student Learning for approval.

Students with applicable skills and knowledge may also receive credit for technical courses in which proficiency is determined by examination. These challenge exams are designed and written by qualified faculty and may be administered in the technical department or testing center.

More specific information on credit award for continuing education units and experiential learning may be obtain from the College Records Office. Testing center and/or evaluation fees may apply.

Audited Courses

Students may audit courses with permission from the course instructors and the College Records Office. Students auditing courses must adhere to the same class requirements as those students taking the courses for credit. Audited courses are not considered when determining a credit hour load, and a grade of "AUD" is shown on the students' grade reports. Students may take courses for credit after auditing them but may not receive credit by examination or use audited courses as course substitutions in degree or certificate plans. Students who audit courses will be charged an audit fee in addition to state and designated tuition as specified in the Tuition and Fees section of the catalog. Contact the College Records Office for more information.

Cooperative Education

Most certificate and degree programs offer students opportunities to participate in cooperative training with industry for at least one semester. Students in cooperative experiences earn up to 9 credit hours working off-campus at jobs related to their fields of study. This phase of training is a cooperative effort between the student, industry, and TSTC to provide valuable work experience. Cooperative education is competitive, enabling some qualified students to earn income to help support their education. Students who are interested in participating in cooperative experiences should discuss the opportunities with their department chairpersons.

Individualized Instruction

Some programs of study offer individualized instruction. In these programs, students may complete course requirements without attending regularly scheduled lecture or laboratory sessions. Students enroll in an agreed-upon number of contact hours and are awarded credit when course objectives are met. This allows students to advance through program requirements at a comfortable speed, which may be slower or faster than the more traditional approach. Students should talk with their department chairpersons about the availability of individual instruction in their programs of study.

Dual Credit Courses

High school students who have completed their sophomore year may enroll for dual credit academic and technical courses at TSTC while still in high school through the exceptional admission program. Students receive either transcripted credit for regular college credit courses or articulated credit that is based upon agreements with school districts. Contact Cooperative Education for more information.

Early College High School

Early college high schools (ECHS) are small high schools designed to allow students to earn both a high school diploma and an associate degree or up to two years of credit toward a bachelor's degree. Early college high schools may be located on or associated with the TSTC colleges. Students attending ECHS enroll in TSTC courses as part of their high school curriculum. While similar to dual credit programs, students in ECHS are subject to additional requirements for admission and participation in classes. Contact an admissions advisor or education and career specialist at a TSTC college for more information.

Day/Evening/Weekend Courses

The majority of college credit courses are taught on weekdays during the day, with selected courses offered during the evenings and/or on Saturdays. Continuing education and workforce training courses are scheduled throughout these time periods. Please refer to the Web site for class schedule.

Distance Learning

TSTC offers instruction through a variety of electronic media, including videoconferencing and the Internet. Through

videoconferencing labs, TSTC sends and receives classes to and from various colleges and schools. Internet classes offer students the opportunity to complete college courses using personal computers and Internet connections. Each TSTC program that offers distance learning courses has requirements specific to that department.

Distance learning courses are not self-paced. However, depending on the nature of the instructional method, students may complete course requirements as their schedules permit. Students enrolled in distance learning courses must meet deadlines, take scheduled tests, etc., but typically they do not have to be in classrooms at specific times, except when required by the instructors. Those students who take courses via the Internet complete assignments using computers and communicate with instructors through e-mail, fax and by telephone. Some distance learning courses require proctored testing.

Admission requirements are the same as those for on-campus students. Students planning to take only distance learning courses should notify the College Records Office so that appropriate information and advising can be arranged. Advising is accomplished by e-mail and telephone.

In most cases, tuition for distance learning courses is the same as on-campus courses. The Tuition and Fees section of this catalog provides more details. The cost of proctored exams, if any, is paid by the student. Students may order books and materials from the TSTC Bookstore or purchase them locally.

Enrollment

Registration

Registration dates are published in the college calendar. Returning students and new students who have completed admission procedures should contact their local TSTC campus for specific registration information.

Schedule Changes

Currently enrolled students may add courses, drop courses, or change sections before classes begin by contacting their program advisors. After classes begin, all students may change their schedules by obtaining course schedule change forms from their instructors and/or department chairs and submitting them to the College Records Office by the deadline published in the TSTC college calendar. Changes are effective only when this process has been completed.

Drops and Withdrawals

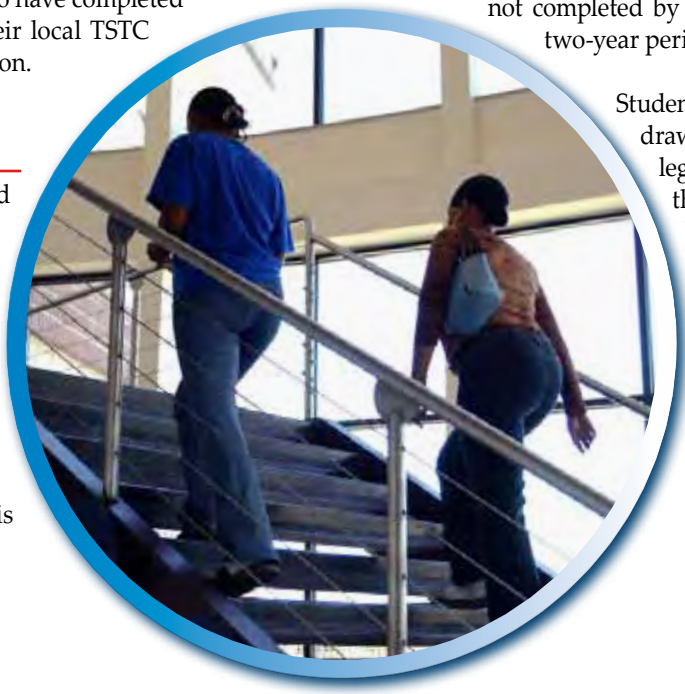
Students may drop courses or withdraw from the college by completing a course schedule change form, obtaining the appropriate approval signatures, and submitting the form to the College Records Office. The effective date is the date the course schedule change form is received in the College Records Office. Deadlines for course drops and withdrawals from the college are published in the TSTC college calendar.

Withdrawal from any developmental course may require the approval of Advising, Retention & Testing. Students who are taking developmental education courses due to TSI plan or pre-requisite issues may drop their developmental course only after proper advisement and approval by Advising, Retention & Testing.

Students who concurrently drop and add the same number of credit hours in a simultaneous transaction do not incur additional charges or receive refunds. See "Refunds for Changes in Enrollment" in the Refunds section for more information.

Courses that are dropped prior to the official census dates do not appear on the student's transcript. After the official census dates, students who drop courses or withdraw from the institution receive marks of "W" (Withdrawal), provided the forms are received on or before the published deadline.

Students who have completed at least 75 percent of the term and who are called to active military service may request an excused absence rather than withdrawal from their courses. Students who request leave based on military service will be given grades of "IM" on all courses and will have two years from the end of the term to complete course work. Grades of "IM" awarded to students called for military service will be changed to "W" grades if the required work is not completed by the end of the two-year period.



Students who withdraw from the College must ensure that all library books and laboratory equipment are returned and all financial obligations are settled before they leave.

Senate Bill 1231 — Limitations on Number of Course Drops

Under section 51.907 of the Texas Education Code, "an institution of higher education may not permit a student to drop more than six courses, including any course a transfer student has dropped at another institution of higher education." This statute was enacted by the State of Texas in Spring 2007 and applies to students who enroll in a public institution of higher education as first-time freshmen in fall 2007 or later.

Any course that a student drops is counted toward the six-course limit if "(1) the student was able to drop the course without receiving a grade or incurring an academic penalty; (2) the student's transcript indicates or will indicate that the student was enrolled in the course; and (3) the student is not dropping the course in order to withdraw from the institution." Some exemptions for good cause could allow a student to drop a course without having it counted toward this limit, but it is the responsibility of the student to establish that good cause. Contact the Registrars Office at your local Texas State Technical College for more information before you drop a course.

Student Participation

Students are responsible for their own class attendance and participation. Faculty members may establish requirements for student participation in specific learning activities both in and out of the classroom and may consider these requirements when determining final grades.

Student Absence on Religious Holy Days

Under Texas Education Code 51.911, a student who is absent from class for the observance of a religious Holy Day is allowed to take an examination or complete an assignment scheduled for that day within a reasonable time period, as established by the faculty member. The student must give written notice by submitting a completed absence request form to the College Records Office within the first 10 days of the term.

Articulation Agreements

Tech Prep

Tech Prep is part of a national education initiative to transform technical education. A Tech-Prep program, as defined in the Technical Education Program Guidelines of the Texas Higher Education Coordinating Board, is a cooperatively developed six-year program of study that begins in the ninth grade and leads to an associate of applied science degree from a public community or technical college. This cooperative arrangement involves business, industry, labor, and secondary and higher education. A Tech Prep Bridge is available for students who do not take the Tech-Prep program in high school. For more information, contact a high school counselor, TSTC department chair, or TSTC Tech Prep representative.

High School Articulation Agreements

TSTC has established articulation agreements with various high schools throughout the state. These agreements allow entering students to use their work in pre-determined high school courses for credit in TSTC programs. To determine if a particular high school is participating in this program, contact the high school counselor and appropriate TSTC department chairperson.

Transfer of Credit

The transfer of course credit from TSTC to other Texas colleges and universities is facilitated by the Texas Higher Education Coordinating Board (THECB) Academic Course Guide Manual and Workforce Education Course Manual. In general, students may submit an official TSTC transcript to another college or university for consideration of transfer credits. Acceptance of credits is at the discretion of the receiving institution. Contact College Records for more information.

Resolution of Transfer Disputes for Lower Division Courses

The following procedures specified in Texas Higher Education Coordinating Board Rules (Chapter 4, Subchapter B, Section 4.27) shall be followed by institutions of higher education in the resolution of credit transfer disputes involving lower-division courses:

(1) If an institution of higher education does not accept course credit earned by a student at another institution of higher education, the receiving institution shall give written notice to the student and to the sending institution that transfer of the course credit is denied, and shall include in that notice the reasons for denying the credit. Attached to the written notice shall be the procedures for resolution of transfer disputes for lower-division courses as outlined in this section, accompanied by clear instructions outlining the procedure for appealing the decision to the Commissioner.

(2) A student who receives notice as specified in paragraph (1) of this subsection may dispute the

denial of credit by contacting a designated official at either the sending or the receiving institution.

(3) The two institutions and the student shall attempt to resolve the transfer of the course credit in accordance with Board rules and guidelines.

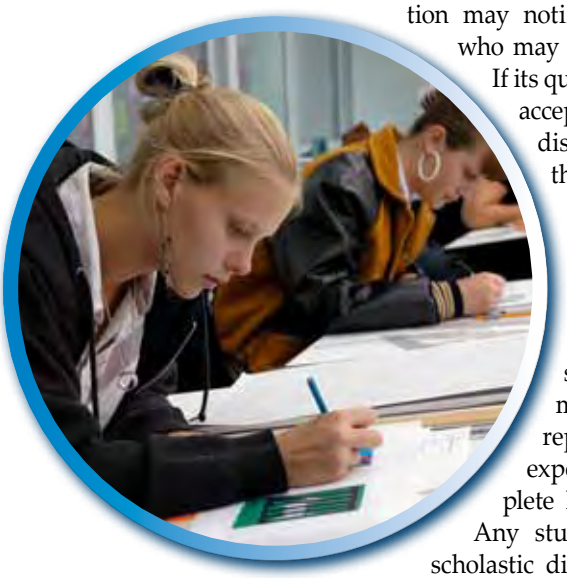
(4) If the transfer dispute is not resolved to the satisfaction of the student or the sending institution within 45 days after the date the student received written notice of denial, the sending institution may notify the Commissioner in writing of the request for transfer dispute resolution, and the institution that denies the course credit for transfer shall notify the Commissioner in writing of its denial and the reasons for the denial.

The Commissioner or the Commissioner's designee shall make the final determination about a dispute concerning the transfer of course credit and give written notice of the determination to the involved student and institutions.

Each institution of higher education shall publish in its course catalogs the procedures specified in all subsections of Section 4.27 in the Texas Higher Education Coordinating Board rules.

The Board shall collect data on the types of transfer disputes that are reported and the disposition of each case that is considered by the Commissioner or the Commissioner's designee.

If a receiving institution has cause to believe that a course being presented by a student for transfer from another school is not of an acceptable level of quality, it should first contact the sending institution and attempt to resolve the problem. In the event that the two institutions are unable to come to a satisfactory resolution, the receiving institution may notify the Commissioner, who may investigate the course. If its quality is found to be unacceptable, the Board may discontinue funding for the course.



Scholastic Integrity

TSTC expects all students to engage in scholastic pursuits in a manner that is beyond reproach. Students are expected to maintain complete honesty and integrity. Any student found guilty of scholastic dishonesty is subject to disciplinary action. Scholastic dishonesty includes, but is not limited to cheating on academic work, plagiarism, and collusion.

- *Cheating on academic work* includes, but is not limited to:
  - ~ copying from another student's test paper or other academic work;
  - ~ using materials during a test that have not been authorized by the individual giving the test;
  - ~ collaborating with another student, without authorization, during an examination or in preparing academic work;
  - ~ bribing another person to obtain an unadministered test;
  - ~ knowingly using, buying, selling, stealing, transporting, or soliciting, in whole or in part, the contents of an unadministered test; and
  - ~ substituting for another student, or permitting another student to substitute for oneself, to take a test or prepare other academic work.

Plagiarism means claiming another's work as one's own without acknowledging its origin and doing so for credit.

Collusion means unauthorized collaboration with another person in preparing a written work offered for credit.

Discipline for scholastic dishonesty follows the same course as other disciplinary actions, except the appropriate faculty member considers and reviews the case first. The student may appeal the faculty member's decision to the department chair or department head and then to the Vice President for Student Learning. If the student is not satisfied with the dean's decision, he/she may follow the normal disciplinary appeal procedures. Students are not suspended from class or from the college until they have received due process.

Continuing Education and Workforce Training

TSTC offers a range of continuing education and workforce training courses and programs. Credit in these courses and programs is awarded as "Continuing Education Units" (CEUs) upon successful completion of course and program objectives. Courses may be offered to the general public or in a customized format for businesses and industries to meet specific workplace needs. Typical curriculum offerings include:

- Training and retraining programs that respond to requests or needs of business or other institutions and agencies;

- Specialized customized training courses, workshops, seminars, and clinics;
- Training for industrial start-up or expansion programs; and
- Continuing education to train for new careers and and to provide skill updates, professional develop ment, personal improvement and recreation.

Admission and Registration

The majority of CEU courses and programs have no admission requirements, however all participants are required to complete a registration form with basic demographic information. Some specialized programs may require demonstrated skills or competencies prior to enrollment.

Tuition and Fees

CEU courses vary in price depending on the length of the course, special equipment or labs used in training and other factors. Customized CEU training courses may be billed directly to the sponsoring business or industry or employers may reimburse students for approved CEU training courses.

Unless the course or student is sponsored by a business or agency, payment of all tuition and fees is required prior to the first class meeting.

Class Records and Certificates

Students completing CEU courses receive one (1) CEU for every 10 hours of participation in a continuing education course or program. Grades of Satisfactory "S" or Unsatisfactory "U" are typically awarded in CEU classes. Other types of grades may be awarded depending on the requirements of the course sponsor. Students who successfully complete CEU courses receive a certificate certifying the number of CEUs awarded.

CEUs earned in classes taught by TSTC may be converted to semester hour (college) credit that is applicable to a certificate of completion or associate degree. Refer to the Credit Award for Assessments and Training section of this catalog for more information.

Customized Training for Business and Industry

TSTC Waco has a corporate college representative to respond to requests from businesses and other institutions or agencies to develop and offer specialized training for employees. Training may be provided at the college or at the sponsor's site of choice. For more information on specialized business and industry training contact Workforce Development.

Student Services

Student Housing

Campus Living

Most college students say they learn and grow as much by living on campus as they do by attending classes. The living environment at TSTC gives you opportunities for social interaction, interpersonal relationships and activities. Campus living is an important component of your total development as a student. We encourage you to join in residential living and expand your experience through human relationships, new ideas and cultural diversity. TSTC offers on-campus housing for the single student, married student or student with a family. See the Fees & Waivers section for prices. Please see page ___ regarding policy on immunizations required for students living in some areas of housing.

Student Housing Policy

TSTC Waco requires that all new students under the age of 21 on the first day of class in the term for which they enroll live on campus for a minimum of two terms (Policy and Procedure 4.1). Policy exemptions will be considered for students who:

a. live with parents/legal guardians and commute;
b. are married or have dependents;
c. have a doctor's exemption for medical circumstances which cannot be accommodated;
d. have two semesters or three quarters of previous college work.

Special circumstances justifying an exemption will be considered by the director of Campus Living and should be directed to the Campus Living Office.

Please submit an application for enrollment to TSTC before applying for housing. The full Security Deposit must accompany any housing application. For more specific information regarding Campus Living, located in the Student Services Center, at (254) 867-3824 or toll-free at (800) 792-8784, ext. 3824.

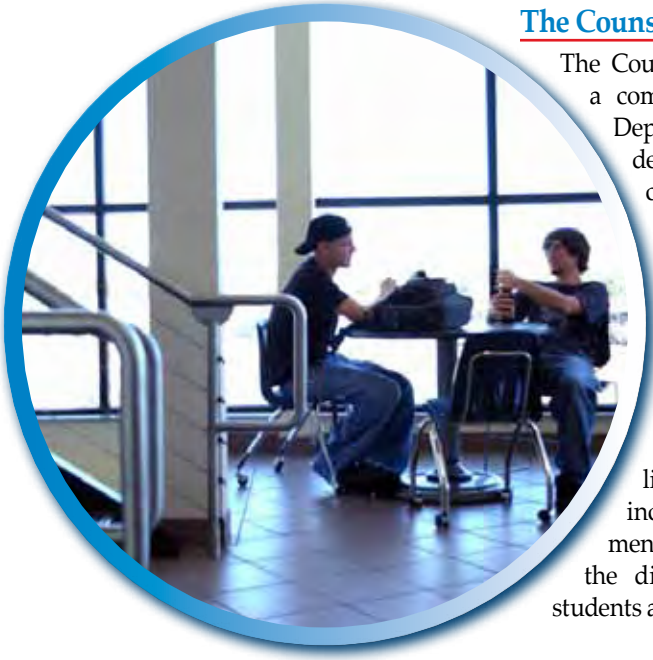
Meal Plan Requirement

New students 21 years of age or younger on the first day of the first semester, that reside in Lavaca Hall, Red River or Village Oaks are required to purchase, at minimum, the 1M525 Meal Plan for their first two semesters at TSTC. The cost is $495. Students can upgrade to the 1M1025 meal plan ($975) or the 1M1500 meal plan ($1,425). The Student Cafeteria is located in the Student Services Center.

The Center for Assessment

Testing services assists students in obtaining maximum results from their educational opportunities. Students are encouraged to make appointments; however, walk-ins are welcomed and accommodated, based on counselor availability.

Testing services provides THEA and TSI-alternative tests, and departmental tests, and GED tests. Other instruments are offered that provide information and guidance in academic and career areas and help in understanding personal aptitudes and interests.



The Counseling Center

The Counseling Center, a component of the Department of Student Life, is dedicated to assisting students in developing transitional skills to help them achieve success in their academic, career and life goals in an inclusive environment that embraces the diversity of our students and community.

While the college experience can be exciting, the Counseling staff understands that it can also be stressful. Demands on time and deadlines for term papers and exams are all a part of being a college student, and that is just the academic side. There may also be issues in a student's life pertaining to family, friends, roommates, romantic relationships, and financial situations. For some students, a therapeutic relationship can provide insight and guidance concerning such issues.

The primary responsibility of the Counseling staff is to alleviate distress and promote healthy functioning by providing short-term counseling services. These services include individual, couples, group, drug/alcohol assessment and problem-solving sessions, consultation and referral services. Confidential personal counseling services are available for all currently enrolled TSTC students.

Some examples of the kinds of issues students may discuss with the counselor include: managing relationships, handling family problems, coping with stress, homesickness, decreasing depressive feelings, dealing with fears, handling a crisis, improving communication, learning to be assertive, study skills, time management, increasing self-esteem, decision-making, and dealing with alcohol and/or drug concerns.

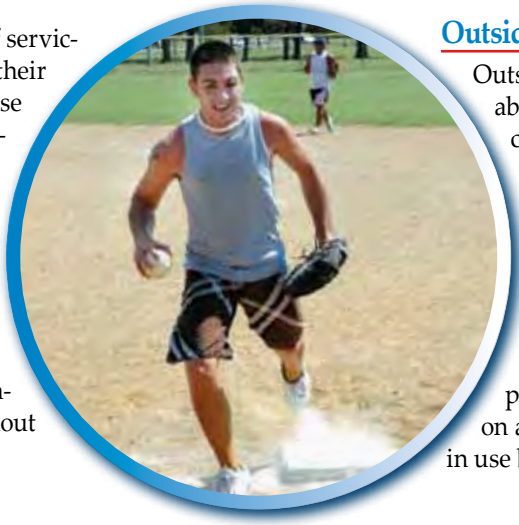
Counselors may make student referrals to community, state, and federal agencies for special assistance and services that are unavailable at TSTC.

Support Services

Support Services, offered through the Department of Student Life, is dedicated to ensuring that TSTC students, both traditional and non-traditional, have access to practical resources that will assist them in becoming self-sufficient, while pursuing academic success.

Most students would agree that the needs of everyday life do not come to a halt simply because one has enrolled in college. Many TSTC students have families and children who depend upon them for support even while they are striving to improve their livelihood. Single students also encounter practical needs requests that arise through the course of the academic year.

Support Services offers a variety of services to assists students in meeting their personal and academic needs. These services include: child care financial assistance program, textbook lending library, public transportation assistance, Clothes Closet and Food Pantry. Practical skills development seminars and workshops such as Parenting Education, household management, and, other personal and family enrichment activities are offered throughout the year.



Outside Sport Equipment

Outside sports equipment is now available for check-out! Students may now check out a variety of balls and other outdoor sports equipment to use on our outdoor basketball and tennis courts, football and soccer field, softball fields and sand volleyball pit. Students may check out equipment from the front desk with a valid TSTC I.D. from 7:00am. to 7:00 p.m. M – F. Use of outdoor facilities is on a first come first serve basis when not in use by the Office of Student Activities.

Women's Programs

The Women's Program of the Department of Student Life seeks to encourage TSTC's female students while offering a unique outlet and networking resource. Through the Department of Student Life Women's Programs, students can receive one-on-one support through mentoring programs. Returning female students act as "Big Sisters" to new students, helping new students to adjust to the newness of TSTC life and giving them support that only someone who has been there can offer. Technology professionals are also available to mentor female students who are beginning to chart their own course in their technical profession, offering guidance in all facets of the journey. TSTC women can find networking and group support in the department offices, as well as through social opportunities such as the Women in Technology student organization. Women will find their interests being addressed through women's issues education.

Student Activities

Murray Watson Jr. Student Recreation Center

TSTC provides its students an opportunity to workout or relax in facilties located on campus in the Murray Watson Jr. Student Recreation Center. A Valid TSTC Student I.D. is required to use the recreation center. Our fitness center has state of the art cardio and weight equipment, including treadmills, ellipticals, stationary bikes, spinners, pin select weights, plate loaded, and a full complement of free weights. The game room includes billiards, ping pong, computers and x-box consoles with the latest games.

Fall & Spring semester 2010-2011 hours are:
Monday-Thursday, 7 a.m. to 8 p.m.
Friday, 7 a.m. to 7 p.m.

Summer and holiday hours vary. For more information regarding Rec Center hours of operation or student activities, call 254-867-3400.

Social Activities

Campus life at TSTC includes a variety of social activities, such as movies, dances, parties, comedy and game shows, and other special events. One highlight of the year is Dia Techsana. Students and organizations gather one afternoon each fall for fun and games. Students can enjoy refreshments, games, contests and recreation.

Intramural and Recreational Sports

TSTC sponsors a variety of team and individual sports throughout the year. These programs contribute to students' general education by providing experiences that are available only through sports, athletic competition, and recreation. Intramural and recreational sports help create well-balanced and happy individuals by developing physical skills, good health, mental alertness, and social well being. These programs strive to reach as many students a possible and develop permanent interests in sports and lifetime fitness. These programs include but are not limited to: team sports, such as flag football, basketball, softball, volleyball and paintball, as well as other activities, such as golf, racquetball, and aerobics. The TSTC Games include participants from TSTC Harlingen, TSTC Marshall, TSTC Waco, and TSTC West Texas. These competitions are held every year, with the colleges serving as hosts on a rotating basis.

As a TSTC Waco student, you can be a part of the action of Big 12 Conference sports. TSTC Waco students can attend all Baylor University home football and basketball games and other sports at a reduced cost. You can enjoy Big 12 Conference sports with tick-

ets distributed through the Student Activities Office. TSTC Waco students can also attend - free of charge - McLennan Community College's home athletic events, including men's and women's basketball, softball and baseball, by presenting a valid TSTC Student Identification Card at the venue entrance to each event.

Student Leadership Council

The Student Leadership Council (SLC) is the governing body that represents students and advises the college administration on issues of student interest and concern. TSTC Waco holds elections for SLC officers each September. The participation of students in TSTC Waco's decision making process is an important institutional value. The administration recognizes the Student Leadership Council as the official voice of the student body, and as such, affords the president a permanent seat as a voting member at monthly meetings of the TSTC Waco President's Executive Team, the decision-making body of the institution. The administration also solicits student appointments through the SLC to serve on a number of standing committees, task forces, and/or focus groups frequently convened to make recommendations or decisions on programs, services, facilities, budget, activities, etc. Additionally, all students have the opportunity to participate in annual surveys or evaluations relative to institutional climate, services, and instruction. For additional information on student appointments to campus committees, contact the office of the Executive Vice President or the Student Leadership Council Office, located in the Student Recreation Center.

Student Clubs and Organizations

Student clubs and organizations provide many opportunities for students to get involved in campus activities. Some clubs and organizations focus on particular professional fields, while others relate to more general interests, hobbies, and support services. Each club or organization must have a faculty/staff advisor and must be approved annually by the Executive Vice President. Students are encouraged to visit the Student Activities Office to learn more about student clubs and organizations.

Student Publications

Students who are interested in writing, photography, or journalistic projects are encouraged to become involved with the various college publications, including the TSTC Waco student online newspaper, "Tech Times." Contact Marketing & Communications located in Patterson Hall or call (254) 867-3035 for more information.

Student Identification Cards

All new college credit students are required to obtain TSTC identification (TechOne) cards when they register; ID cards are optional for students in continuing education and workforce training programs. A fee is charged if a replacement card is needed. Students should carry these cards at all times, because they must be presented for various purposes, such as cashing checks, paying fees, Meal Plans, Tech Bucks, Student Recreational Center access and checking out library books. Misuse of ID cards may result in disciplinary action.

Library

The Library, conveniently located between the Electronics Center and the Technical Studies Center, offers students more than 62,000 books and approximately 250 periodicals, including general interest magazines, technical and professional journals, and newspapers. Also available are private study rooms, drafting tables, TTY, photocopiers, microfiche readers and reader/printers, and more than 2,000 videos.

The Library also houses a computer laboratory that provides more than 20 software programs and applications for student use. The lab has 24 multimedia computers with Internet access and popular software. Students can also access the Library on-line EBSCO-Host database from off-campus. Instructions for remote access are posted at the Library's Web page (www.waco.tstc.edu/library).

The Library is a member of TexShare, a statewide consortium of libraries, which was founded to share and conserve library materials. TexShare allows TSTC students to check materials out of other TexShare member libraries, upon issue of a TexShare card at the circulation desk in the Library.

The Library Web page offers links to online reference sites and online reference assistance from the TSTC Waco Library staff.

Information or telephone reference is available by calling (254) 867-4846.

Students must clear their Library records before the end of each semester. Official transcripts will not be released and registration for subsequent semesters may not be allowed until all obligations are met.

College Bookstore

The TSTC bookstore maintains a wide selection of books and supplies required for classes and labs. The bookstore also offers an assortment of educational materials, health care products, stamps, cards, envelopes, and snacks, as well as an array of college sportswear, hats, and novelties.

Textbooks are required for most courses on campus. The TSTC Bookstore, conveniently located in the Student Services Center, is a full-service bookstore that sells textbooks, tools and supplies required for most college courses. The cost of textbooks and tools varies by course and instructional program.

The Bookstore is open 8 a.m.-5 p.m. Monday through Friday. The Bookstore remains open when registration hours are extended. Notification of special hours or closings will be sent through campus wide e-mail. For more information, call (254) 867-3802.

Food Service

Campus Dining

In addition to the services offered at the Cafe, Food Service/Culinary Arts (FSC) students also serve lunch during the semester. FSC diners can choose from a variety of entrees and salads prepared by FSC students, under the supervision of FSC faculty.

The department also sells baked goods throughout the term. Call FSC at (254) 867-4868 for more information, or use the automated menu line at (254) 867-3700.

Note: Campus dining arrangements are subject to change.

Student Health

Health Services

Despite safety precautions, there are certain risks inherent in any work involving regular contact with mechanical and electrical equipment incidental to instruction in a technical college such as TSTC. Therefore, students are required to adhere to stringent safety precautions and to make provisions for the cost of medical treatment in the event of illness, an accident or emergency.

In the event that you suffer an accident or illness, TSTC will assist you in receiving expert medical attention. If an accident or illness warrants emergency treatment in a doctor's office or hospital, you, not TSTC, will bear all related costs. Students enrolling at TSTC are eligible to participate in a low-cost, group insurance plan for themselves and their families.

Although TSTC's Student Health Services department is limited to basic health care and nursing, including immunizations and screenings, the College works closely with health care providers in the community. In addition, the Health Services staff is available to assist you during college hours.

Health Insurance

Information on health insurance is provided in the "Student Insurance" section of this catalog.

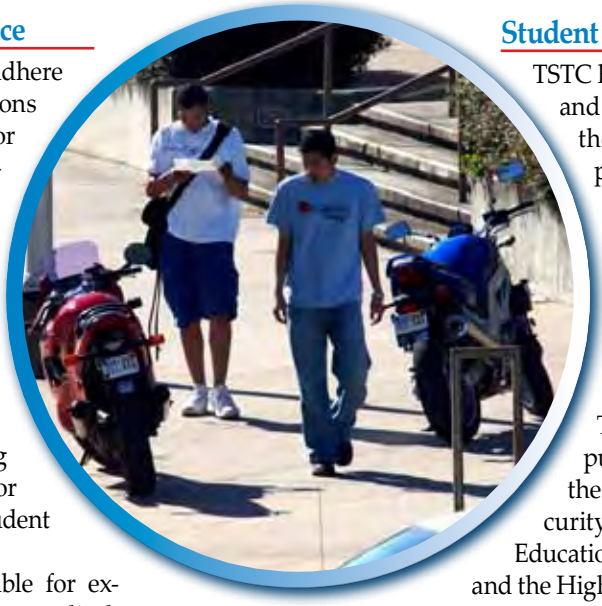
HIV Policy and Procedures

TSTC does not discriminate against students who are HIV-positive. The college works to increase awareness and educate its students and employees about HIV infection and the AIDS virus with the express purpose of preventing infection and limiting the consequences of infection. Copies of TSTC's policy and procedures relating to HIV infection are available in Health Services. Additional information and referral services for testing are available in Health Services.

Bacterial Meningitis Notification

State law requires that information regarding bacterial meningitis be provided to new college students. Bacterial meningitis is a serious, potentially deadly disease that can progress extremely fast. It is an inflammation of the membranes that surround the brain and spinal cord and can infect the blood. The disease can be treated, but those who survive may develop severe health problems and severe disabilities. Vaccinations that are effective against 70% of the most common types of bacterial meningitis are available and should be considered by those living in close quarters and by college students aged 25 or younger. All frst-time students or transfer students enrolling in public, private or independent institutions of higher education on or after Jan.1, 2010, who plan to live in single-student housing (Lavaca Hall, Red River or Village Oaks Apartments) are required to be vaccinated for Bacterial Meningitis at least 10 days prior to move in and provide appropriate documentation For more information on bacterial meningitis, contact your health care provider, the TSTC Health Services, the local or regional Texas Department of Health Office, or www.cdxc.gov/ncidod/dmbd.diseaseinfo.

Student Health Insurance



Students are required to adhere to stringent safety precautions and to make provisions for the cost of medical treatment in the event of an accident or emergency illness. Students in allied health programs are required to show proof of health insurance. Other students are required to:

1. show proof of having health insurance coverage; or
2. enroll in the TSTC student health insurance plan; or
3. be personally responsible for expenses incurred in receiving medical treatment.

The student health insurance offered for a fee at TSTC is a low-cost group plan that provides financial protection in the event of an accident or illness requiring emergency medical treatment and/or hospitalization. Students are responsible for expenses not covered by insurance. Contact Health Services.

Note: Some TSTC programs require student medical health and accident insurance. Contact the program advisory for more information.

Disability Support Services

The Office of Disability Support Services serves the needs of students with disabilities by assisting and recommending reasonable accommodations. Students with certified disabilities, identified by the Americans with Disabilities Act of 1990 are eligible to receive reasonable accommodation according to the limitation of the individuals disability. Each student, after providing appropriate documentation of their disability and/or their prescription for auxiliary aids, is evaluated individually to determine suitable and reasonable accommodations. Some of the types of accommodations which may be provided include: tape recorders, extended test time, alternate testing sites, scribes, sign language interpreters, note takers, and the use of special adaptive equipment.

Students with bona fide disabilities are encouraged to contact the Office of Disability Support Services early to allow sufficient time for processing accommodation requests. Disability Support Services collaborates with both college personnel and students with disabilities and facilitates appropriate accommodations to assist in the student's academic endeavors.

Student Transportation

TSTC has an open parking system. Students and visitors are not required to register their vehicles for parking. However, parking in reserved spots for faculty and staff will result in a parking citation. Citations may be appealed with the Student Government Association or the TSTC Police Department.

Campus Security

The Student Right-to-Know and Campus Security Act (Public Law 101-542), the Crime Awareness and Campus Security Act (Public Law 102-26), the Higher Education Technical Amendments of 1991, and the Higher Education Technical Amendments of 1992 require institutions of higher education to prepare, publish, and distribute to all employees, prospective students, and students an Annual Security Report by October 1 of each year. This report contains data about specific criminal offenses that occurred on campus during the most recent calendar year and the two preceding calendar years, as well as the number of arrests for crimes occurring on campus. TSTC's Annual Security Report is available in the Police Department or any Student Services Center office.

Information provided by the state of Texas concerning registered sex offenders may be obtained through the Web site that is maintained by the TSTC Police Department. Additional information relating to state or federally mandated public information requirements is also available on this website, **www.waco.tstc.edu/crimestats.**

This information is provided to students during the general orientation session. Additionally on Oct. 28, 2002, the Jeanne Cleary disclosure of Campus Security Policy and Campus Crime Statistic's Act was amended to require institutions of higher education to issue a statement in addition to other disclosures advising the public and campus community where law enforcement agency information provided by the state concerning registered sex offenders may be obtained. This information will be maintained by the TSTC Police Department and be accessible at **www.waco.tstc.edu/crimestats.**

Any information regarding registered sex offenders will also be available in print by request. These changes took effect Oct. 1, 2003. These changes by the federal government also

amended the Jacob Wetterling Crimes Against Children and Sexually Violent Offender Registration Act requiring sex offenders to provide notice of each institution of higher education in that state in which the person is employed, carries on a vocation, or is a student. The TSTC Police Department will ensure once registered sex offenders comply with this law that this registration information is promptly made available. The TSTC Police Department will also ensure this information is entered into appropriate records or data systems for public dissemination. This database will be maintained by the TSTC Police Department and be accessible through the TSTC Police Department Web site along with any additionally required state or federally mandated public information requirements.

Student Success

Out of a group of 1,443 students enrolled as full-time, first-time college students at TSTC Waco in fall 2005, 28.97 % of these students completed their programs of study within one and one-half times the normal time frame of their programs as described in the curriculum. We care about your success and offer programs to help.

Job Placement Services

The Student Employment Representative, located in the Financial Aid Office, offers notices of local and regional job openings for students seeking information about off-campus employment. The Student Employment Representative also maintains on-campus student employment files and can provide assistance with securing part-time positions in various campus offices.

In addition to its annual Industry Career Day event, TSTC Waco offers job placement services through individual instructional departments for those students nearing graduation. Contact the department chair for details about job placement assistance in your major technology.

Student Conduct and Discipline

Student Conduct

The general morale of the student body is dependent upon many factors; among these are the success of its graduates, the attitude of faculty and administration, the general behavior of individual students, and the reputation of the College. TSTC believes a primary factor in strong student morale is an overall regard for good citizenship on the part of the student body. TSTC assumes that students eligible to perform on the college level are familiar with the ordinary rules governing proper conduct and that they will observe these rules as a matter of training and habit.

TSTC regulations forbid gambling, the use of controlled substances and alcoholic beverages, and the appearance of anyone under the influence of any of these on the campus or when attending or participating in activities sponsored by the college. All TSTC buildings are tobacco free, with the exception of specifically-designated housing facilities.

Possession of firearms, illegal knives, and other prohibited weapons on TSTC facilities, including parking areas and publicly accessed facilities, is a violation of criminal law and TSTC policies. Persons who violate the law and these policies will be subject to serious consequences, including referral for criminal prosecution and dismissal from college.

Racial and/or sexual harassment of employees or students is not tolerated and is expressly prohibited at TSTC. Activities constituting 'hazing' are also prohibited. No person or organization may engage in, solicit, encourage, direct, aid, permit, or condone hazing, regardless of consent or acquiescence in any hazing activity.

No person or group of people acting in concert may willfully engage in disruptive activity or disrupt a lawful assembly on any campus or property of the TSTC System; further, the administration is charged with keeping the colleges free of disruptive activities and may take whatever disciplinary action is deemed necessary in instances of disruption or threat of disruption.

Students are expected to dress and groom themselves in an appropriate manner while on campus and while participating in activities sponsored by the College. Students whose conduct casts an unfavorable reflection upon the college, and thereby upon all students, are subject to disciplinary action.

Additional information on student conduct is available in the Student Handbook, which is available online.

Student Discipline Procedures

Any alleged violation or flagrant disregard of TSTC rules and regulations will be brought to the attention of the student disciplinary officer who will initiate an investigation of the situation. After a complete and thorough investigation, the student disciplinary officer will determine the course of action. The student disciplinary officer's decision may be appealed through the appropriate college appeals process.

Additional information regarding policies and procedures relating to student conduct and discipline are available in the TSTC Student Handbook, which is available from any Student Services Center office.

TSTC Campus Map Key

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Technical Studies Center (1TSC)	51	F-3
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TSTC Soccer Field	57	E-5
TSTC Softball Fields	58	F-4
TSTC Swimming Pool	59	E-4
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TSTC System Human & Organization Development	61	F-4
TSTC Tennis/Outdoor Basketball Courts	62	E-5
TSTC Walking Track	63	F-5
Village Oaks Apartments (also see D-3)	64	E-3
Village Oaks Apartments Clubhouse/Office	65	E-3
Women's Resource Center (WRC)	66	E-5

General Information

Instructional Philosophy

TSTC trains employees for tomorrow's careers, helping to strengthen the economic competitiveness of Texas and improve the lives of its people. TSTC believes in "learning by thinking and doing." Its curriculum gives students the technical knowledge, skills, and abilities they need to be successful in their chosen careers. Its faculty members are highly qualified, with years of business and industry experience in their respective fields. And its facilities and equipment provide students with significant opportunities to apply what they learn.

Industry Advisory Committees

Industry Advisory Committees are an essential component of TSTC's graduate success. Their members guide curriculum development by advising faculty on the skills, knowledge, and abilities that employees need. They help to create and equip facilities so students gain experiences that enhance their value to employers. Their on-going involvement ensures that TSTC students receive the right kind of education.

Institutional Research

Institutional research supports planning, evaluation, and improvement initiatives. Using paradigms from the social sciences and organizational and management theory, institutional research deals with a wide range of topics and issues critical to the health and advancement of the College. Institutional research collects and analyzes data designs and implements studies dealing with students, personnel, facilities, equipment, programs, and services; develops databases suitable for longitudinal studies; and disseminates the results to be used for the betterment of TSTC and those that it serves.

Education Foundations

Two non-profit organizations have been created for the purpose of benefiting TSTC and its students. The Rolling Plains Technical Foundation, founded in 1973, is composed of West Central Texas leaders who focus their activities on supporting TSTC West Texas. The TSTC Regents Circle, founded in 2000, includes community and business leaders from throughout Texas whose work supports all the colleges of the TSTC System. These two foundations provide invaluable financial assistance to TSTC students, as well as to TSTC as a whole.

Release of Student Records

In compliance with the "Family Education Rights and Privacy Act of 1974 (FERPA)," TSTC gives notice that the following directory information will be released upon request and with the approval of the appropriate administrator, unless the student desires to withhold it: student's name, address, e-mail address, telephone number, major field of study, classification of coursework level, enrollment status, extracurricular participation in officially recognized activities, achievement and academic awards or honors, weight and height of members of athletic teams, dates of attendance, photographic image, and most recent previous institution attended.

Release of additional student record information not defined as "directory information" must be specifically authorized by the student. Students may prohibit the release of directory information by completing the appropriate form available at Student Records during registration or within the first 11 class days. This request remains in effect until revoked in writing by the student or until the student fails to register for a subsequent term.

Minors (under 18 years of age) attending TSTC have the same right to the privacy of their records as adult students.

Student academic records information, other than directory information, may be released to appropriate school officials without consent of the student. A school official can be:

1) an individual employed by TSTC in an administrative, supervisory, academic, research or support staff position (including law enforcement and health staff personnel);
2) an individual elected to the TSTC Board of Regents;
3) an individual or company employed by or under contract to TSTC to perform a special task such as an attorney, auditor, or collection agency,
4) a student serving on an official committee, such as a disciplinary or grievance committee, or assisting an other school official in performing his or her tasks.

Students have the right to inspect and review their academic record. Students may petition TSTC to amend or correct any part of their academic record which is believed to be inaccurate, misleading, or in violation of the privacy or other rights of the students. When the college decides it will not amend or correct a student's record, the student has a right to a hearing to present evidence that the record is inaccurate, misleading, or in violation of the privacy or other rights of the student. Contact the College Records Office at (254) 867-2362 for more information regarding FERPA and student records.

COMPACT WITH TEXANS

Texas State Technical College (TSTC) is a public coeducational institution of higher education offering courses of study in technical education leading to the award of Certificates and Associate of Applied Science Degrees. TSTC also provides technical education and training to business and industry, continuing education to the public, and training programs for community and state economic development. TSTC colleges are located in Harlingen, Marshall, Sweetwater, and Waco, with extension centers in Abilene, Brownwood, and Breckenridge. TSTC serves students from more than 200 counties in Texas, and TSTC graduates begin their careers in high-paying jobs across the state or continue their education at colleges and universities. TSTC graduates are highly valued by business and industry for their work ethic, knowledge, and workplace skills. Texas State Technical College Waco is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award Associate of Applied Science degrees and Certificates of Completion (1866 Southern Lane, Decatur, Georgia 30033-4097, telephone number 404-679-4501).

TSTC's Vision

The Texas State Technical College System will be a leader in strengthening the competitiveness of Texas business and industry by building the state's capacity to develop the highest quality workforce.

TSTC's Values

Excellence	Achieving the highest quality in all we do
Leadership	Developing visions and strategies for a desired future, and aligning and energizing people to achieve those visions
Innovation	Creating and implementing new ideas and methods
Collaboration	Working cooperatively with other organizations and within our own system
Responsiveness	Providing appropriate programs and services in a proactive, flexible, and timely manner
Accountability	Measuring our performance and using the results for improvement
Stewardship	Ensuring our programs and services add value to our students and communities throughout the state, and operate in accordance with the public trust for which we are responsible

TSTC's Customer Service Goal

It is the goal of Texas State Technical College faculty and staff to provide a level of customer service that is beyond expectation. We pledge to be . . .

Friendly to all we meet in our work,
Helpful in all that we do,
Courteous in all of our dealings,
Responsive to customers' needs, and
Accountable for our actions.

We will deliver the highest quality services possible with the highest regard for honesty, integrity, and ethical behavior.

For more information, please call or write to:

Texas State Technical College
3801 Campus Drive
Waco, TX 76705
(254) 799-3611 • 800-792-8784
http://www.tstc.edu

TSTC's Formal Written Complaint Handling Procedure

Most questions or complaints can be addressed through routine college channels. If additional assistance is needed, you are encouraged to file a formal written complaint. TSTC is committed to your satisfaction. The Customer Service Representative for our college is Executive Vice President Rob Wolaver.

1. Submit your complaint in writing by filling out the Effective Customer Relations form. This form may be downloaded at www.waco.tstc.edu, or obtained at the Student Services Center. Alternatively, you may communicate verbally to TSTC's Customer Service Representative in the Student Services Center or by calling (254) 867-3366.

2. The TSTC Customer Service Representative will acknowledge your complaint and let you know the matter is receiving attention. You will be notified in writing within five working days of receiving the complaint as to the length of time it will take to resolve the issue.

3. The TSTC Customer Service Representative will investigate the complaint.

4. A solution that is consistent with TSTC policies, as well as applicable local, state, and federal laws, will be proposed to you in writing in the time frame specified in step 2.

5. You will be contacted by the Customer Service Representative within 10 days of the written response to determine your satisfaction with the proposed solution and to be sure that the provisions of the solution have been implemented.

6. If you are not satisfied with the proposed solution, you may request that your complaint be considered by a Dispute Resolution Committee appointed by the college president. This committee will review all available documentation and render a decision as to the resolution of the complaint. All decisions of the committee are final and are not open to further review.

Texas Higher Education Coordinating Board Complaint Procedure

Students have the right to complain to the Texas Higher Education Coordinating Board regarding the institution's management of Title IV, HEAF (Higher Education Assistance Fund) programs, or its advertising or promotion of its educational programs. Complaints regarding the institution must be made in writing to: Texas Higher Education Coordinating Board, P.O. Box 12788, Austin, TX 78711.

Title IX Compliance

The person designated to coordinate compliance activities for Title IX of the Educational Amendments of 1972 (sex equity issues) is Vice President for Human Resources Carrie Gayeske, who can be reached at (254) 867-4810.

Notes:

INSTRUCTIONAL PROGRAMS

TSTC curriculum, courses and course sequence are subject to change.
Please check with your department chair, advisor or the TSTC Web site for a current listing.

TSTC
Texas State Technical College

Advertising Design & Print Technology

From concept to creation, designers must develop compelling work to compete in today's advertising market – a market that can make or break you in the industry.

TSTC takes you from the drawing board to the computer in its Advertising Design & Print Technology (ADP) to teach you how to vividly move an audience, whether it's designing billboards or brochures, print ads or post cards and much more.

With an emphasis on creation, production and presentation of visual messages, you'll learn the skills to deliver a message that gets noticed.

The program emphasizes the technical and practical aspects of preparing camera-ready art for reproduction while enhancing your computer skills on both Macintosh and PC. You'll learn many of today's electronic illustration and design programs, including Adobe InDesign, Photohop and others.

Associate of Applied Science Degree Program

The two-year Advertising Design & Print Technology curriculum includes a solid framework of courses that lead to advanced design, imaging and advertising assignments. The coursework, including those in computer graphics with Macintosh and PC computers, culminates in an Associate of Applied Science degree.

Tech Prep Associate of Applied Science Degree Program

ADP also offers Tech Prep. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree with advanced skills.

ADP Advisory Committee

Stephen Adams, Adams Creative, Grand Prairie
Jason Bayer, CC Creations, Bryan
James Bell, Bell Creative Inc., Dallas
Jeff Blackburn, Austin Tees, Austin
James Brown, The Dwyer Group, Waco
Jud Burgess, Substance, El Paso
John Ciaburri, Woodward Creative Group, Temple
Kristopher Cowan, Dynamic Designs, Waco
Keith Dotson, Great Lakes Higher Education Corp, Madison, Wis.
Sarah Ervin, Waco Tribune-Herald, Waco
Sylvia Harrington, Big Red, Waco
Harlowe Hodges, Frostburg University,Frostburg, Md.
David Houdek, Ussery Printing Company, Irving
Fred Korg, Savage Design Group, Houston
Tim Kupper, Xpert Media Management LLC, San Antonio
Chris Martin, AMA Nystrom Printing, Waco
Darold McDonald, Concentus Media Group, Temple
Duane McGregor, Cameron Park Zoo, Waco
Lynn Pearson, Waco Tribune-Herald, Waco
Patrick Pollei, Pollei DesignWorks, Waco
Bryan Tamayo, Fossil, Inc., Richardson
Kenneth Turbeville, WRS Group, Waco
Heather Vaughan, TG, Round Rock

Advertising Design & Print Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ARTC	1302	Digital Imaging I	3
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ARTC	1313	Digital Publishing I	3
GRPH	1359	Vector Graphics for Production	3
INDS	1301	Basic Elements of Design	3
ITSE	1301	Web Design Tools	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
ARTC	1305	Basic Graphic Design	3
ARTC	2317	Typographic Design	3
ARTT	1241	Creative Drawing	2
GRPH	2309	Digital Pre-press	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**14**

Fourth Semester			Credits
ARTC	1349	Art Direction I	3
ARTC	1317	Design Communication I	3
ARTC	2313	Digital Publishing II	3
ENGL	2311	Technical Writing	3
		Semester Total	**12**

Fifth Semester			Credits
ARTC❖	2335	Portfolio Development for Graphic Design	3
ARTC	2347	Design Communication II	3
ARTC	2349	Art Direction II	3
GRPH	1432	Electronic Imaging System	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**16**

❖ This course has been designated as a capstone course (see index for explanation).

Printing

Specialization of Advertising Design & Print

The printing industry is undergoing major changes, becoming increasingly digital and integrating the work of commercial artists and printing technicians. Job opportunities for printing specialists are expected to be favorable because a large number of these workers are expected to retire over the next decade. The best opportunities will be available for skilled operators, and TSTC can provide you with the skills you need for this industry.

ADP at TSTC offers a Printing Specialization to prepare you for the publishing careers of today and tomorrow. As technology changes the nature of the industry, more experienced technicians with finely honed skills are needed at Texas' 4,000 printing operations, including those who can perform complex duties such as page design, color scanning, pre-press skills, image manipulation and Web page design.

Associate of Applied Science Degree Program

TSTC's two-year Printing Specialization offers hands-on experience using software programs such as Adobe Photoshop and InDesign. In addition, the curriculum, which culminates in an Associate of Applied Science degree, covers all phases of digital imaging, process color, trade customs, cost and production of quality press sheets.

Certificate of Completion Program

TSTC's Printing Specialization now offers a Certificate of Completion in Pre-Press. An academically qualified student can complete this program in 12 months.

Printing Specialization

Associate of Applied Science Degree

Total Credits: 69

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ARTC	1302	Digital Imaging I	3
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ARTC	1313	Digital Publishing I	3
GRPH	1359	Vector Graphics for Production	3
INDS	1301	Basic Elements of Design	3
ITSE	1301	Web Design Tools	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
ARTC	2313	Digital Publishing II	3
ARTC	2317	Typographic Design	3
GRPH	1305	Introduction to Graphic Arts and Printing	3
INDS	1341	Color Theory and Application	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fourth Semester			Credits
EECT	1200	Technical Customer Service	2
GRPH	1432	Electronic Imaging System	4
GRPH	1366	Practicum (or Field Experience) - Graphic and Printing Equipment Operator, General Production	3
GRPH	2309	Digital Pre-press	3
		Semester Total	**12**

Fifth Semester			Credits
ARTC	1349	Art Direction I	3
GRPH	2388	Internship - Graphic and Printing Equipment Operator, General Production	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**12**

Pre-Press

Certificate of Completion

Total Credits: 37

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
GRPH	1305	Introduction to Graphic Arts and Printing	3
GRPH	1319	Bindery and Finishing Operations	3
ARTC	1302	Digital Imaging I	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
ARTC	1313	Digital Publishing I	3
ARTC	2317	Typographic Design	3
GRPH	1359	Vector Graphics for Productions	3
INDS	1341	Color Theory and Application	3
		Semester Total	**12**

Third Semester			Credits
GRPH	1432	Electronic Imaging Systems	4
ARTC	1349	Art Direction I	3
ARTC	2313	Digital Publishing II	3
GRPH	2309	Digital Pre-Press	3
		Semester Total	**13**

Air Conditioning & Refrigeration Technology

The weather in Texas is legendary for the temperatures it can reach. It's not uncommon during the summer months to have a string of triple digit temps. It's so hot in Texas, in fact, that Texas Environmental Profiles reports ninety percent of the homes here have air conditioners.

Because of this, jobs in the air conditioning industry are widespread in Texas, making it an exceptional career choice. And the field is growing – not just here, but in the entire nation. The U.S. Department of Labor reports employment of heating, air-conditioning and refrigeration mechanics and installers is projected to increase by nine percent through 2016. That means the industry is going to need trained technicians who really know the business.

TSTC's Air Conditioning & Refrigeration Technology (ACT) program can provide students with the training needed to start a new and lasting career. The ACT program offers training on high efficiency commercial and residential heating and air-conditioning equipment, heat pumps, commercial refrigeration equipment and an 80-ton chilled water A/C system. Students learn basic and advanced control systems, plus Direct Digital Control Systems, and gain skills in refrigerant recovery systems to learn about environmental issues that affect the industry.

As an additional benefit, TSTC also offers testing to obtain vital certification required by law to work with refrigerants during the service, repair or disposal of appliances and industrial process refrigeration.

The program is also offered at the Fort Bend Technical Center.

Associate of Applied Science Degree Program

The laboratory facilities at Texas State Technical College include high efficiency commercial and residential heating and air conditioning equipment, energy efficient heat pumps, commercial refrigeration equipment, direct digital and pneumatic controls and a large chilled water system. You can learn the unique skills for exciting careers in the HVAC industry through the two-year Associate of Applied Science degree curriculum.

Certificate Program

In the one-year Air Conditioning & Refrigeration Service curriculum, you can hone your skills for faster entry into the job market. The Certificate of Completion curriculum requires a total of 39 credit hours.

Tech Prep Associate of Applied Science Degree Program

ACT offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The department requires that all students demonstrate basic reading, writing and mathematical skills before enrolling.

ACT Advisory Committee

Gary Coulson, Brandt Engineering, Dallas
Chet Couvillon, Ince Distributing Inc., San Antonio
Rob Emmert, Entech Sales & Service, Austin
Oscar Garza, McNamara Custom Service Inc., Waco
Jose Gonzalez, TD Industries Inc., Dallas
Keith Henigan, American Mechanical Services, Carrollton
Richard Hunton Jr., The Hunton Group, Houston
Richard Lowery, Carrier UTC, Austin
James Martin, United Environmental Services, Pasadena
Quanah Martin, Johnson Controls, Double Oaks
Jerry Pierpont, TSTC Instructor (Retired), Honorary Member, Hillsboro
Kevin Sawyer, The Trane Company, McGregor
Darren Sinkule, T.E.A.M. Solutions, Waco
Rick Tullis, Capstone Mechnical, Waco
Glenn Varner, Engineered Air Balance Co. Inc., Addison
George Wentzel, Gemaire Group, San Antonio
Ed Wright, Lennox Ind., Carrollton

Ft. Bend ACT Advisory Committee

John Burg, Air Depot A/C Heating, Houston
Jim Butcher, Houston
David Edson, Johnstone Supply, Houston
Reed Hughes, Manitowoc Ice Machines, The Woodlands
Richard Hunton Jr., Hunton Distribution Group, Houston
Bob Manry, Southwest Texas Equipment Distributors Inc.
Calvin Miller, Century Supply, Houston
Jerry Oliver Jr., Gulf Coast Mechanical A/C Specialist, Beasley

Sonny Roncancio, Fresh Air Air Conditioning & Heating, Stafford
Martin Schulze, Martin Schulze Air Conditioning, Richmond
Shawn Schulze, Martin Schulze Air Conditioning, Richmond
Kirk Voitle, Kirk Voitle A/C Company Inc., Sugar Land
Roy Wiederkehr, Aces Supply, Houston

Air Conditioning & Refrigeration Technology

Associate of Applied Science Degree

Total Credits: 64

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
HART	1256	EPA Recovery Certification Preparation	2
HART	1307	Refrigeration Principles	3
HART	1301	Basic Electricity for HVAC	3
HART	2338	A/C Installation and Startup	3
ENGL	1301	Composition I	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
HART	1341	Residential Air Conditioning	3
HART	1345	Gas and Electric Heating	3
HART	1303	Air Conditioning Control Principles	3
HART	2342	Commercial Refrigeration	3
		Semester Total	**12**

Third Semester			Credits
HART	2331	Advanced Electricity for HVAC	3
HART	2336	Air Conditioning Troubleshooting	3
HART	2343	Industrial Air Conditioning	3
HART	2349	Heat Pumps	3
		Semester Total	**12**

Fourth Semester			Credits
HART	2334	Advanced Air Conditioning Control	3
HART	2445	Residential Air Conditioning System Design	4
ACGM	X3XX	Gen Ed Social Science Course	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**13**

Fifth Semester			Credits
HART❖	2402	Commercial Air Conditioning System Design	4
HART	2341	Commercial Air Conditioning	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Totals	**13**

Air Conditioning Technician

Certificate of Completion

Total Credits: 35

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
HART	1256	EPA Recovery Certification Preparation	2
HART	1307	Refrigeration Principles	3
HART	1301	Basic Electricity for HVAC	3
HART	2338	Air Conditioning Installation and Startup	3
		Semester Total	**11**

^Institutional Credit Only

Second Semester			Credits
HART	1341	Residential Air Conditioning	3
HART	1345	Gas and Electric Heating	3
HART	1303	Air Conditioning Control Principles	3
HART	2342	Commercial Refrigeration	3
		Semester Total	**12**

Third Semester			Credits
HART	2331	Advanced Electricity for HVAC	3
HART❖	2336	Air Conditioning Troubleshooting	3
HART	2343	Industrial Air Conditioning	3
HART	2349	Heat Pumps	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Aircraft Pilot Training Technology

On a campus that started its life as a U.S. Air Force base, training for positions in the aviation industry continues to flourish. The Federal Aviation Administration reports commercial aviation remains on track to carry one billion passengers by 2021 and continues to forecast long-term aviation growth, demonstrating the long-term value of air transportation to the public.

Today, a majoritiy of new airline hires are civilian-trained pilots with opportunities in jobs such as air-taxi/charter pilot, flight instructor, cargo transporter, corporate or commercial pilot, agriculture pilot, traffic or law-enforcement pilot and more. The state of Texas has an abundance of opportunities, as our state has the largest airport network in the nation, according to the Texas Department of Transportation.

At TSTC, our experienced flight professionals in the Aircraft Pilot Training (APT) Technology can provide you with the critical foundation you'll need to succeed in the field of aviation. You'll get top-notch, hands-on training and flying time on a variety of aircraft, including Cessna 172s, Diamond DA-20s and a Piper Seminole and a Piper Arrow, as well as training on a Redbird and Frasca single- and multi-engine simulators, worldwide weather terminals and much more.

For those who want to continue their education, TSTC offers an Aviation Science program with Baylor University and with Tarleton State University, allowing you to also earn a bachelor degree.

Associate of Applied Science Degree Program

The two-year associate degree program at TSTC immerses you in variety of flight activities to put you on the path to success. Successful graduates will hold FAA Private and Commercial certificates along with an Instrument Rating. Flight Instructor certificates or a Multi-engine rating will complete the degree requirement.

The program is FAA approved under Part 141 of the Federal Air Regulations. To enroll, the department requires all students to demonstrate basic reading, writing and mathematical skills. Additionally, all APT students must fulfill requirements for a Class II flight physical and provide the College Records Office with a current Class II Medical record.

All new students must also have successfully completed all sections of the Texas Higher Education Assessment (THEA) Test and all remedial courses before registering for classes in the APT program.

To learn more, contact the APT department chair for information about flight training costs required for this program. Texas State Technical College keeps these additional costs to an absolute minimum. Flight costs vary per term and are subject to change due to variables such as fluctuating fuel and flight-time costs.

APT Advisory Committee

Jerry Benson, Delta Airlines (retired), Waco
Syd Carter, American Airlines (retired), Dallas
Flex Chiota, Net Jets, Waco
Tim Compton, Baylor Institute for Air Science, Waco
Bill Crossland, Waco
Dave Curtis, Southwest Airlines, Chicago, Ill.
Chris Edwards, Beechjet-King Air, Teague
Mark Estes, Baylor University, Waco
Jesse Falcon, American Airlines
John Foster, Home State Ins., Hewitt
Charles Frost, FAA Pilot Examiner (retired), Waco
Jim Fullingim, Tarleton State University, Killeen
Jim Gardner, Texas Farm Bureau, Waco
Dave Hinckley, Bombardier Aerospace Flexjet, Belton
Ken Knebel, UPS, Austin
Bill Massey, Valley Mills
Michael Meline, AirTran Airways, Villa Rica, Ga.
Shelly (Barron) Meline, AirTran Airways, Villa Rica, Ga.
Harold Refuse, Crawford
Steven Sauck, SkyWest Airlines, Fresno, Calif.
Russell Vanhoozer, American Eagle, Waco

Aircraft Pilot Training Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AIRP	1307	Aviation Meteorology	3
AIRP	1417	Private Pilot Ground School	4
AIRP	1215	Private Flight	2
AIRP	1301	Air Navigation	3
AIRP	1313	Introduction to Aviation	3
		Semester Total	**15**

^ Institutional Credit Only

Second Semester			Credits
MATH	1314	College Algebra	3
AIRP	1451	Instrument Ground School	4
AIRP	2250	Instrument Flight	2
AIRP	2331	Advanced Meteorology	3
ENGL	1301	Composition I	3
		Semester Total	**15**

Third Semester			Credits
AIRP	1341	Advanced Air Navigation	3
AIRP	1255	Intermediate Flight	2
AIRP	1343	Aerodynamics	3
AIRP	2333	Aircraft Systems	3
HUMA	1301	Introduction to Humanities	3
		Semester Total	**14**

Fourth Semester			Credits
AIRP	2337	Commercial Ground School	3
AIRP	2239	Commercial Flight	2
AIRP	1345	Aviation Safety	3
AIRP	2355	Propulsion Systems	3
PSYC	2301	General Psychology	3
		Semester Total	**14**

Fifth Semester			Credits
AIRP	2349	Instructor Ground School	3
AIRP ❖+	2236	Certified Flight Instructor-Airplane	2
AVIM	2337	Aviation Law	3
ACGM	X3XX	Gen Ed Elective	3
AIRP	2357	Turbine Aircraft Systems Ground School	3
		Semester Total	**14**

Enhanced Skills Certificate

Total Credits: 6

AIRP	2251	Multi-engine Flight	2
AIRP	2242	Flight Instructor – Instrument Airplane	2
AIRP	2243	Flight Instructor – Multi-engine Airplane	2
		Semester Total	**6**

+or AIRP❖ 2251 Multiengine Flight

❖Capstone course: Students must take one of the required learning experiences which results in a consolidation and synthesis of a student's educational experience. The capstone experience certifies mastery of entry-level work place competencies

Air Traffic Control

It takes a team of sharp individuals to ensure the safe operation of military, commercial and private aircraft. Ground controllers, airfield operation specialists, enroute controllers, airport tower and terminal approach controllers and others work together to ensure the safe flow of air traffic in the skies.

Fortunately for job seekers, Texas incorporates over 380 public airports — the nation's second-largest system and predictions for growth are good. The federal government expects the aerospace industry to grow by 10 percent through 2016. The need for Air Traffic Controllers in Texas is expected to grow 26 percent in the same period. Pay and benefits are great too, as employees earn relatively high pay and good benefits.

Because the majority of today's FAA's Air Traffic Controllers face mandatory retirements over the next decade, there is a strong need for professionals in the field. That's why TSTC is offering a program in Air Traffic Control (ATC) that can lead to an associate degree.

The program will offer the basics in air traffic control, providing an advanced route into the Federal Aviation Administration's Air Traffic Control Academy. The training will follow the FAA Air Traffic Basics curriculum, and the materials will be similarly matched.

Students achieving this degree can develop skills that meet or exceed all FAA ATC entry requirements. They will be backed by knowledgeable staff who have worked in this sector – including former FAA and military personnel — and learn skills and knowledge provided by an advisory board comprised of industry experts.

Air Traffic Control

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AIRP	1301	Air Navigation	3
AIRP	1307	Aviation Meteorology	3
AIRP	1313	Introduction To Aviation	3
AIRP	1417	Private Pilot Ground School	4
MATH	1314	College Algebra	3
		Semester Total	**16**

^ Institutional Credit Only

Second Semester			Credits
AIRP	1272	Flight Simulation I	2
AIRP	1451	Instrument Ground School	4
AIRP	2331	Advanced Meteorology	3
ENGL	1301	Composition I	3
		Semester Total	**12**

Third Semester			Credits
AIRP	1341	Advanced Air Navigation	3
AIRP	2333	Aircraft Systems	3
AIRP	2352	Practical Dispatching I	3
AVIM	1371	Air Traffic Control I	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fourth Semester			Credits
AIRP	1345	Aviation Safety	3
AIRP	2337	Commercial Ground School	3
AIRP	2353	Practical Dispatching II	3
AIRP	2355	Propulsion Systems	3
AVIM	2372	Air Traffic Control II	3
		Semester Total	**15**

Fifth Semester			Credits
AIRP	2272	Flight Simulation II	2
AVIM	2337	Aviation Law	3
AVIM	2373	Air Traffic Control III	3
ACGM	X3XX	Gen Ed Social Science Course	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**14**

Aircraft Dispatch Technology

Did you know a commercial plane never leaves the ground without both the captain and the dispatcher agreeing on the flight? That's because aircraft dispatchers play a crucial role in overseeing the safety of a flight from one location to another.

There are more than 2,000 U.S. dispatchers who help keep pilots from flying into turbulence, running out of fuel or safely arriving at airports where runways are icy. They are known as the ears and eyes on the ground for pilots in the air.

Dispatchers, like pilots, must know a wealth of information, from aircraft-maintenance manuals and emergency checklists, to weather information, air-ground radio systems and runway layouts at hundreds of airports.

The FAA notes the role of the aircraft dispatcher is a critical link in air safety – and it can make an exciting career choice —especially in Texas, where there's 384 public airports, four major airlines and two of the world's most busiest airports.

TSTC is offering a specialization in Aircraft Dispatch through two completion paths for students: an associate degree in Aircraft Dispatch or a certificate of completion that can fast-track students into launching their careers.

TSTC is one of a select number of Texas schools to offer this degree, and it's the perfect learning environment, because size speaks volumes. TSTC Waco Airport is the largest public airport owned by a two-year college in the nation! It has a history of aviation experience dating back to 1968.

And the program is backed by experienced professionals who have worked in the field, along with an advisory committee of industry members who ensure the curriculum keeps you on track for the best possible education.

Aircraft Dispatch Advisory Committee

Carla Caisse, Southwest Airlines, Dallas
Steven Caisse, Irving
Charles Durham, Houston
Ray Howland, American Airlines, Dallas
Larry Merchant, Southwest Airlines, Dallas
Michael Patterson, Mesa Airlines, Phoenix, Ariz.
Geri Reynold, American Eagle Airlines, Dallas
Benjamin Springrose, Delta Connection, Apple Valley, Minn.

Aircraft Dispatch Technology

Associate of Applied Science Degree

Total Credits: 64

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AIRP	1301	Air Navigation	3
AIRP	1307	Aviation Meteorology	3
AIRP	1313	Introduction To Aviation	3
AIRP	1417	Private Pilot Ground School	4
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**16**

Second Semester			Credits
AIRP	1272	Flight Simulator I	2
AIRP	1451	Instrument Ground School	4
AIRP	2331	Advanced Meteorology	3
AVIM	2337	Aviation Law	3
ENG	1301	Composition I	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**18**

Third Semester			Credits
AIRP	1341	Advanced Air Navigation	3
AIRP	2333	Aircraft Systems	3
AIRP	2352	Practical Dispatching I	3
AVIM	1371	Air Traffic Control I	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fourth Semester			Credits
AIRP	1345	Aviation Safety	3
AIRP	2337	Commercial Ground School	3
AIRP	2353	Practical Dispatching II	3
AIRP	2355	Propulsion Systems	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Aircraft Dispatch Technology

Certificate of Completion—Level 2

Total Credits: 49

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AIRP	1301	Air Navigation	3
AIRP	1307	Aviation Meteorology	3
AIRP	1313	Introduction To Aviation	3
AIRP	1417	Private Pilot Ground School	4
		Semester Total	**13**

^ Institutional Credit Only

Second Semester			Credits
AIRP	1272	Flight Simulator I	2
AIRP	1451	Instrument Ground School	4
AIRP	2331	Advanced Meteorology	3
AVIM	2337	Aviation Law	3
		Semester Total	**12**

Third Semester			Credits
AIRP	1341	Advanced Air Navigation	3
AIRP	2333	Aircraft Systems	3
AIRP	2352	Practical Dispatching I	3
AIRP	1371	Air Traffic Control I	3
		Semester Total	**12**

Fourth Semester			Credits
AIRP	1345	Aviation Safety	3
AIRP	2337	Commercial Ground School	3
AIRP	2355	Propulsion Systems	3
AIRP	2353	Practical Dispatching II	3
		Semester Total	**12**

Auto Collision & Management Technology

Since 2006, the federal government reports that motor vehicle crashes involving property damage alone reached more than 4.1 million, and that number continues to escalate as roads become more congested. Inevitably, that means there will be many collisions.

That's why business for auto-body shops is booming, as is the need for skilled technicians to make repairs.

Get those skills at TSTC by enrolling in the Automotive Collision & Management Technology (ACM). You can learn advanced curriculum in state-of-the-art facilities — such as the $2.1 million 40,000 square foot Transportation Technologies Center —and get crucial hands-on experience that will put you first in line when it comes to hiring time. Expert, experienced faculty and the backing of top names in the industry assure you can get the latest possible training available in the market.

The ACM program offers one of just four postsecondary auto body programs in Texas certified by the National Automotive Technicians Education Foundation. In addition, the ACM program is ASE-compliant (Automotive Service Excellence) and the staff is certified by ASE — an important fact considering 69 percent of all shops are ASE-certified. Students also have the opportunity to gain the knowledge that can later help them become I-CAR certified (Inter-Industry Conference on Auto Collision Repair), one of the major organizations in the industry.

At TSTC, you'll work with equipment such as a Blackhawk 360° Frame Rack, a Blackhawk P-188 Mechanical Measuring System, Cartronic Computerized Electronic Unibody Mechanical System, a Hunter Computerized 4-Wheel Alignment System, a Shark Computerized Measuring System, Pro-Spot Resistance Spot Welder, PPG paint mixing systems, a SATA Fresh Air Respirator/Monitoring System and much more.

Associate of Applied Science Degree Program

TSTC offers a comprehensive, two-year Associate of Applied Science degree program in Auto Collision & Management Technology.

Tech Prep Associate of Applied Science Degree Program

ACM also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

Certificate Programs

Texas State Technical College also offers one-year Certificate of Completion programs for a more rapid route to attaining credentials in Auto Body Collision Repair and Auto Body Refinishing. *Note: Before enrolling in an ACM certificate program, students must satisfy DMTH 0100, WRIT 0100 and READ 0100 requirements.*

ACM Advisory Committee

Rick Angle, Caliber Collision, San Antonio
Don Armstrong, Caliber Collision, Schertz
Rusty Barsanti, Caliber Collision, Fort Worth
Matt Bole, Craig's Collision Center, Grapevine
Wayne Burchfield, Classic Toyota, Tyler
Tom Dance, Herb's Paint & Body No. 1, Dallas
Johnny Dickerson, Collision Repair Service, Garland
Robert Dixon, Associated Collision Center, San Antonio
Andy Duhon, PPG, Powell
David Gafford, Caliber Collision, Round Rock
Bill Haas, Automotive Service Association, Bedford
Ed Johnson, Allstate Insurance Company, Waco
Terry Kingsley, Continental Collision Center, Austin
Tom Kirk, Collision Equipment Sales, Beaumont
George Lovejoy, Retired, Clifton
Vicki Lyman, State Farm Mutual Auto Ins. Co., Round Rock
Ben Madary, Collision Center Leo Martin, Lake Jackson
Sharon Mazanec, Sterling Auto Body Centers
Debbie Menz, Dupont, Round Rock
Doug Middleton, Retired, San Antonio
Mike Miller, I-Car, Smyrna, Tenn.
Nelsie Mullins, State Farm Claims Office, Arlington
John Reid, Rebreu, Austin
Renee Sandoval, Caliber Collision, Austin
Wayne Tribble, T Paint & Body, Llano
Jeff Williams, Jeff's Paint & Body, Silsbee
Steve Williams, Texas Farm Bureau, Waco

Auto Collision & Management Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ABDR	1203	Vehicle Design and Structural Analysis	2
ABDR	1215	Vehicle Trim and Hardware	2
ABDR	1349	Automotive Plastic Sheet Molded Compound Repair	3
ABDR	1371	Basic Paint Techniques, Equipment and Environment Practices	3
ABDR	1207	Auto Body Welding	2
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
ABDR	1331	Basic Refinishing	3
ABDR	1458	Intermediate Refinishing	4
ABDR	2371	Refinish Process I	3
		Semester Total	**10**

Third Semester			Credits
ABDR ❖	2449	Advanced Refinishing	4
ABDR ❖	2353	Color Analysis and Paint Matching	3
ABDR	2551	Specialized Refinishing Techniques	5
		Semester Total	**12**

Fourth Semester			Credits
ABDR	1419	Basic Metal Repair	4
ABDR	2435	Structural Analysis and Damage Repair IV	4
ABDR	1323	Front and Rear Wheel Alignment	3
		Semester Total	**11**

Fifth Semester			Credits
ABDR	2402	Auto Body Mechanical and Electrical Service	4
ABDR	2277	Structural Sectioning and Welded Panel Repair	2
ABDR	2255	Collision Repair Estimating	2
ABDR	1442	Structural Analysis and Damage Repair II	4
		Semester Total	**12**

Sixth Semester			Credits
ENGL	1301	Composition I	3
MATH	1332	Comtemporary Math 3	
HUMA	1301	Introduction to Humanities	3
PSYC	2301	General Psychology	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**15**

Auto Collision Repair

Certificate of Completion

Total Credits: 39

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ABDR	1207	Auto Body Welding	2
ABDR	1203	Vehicle Design and Structural Analysis	2
ABDR	1215	Vehicle Trim and Hardware	2
ABDR	1349	Automotive Plastic and Sheet Molded Compound Repair	3
ABDR	1371	Basic Paint Techniques, Equipment and Environment Practices	3
		Semester Total	**12**

^ Institutional Credit Only

Second Semester			Credits
ABDR	1419	Basic Metal Repair	4
ABDR	2435	Structural Analysis and Damage Repair IV	4
ABDR	1323	Front and Rear Wheel Alignment	3
		Semester Total	**11**

Third Semester			Credits
ABDR	1442	Structural Analysis and Damage Repair II	4
ABDR	2402	Auto Body Mechanical and Electrical Service	4
ABDR	2277	Structural Sectioning and Welded Panel Repair	2
		Semester Total	**10**

Fourth Semester			Credits
POFT	1325	Business Math and Machine Application	3
POFT*	1302	Business Communications	3
		Semester Total	**6**

Auto Refinishing

Certificate of Completion

Total Credits: 42

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ABDR	1203	Vehicle Design and Structural Analysis	2
ABDR	1215	Vehicle Trim and Hardware	2
ABDR	1349	Automotive Plastic and Sheet Molded Compound Repair	3
ABDR	1371	Basic Paint Techniques, Equipment and Environment Practices	3
ABDR	1419	Basic Metal Repair	4
		Semester Total	**14**

^ Institutional Credit Only

Second Semester			Credits
ABDR	1331	Basic Refinishing	3
ABDR	1458	Intermediate Refinishing	4
ABDR	2371	Refinish Process I	3
		Semester Total	**10**

Third Semester			Credits
ABDR❖	2449	Advanced Refinishing	4
ABDR❖	2353	Color Analysis and Paint Matching	3
ABDR	2551	Specialized Refinishing Techniques	5
		Semester Total	**12**

Fourth Semester			Credits
POFT	1325	Business Math and Machine Application	3
POFT*	1302	Business Communications	3
		Semester Total	**6**

*POFT 1301 Business English can be substituted

❖This course has been designated as a capstone course (see index for explanation).

Automotive Technology

The annual vehicle miles traveled in Texas during 2007 reached 241.7 billion, an increase of 2.07 percent over the miles traveled in 2006. In fact, Texas boasts over 72,000 miles of state and federal highways. That puts a lot of wear and tear on a car.

No matter what the economic climate, drivers will always need technicians to repair cars. And these days, cars are more complex than ever before. In fact, newer cars can have up to 38 computers which communicate with each other over an elaborate network system.

With these electronically advanced cars, the automotive industry needs skilled technicians with advanced training and abilities. TSTC's Automotive Technology (AUT) program can provide you with these skills that will always be in demand.

The AUT program, ranked the leader in post-secondary automotive education, features nearly $3 million worth of the latest equipment and laboratories, in addition to National Automotive Technicians Education Foundation certification and instructors certified by Automotive Service Excellence.

Associate of Applied Science Degree Program

TSTC's Automotive Technology department offers a two-year Associate of Applied Science degree plan in which you can learn to make in-depth diagnoses and repairs for all car and light truck systems.

Tech Prep Associate of Applied Science Degree Program

AUT also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The Automotive Technology department requires that students demonstrate basic reading, writing and mathematical skills before enrolling.

Certificate Programs

TSTC's Automotive Technology also offers Certificates of Completion in three areas of specialization: Automotive Parts Specialist, Heavy Line and Level 2 Automotive Technology. The Heavy Line Technician focuses on engine, transmission, brake and chassis repairs, and the Automotive Parts Specialist has extensive knowledge of the wide range of parts used in the automotive repair industry. The Automotive Technology Level 2 provides a deeper knowledge of general automotive applications.

AUT Advisory Committee

J. W. Burks, Waco Nissan, Waco
Tommy Carpenter, Allan Samuels Chevrolet, Waco
Tim Halpain, Matco Tools, Marble Falls
Freddie Kish, Freedie Kish's Care Care Center, Waco
Mike Lee, Karr-Hunter Buick Pontiac, Waco
Ben Leggett, Customer Retention Solutions, Lometa
Luhrel Leggett, O'Reilly Auto Party, Waco
Ken Luikart, Luikart's Foreign Car Clinic, Waco
Bruce Mungiguerra, South Point Nissan, Austin
Tommy Murphy, Bird-Kultgen Ford, Waco
Chris Perales, Perales Brothers Auto Maintenance, Waco
Larry Springman, WIX Filters, Lorena
Brian Sykora, Sykora Family Ford, West Columbia
Dennis Walje, Carmax, Irving
Todd Zelinski, Sanley Automotive Enterprises, Dallas

Automotive Technology

Associate of Applied Science Degree

Total Credits: 66

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AUMT	1305	Introduction to Automotive Technology	3
AUMT	1407	Automotive Electrical Systems	4
AUMT	1419	Automotive Engine Repair	4
ENGL	1301	Composition I	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
AUMT	1410	Automotive Brake Systems	4
AUMT	1416	Suspension and Steering	4
AUMT	1445	Automotive Heating and Air Conditioning	4
		Semester Total	**12**

Third Semester			Credits
WECM	X4XX	Technical Elective	4
ACGM	X3XX	Gen Ed Social Science Course	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**13**

Fourth Semester			Credits
AUMT	2413	Automotive Drive Train and Axles	4
AUMT	2417	Automotive Engine Performance Analysis I	4
AUMT	2421	Automotive Electrical Lighting and Accessories	4
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**15**

Fifth Semester			Credits
AUMT❖	2425	Automatic Transmission and Transaxle	4
AUMT❖	2434	Automotive Engine Performance Analysis II	4
AUMT❖	2437	Automotive Electronics	4
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Automotive Parts Specialist Level 1

Certificate of Completion

Total Credits: 25

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
POFT	1301	Business English	3
POFT	1325	Business Math and Machine Applications	3
AUMT	1305	Introduction to Automotive Technology	3
VHPA	1301	Auto Parts Nomenclature	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
VHPA	1441	Auto Parts Counter Sales	4
VHPA	2331	Auto Parts Management	3
EECT	1200	Technical Customer Service	2
WECM	X4XX	Technical Elective	4
		Semester Total	**13**

Heavy Line Technician Level 1

Certificate of Completion

Total Credits: 39

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AUMT	1305	Introduction to Automotive Technology	3
AUMT	1410	Automotive Brake Systems	4
AUMT	1416	Automotive Suspension and Steering	4
POFT	1325	Business Math and Machine Applications	3
		Semester Total	**14**

^Institutional Credit Only



Second Semester			Credits
AUMT	1407	Automotive Electrical Systems	4
AUMT	1419	Automotive Engine Repair	4
EECT	1200	Technical Customer Service	2
POFT	1301	Business English	3
		Semester Total	**13**

Third Semester			Credits
AUMT	2413	Manual Drive Train and Axles	4
AUMT❖	2417	Engine Performance Analysis I	4
WECM	X4XX	Technical Elective	4
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Automotive Technology, Level 2

Certificate of Completion

Total Credits: 59

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AUMT	1305	Introduction to Automotive Technology	3
AUMT	1407	Automotive Electrical Systems	4
AUMT	1419	Automotive Engine Repair	4
POFT	1301	Business English	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
AUMT	1410	Automotive Brake Systems	4
AUMT	1416	Automotive Suspension and Steering Systems	4
AUMT	1445	Automotive Heating and Air Conditioning	4
POFT	1325	Business Math and Machine Applications	3
		Semester Total	**15**

Third Semester			Credits
AUMT	2413	Automatic Drive Train and Axles	4
AUMT	2421	Automotive Electrical Lighting and Accessories	4
EECT	1200	Technical Customer Service	2
AUMT	2417	Automotive Engine Performance Analysis I	4
		Semester Total	**14**

Fourth Semester			Credits
AUMT ❖	2425	Automotive Automatic Transmission and Transaxle	4
AUMT ❖	2434	Automotive Engine Performance Analysis II	4
AUMT ❖	2437	Automotive Electronics	4
WECM	X4XX	Technical Elective	4
		Semester Total	**16**

❖This course has been designated as a capstone course (see index for explanation).

Note: See the department for a list of approved electives.

Toyota Training & Education Network (T-TEN) Program

Specialization of Automotive Technology

Officials from Toyota Motor Sales, USA Inc. honored TSTC by awarding the Toyota Training & Education Network (T-TEN) program with its 2008 T-TEN School Recognition Award. In fact, officials noted, TSTC's program is among the top T-TEN schools in the nation. What that means for you as a student is a top-notch education with a leader in post-secondary automotive education that can fast-track you into a career that lasts.

At TSTC, the Automotive Technology's Import Specialization provides product-specific training through the T-TEN program, utilizing nearly $3 million worth of the latest equipment and laboratories. In addition, instructors, experienced in the industry, have certifications in Automotive Service Excellence and National Automotive Technicians Education Foundation — standards in today's industry.

Associate of Applied Science Degree Program

TSTC and Toyota developed T-TEN to fill the growing need for highly professional, technically competent apprentice technicians for Toyota dealerships. Through this comprehensive link, Toyota and TSTC offer a variety of unique educational benefits, including the latest in educational and instructional course materials, paid dealership cooperative education opportunities, scholarships and tools, dealership placement assistance and a state-of-the-art education on the latest components and vehicles. The Automotive T-TEN Program curriculum culminates in an Associate of Applied Science degree.

Certificate Programs

TSTC's T-TEN program also offers two one-year certificates meeting the requirements for the Toyota/Lexus T-TEN program.

AUT T-TEN Advisory Committee

Tom Anderson, Star Toyota of Abilene, Abilene
Gene Bannister, Holley Toyota, Brownwood
John Beaver, Don Ringler Toyota, Temple
Lorena Boughton, Toyota, Torrance, Calif.
David Bryan, Tegeler Toyota, Brenham
Frank Drifill, Red McCombs Toyota, San Antonio
Mike Duncan, Lexus of San Antonio, San Antonio
Craig Fletcher, Bossier/Atkinson Toyota, Bryan
Kenneth Goodman, Mitchell Pontiac-Toyota, San Angelo
Mickey Hadley, Street Toyota, Amarillo
John Hall, Toyota of Longview, Longview
Steve Head, Toyota of Paris, Paris
Cecil Herbert, Champions Toyota, Austin
Steve Kelly, Stewart Toyota, Corsicana
Bud King, Universal Toyota, San Antonio
Dan Lee, Gulf States Toyota, Houston
Phil McDaniel, Classic Toyota of Tyler, Tyler
Pete Reinhart, Classic Toyota, Round Rock
Joel Rimmer, Cavender Toyota, San Antonio
Gerald Skidmore, Toyota of Killeen, Killeen
Jim Smajdek, San Marcos Toyota, San Marcos
Danny Smith, Charles Mound Toyota
John Smith, Messer Toyota, Lubbock
Bob Tucker, Patterson Toyota, Wichita Falls
Thad Tucker, Lexus of Austin, Austin
John Ulzman, Lexus of Austin, Austin
Gary Waller, Jeff Hunter Toyota, Waco

Automotive Technology Toyota-Training & Education Network (T-TEN)

Associate of Applied Science Degree

Total Credits: 62

First Semester (Fall)			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ENGL	1301	Composition I	3
AUMT	1305	Introduction to Automotive Technology*	3
AUMT	1307	Automotive Electrical Systems	3
AUMT	1310	Automotive Brake Systems	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester (Spring)			Credits
AUMT	1316	Automotive Suspension and Steering Sys.	3
AUMT	1319	Automotive Engine Repair	3
AUMT	1345	Auto Heating and A/C	3
AGCM	X3XX	Gen Ed Humanities/Fine Arts Course	3
AGCM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Third Semester (Summer)			Credits
AUMT	1480	Co-op - Auto Mechanical Technology	4
		Semester Total	**4**

Fourth Semester (Fall)			Credits
AUMT	2321	Auto Electrical Lighting and ACC	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
AUMT	2313	Automotive Drive Train and Axles	3
AUMT	2317	Automotive Engine Performance Analysis I	3
		Semester Total	**12**

Fifth Semester (Spring)			Credits
AUMT❖	2325	Automotive Automatic Transmission and Transaxle	3
AUMT❖	2334	Automotive Engine Performance Analysis II	3
AUMT❖	2311	Automotive Electronic Controls	3
GEN. ED		Academic Elective	3
		Semester Total	**12**

Sixth Semester (Summer)			Credits
AUMT	2480	Co-op - Auto Mechanical Technology	4
AUMT	2301	Automotive Management	3
		Semester Total	**7**

Toyota Technician Level 2
Toyota Technician

Certificate of Completion - Level 2

Total Credits: 49

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AUMT	1305	Introduction to Automotive Technology	3
AUMT	1307	Automotive Electrical Systems	3
AUMT	1310	Automotive Brake Systems	3
		Semester Total	**9**

^ Institutional Credit Only

Second Semester			Credits
AUMT	1316	Automotive Suspension and Steering Sys.	3
AUMT	1319	Automotive Engine Repair	3
AUMT	1345	Auto Heating and A/C	3
		Semester Total	**9**

Third Semester			Credits
AUMT	1480	Co-op - Auto Mechanical Technology	4
		Semester Total	**4**

Fourth Semester			Credits
AUMT	2321	Auto Electrical Lighting and Accessories	3
AUMT	2313	Automotive Drive Train and Axles	3
AUMT	2317	Automotive Engine Performance Analysis I	3
		Semester Total	**9**

Fifth Semester			Credits
AUMT❖	2334	Automotive Engine Performance Analysis II	3
AUMT❖	2311	Automotive Electronic Controls	3
EECT	1200	Technical Customer Service	2
AUMT❖	2325	Automotive Automatic Transmission and Transaxle	3
		Semester Total	**11**

Sixth Semester			Credits
AUMT	2480	Cooperative Education - Automobile/ Automotive Mechanics Technology/ Technician	4
AUMT	2301	Automotive Management	3
		Semester Total	**7**

❖ This course has been designated as a capstone course (see index for explanation).

Aviation Maintenance Technology

For every hour an airplane spends in the air, a technician must spend numerous hours on the ground performing routine maintenance. With strict Federal Aviation Administration (FAA) requirements and the large volume of commercial and private air traffic, graduates from Texas State Technical College's Aviation Maintenance Technology (AER) program are in big demand. The AER program at TSTC prepares individuals to apply to modern aircraft scientific knowledge to the installation, testing and maintenance of complex equipment.

In addition, TSTC is a FFA-certified program (#FT8T150Q) providing the training necessary to test for both the Airframe and Powerplant (A&P) ratings.

Instructors work closely with students to assist them in reaching their individual career preparation goals. With a low student-to-faculty ratio, the focus remains on the student.

TSTC Waco's program helps students prepare for employment in a variety of areas, from fixed-based operations at small airports, to jobs with major airlines in large metropolitan areas.

Associate of Applied Science Degree Program

The Aviation Maintenance Technology curriculum culminates in an Associate of Applied Science degree. To meet FAA requirements necessary to test for the Airframe and Powerplant written exams, you must complete the Associate of Applied Science Degree.

AER Advisory Committee

David Charro, L-3 Communications, Waco
Jeff Garrett, Air Impression, Waco
Pete Gotowko, L-3 Communications, Waco
Tom Guest, L-3 Communications, Waco
Will Lovins, L-3 Communications, Waco
Chris Perminter, Dal-Fort Aerospace, Dallas
Gayle Richiey, L-3 Communications, Waco
Randall Schaefer, Ram Aircraft Corp., Waco
Keith Shaw, Turbomeca, USA, Grand Prairie

Aviation Maintenance Technology
Aircraft Airframe Technology

Associate of Applied Science Degree

Total Credits: 62

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AERM	1315	Aviation Sciences	3
AERM	1314	Basic Electricity	3
AERM	1203	Shop Practices	2
AERM	1208	Federal Aviation Regulations	2
AIRP	1313	Introduction to Aviation	3
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
AERM	1205	Weight and Balance	2
AERM	1243	Instruments and Navigation/ Communication	2
MATH	1332	Contemporary Mathematics	3
AERM	1210	Ground Operations	2
AERM	1241	Wood, Fabric, and Finishes	2
AERM	1345	Airframe Electrical Systems	3
		Semester Total	**14**

Third Semester			Credits
AERM	1352	Aircraft Sheet Metal	3
AERM	1347	Airframe Auxiliary Systems	3
AERM	1253	Aircraft Welding	2
AERM	1254	Aircraft Composites	2
ENGL	1301	Composition I	3
		Semester Total	**13**

Fourth Semester			Credits
AERM	2233	Assembly and Rigging	2
AERM	1349	Hydraulic, Pneumatic, and Fuel Systems	3
AERM	1350	Landing Gear Systems	3
AERM	2231	Airframe Inspection	2
		Semester Total	**10**

Fifth Semester			Credits
ITSC	1309	Integrated Software Applications I	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
ELECTIVE		Approved General Psychology Elective	3
ELECTIVE		Approved Humanities Elective	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Aviation Maintenance Technology
Aircraft Powerplant

Associate of Applied Science Degree

Total Credits: 61

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AERM	1314	Basic Electricity	3
AERM	1315	Aviation Sciences	3
AERM	1208	Federal Aviation Regulations	2
AERM	1203	Shop Practices	2
AIRP	1313	Introduction to Aviation	3
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
MATH	1332	Contemporary Math	3
AERM	1210	Ground Operations	2
AERM	1351	Aircraft Turbine Engine Theory	3
AERM	1444	Aircraft Reciprocating Engines	4
AERM	1357	Fuel Metering and Induction Systems	3
AERM	1205	Weight and Balance	2
		Semester Total	**17**

Third Semester			Credits
AERM	1456	Aircraft Powerplant Electrical	4
AERM	2351	Aircraft Turbine Engine Overhaul	3
AERM	2447	Aircraft Reciprocating Engine Overhaul	4
AERM	1340	Aircraft Propellers	3
AERM	2252	Aircraft Powerplant Inspection	2
		Semester Total	**16**

Fourth Semester			Credits
ENGL	1301	Composition I	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
ACGM	X3XX	Gen Ed Social Science Course	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ITSC	1309	Integrated Software Applications I	3
		Semester Total	**15**

Aviation Maintenance Technology
Aircraft Powerplant Technician

Certificate of Completion

Total Credits: 40

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AERM	1205	Weight and Balance	2
AERM	1208	Federal Aviation Regulations	2
AERM	1210	Ground Operations	2
AERM	1314	Basic Electricity	3
AERM	1315	Aviation Science	3
AERM	1203	Shop Practices	2
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
AERM	1357	Fuel Metering and Induction Systems	3
AERM	1456	Aircraft Powerplant Electrical	4
AERM	2351	Aircraft Turbine Engine Overhaul	3
AERM	2447	Aircraft Reciprocating Engine Overhaul	4
		Semester Total	**14**

Third Semester			Credits
AERM	1340	Aircraft Propellers	3
AERM	1351	Aircraft Turbine Engine Theory	3
AERM	1444	Aircraft Reciprocating Engines	4
AERM	2252	Aircraft Powerplant Inspection	2
		Semester Total	**12**

Aviation Maintenance Technology
Airframe Mechanics Technician

Certificate of Completion

Total Credits: 41

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
AERM	1203	Shop Practices	2
AERM	1205	Weight and Balance	2
AERM	1208	Federal Aviation Regulations	2
AERM	1210	Ground Operations	2
AERM	1314	Basic Electricity	3
AERM	1315	Aviation Science	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
AERM	1241	Wood, Fabric, and Finishes	2
AERM	1345	Airframe Electrical Systems	3
AERM	1347	Airframe Auxiliary Systems	3
AERM	1352	Aircraft Sheet Metal	3
AERM	1243	Instruments and Navigation/ Communication	2
		Semester Total	**13**

Third Semester			Credits
AERM	2231	Airframe Inspection	2
AERM	1350	Landing Gear Systems	3
AERM	2233	Assembly and Rigging	2
AERM	1253	Aircraft Welding	2
AERM	1254	Aircraft Composites	2
AERM	1349	Hydraulic, Pneumatic, and Fuel Systems	3
		Semester Total	**14**

Avionics Technology

In the future world of Automatic Dependent Surveillance - Broadcast (ADS-B) and the FAA's Next Generation Air Transportation System (NextGen) blueprint, aviation technicians are going to need stronger skills than ever before in a technology that's crucial to flight – avionics.

Pilots depend upon avionic technicians to install, maintain and repair crucial flight equipment, including communication radios, transponders, digital audio systems, flight management computers, auto pilot systems and much more.

With a degree from TSTC's Avionics Technology, you can begin an interesting career that pays. TSTC's Avionics Technology offers both an associate degree and certificate program that provide the intricate skills and technical training needed to succeed in this field. Expert faculty with practical field experience, an advisory board offering the latest industry information and critical hands-on experience on first-rate technical equipment can lead to a successful career as a professional avionics technician.

Students in the technology will have access to the only avionics training facility in Texas that has been approved by the Federal Aviation Administration (FAA) as a Certified Repair Station (CRS #FT8R150Q). The lab is a fully functional repair facility authorized by the FAA to perform real maintenance on real aircraft.

The curriculum includes college-transferable courses in science, mathematics and English required for the Associate of Applied Science degree, and helps prepare students to obtain the Federal Communication Commission's General Radiotelephone Operator's License.

Associate of Applied Science Degree Program

Through the Avionics Technology at TSTC, you can learn the intricate skills required for today's specialized aviation electronics. You can choose the two-year Avionics Technology curriculum, which culminates in an Associate of Applied Science degree.

Certificate Program

TSTC also offers a Ramp Testing Certificate, which teaches students to analyze the operation of avionics systems aboard aircraft, isolate malfunctioning equipment and remove and repair faulty units.

Avionics Technology Advisory Committee

Mike Adamson, Aircraft Electronics Association Educational Foundation, Independence, Mo.
Henry Billingsly, Aurora Avionics, McGregor
Miguel Correa, Cal Labs Inc., Dallas
Jim Glodfelty, Dac International, Austin
Sean Maddox, Duncan Aviation, Houston
Mike Majors, Engineer Addisoft Consulting, Waco
James Miller, Brazos Avionics Inc., Houston
Kerry Nobles, Dallas Avionics Inc., Dallas
Robert Schneier, Free Flight Systems, Waco
David Scott, Dallas Avionics, Dallas
Tim Taylor, Free Flight Systems, Waco
Tim Tonkin, L-3 Communications, Waco

Avionics Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
IEIR	1302	Introduction to Direct Current	3
AVNC	1303	Introduction to Aviation Electronics Systems	3
AVNC	1343	Aviation Electrical and Electrical Systems Installation	3
AIRP	1313	Introduction to Aviation	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
IEIR	1304	Alternating Current for Industrial Operations	3
AVNC	1353	Operational Testing of Aviation Electronic Systems	3
AVNC	2308	Aviation Electrical and Electronic System Installation II	3
CSIR	2301	Communications Electronic Components	3
		Semester Total	**12**

Third Semester			Credits
CETT	1325	Digital Principles and Devices	3
CSIR	1344	General Communications Circuits I	3
AVNC	1306	FAA Regulations for Avionics Certified Repair Stations	3
AVNC	2330	Aviation Electronics Printed Wire Assemblies Repair and Rework	3
		Semester Total	**12**

Fourth Semester			Credits
MATH	1332	Contemporary Mathematics I	3
ENGL	1301	Composition I	3
AVNC	2304	Foundations in Avionics Equipment Component Level Repairs	3
AVNC	1325	Emerging Technologies in Aviation Electronic Systems	3
		Semester Total	**12**

Fifth Semester			Credits
AVNC	2345	Aviation Navigational Equipment Component Level Repair	3
AVNC	2350	Aviation Pulsed RF Equipment Component Level Repair	3
HUMA	1301	Humanities	3
PSYC	2301	Psychology	3
		Semester Total	**12**

Sixth Semester			Credits
ACGM	X3XX	Gen Ed Elective	3
AVNC❖	2355	Advanced Aviation Electronics Troubleshooting	3
AVNC	2357	Aviation Communications Component Level Repair	3
CSIR	1355	Industry Certifications	3
		Semester Total	**12**

Avionics Ramp Testing

Certificate of Completion

Total Credits: 42

First Semester			Credits
TECH^	1100	Tech Success	
CTEX	10XX	Tech Success Seminars (3 as assigned)	1
AVNC	1303	Introduction to Aviation Electronics Systems	3
AVNC	1325	Emerging Technologies in Aviation Electronic Systems	3
AVNC	1343	Aviation Electrical and Electronic Systems Installation	3
AIRP	1313	Introduction to Aviation	3
IEIR	1302	Introduction to Direct Current Circuits	3
		Semester Total	**15**

^ Institutional Credit Only

Second Semester			Credits
AVNC	1353	Operational Testing of Aviation Electronic Systems	3
AVNC	2308	Aviation Electrical and Electronic System Installation II	3
CSIR	2301	Communications Electronic Components	3
IEIR	1304	Alternating Current (TP)	3
		Semester Total	**12**

Third Semester			Credits
AVNC	1306	FAA Regulations for Avionics Certified Repair Stations	3
AVNC❖	2330	Aviation Electronics Printed Wire Assemblies Repair and Rework	3
CETT	1325	Digital Principles and Devices (TP)	3
CSIR	1344	General Communications Circuits	3
CSIR	1355	Industry Certifications	3
		Semester Total	**15**

❖ This course has been designated as a capstone course (see index for explanation).

Biomedical Equipment Technology

Biomedical equipment technicians are a vital component of the healthcare delivery system. Without them, hospitals, clinics and other entities would be unable to function properly.

This means a bright future for those who want to enter the field. The medical equipment repair sector is projected by the U.S. Department of Labor to increase 22 percent through 2016 — much faster than the average for all occupations — as a result of increased demand for medical services and the increasing complexity of equipment.

Biomedical equipment technicians work on equipment such as defibrillators, heart monitors, medical imaging equipment (X-rays, CAT scanners and ultrasound equipment), voice-controlled operating tables and electric wheelchairs. Much of the equipment is valued at millions of dollars. The industry will need sharp, professional technicians that can inspect, calibrate, maintain, troubleshoot and repair this critical medical equipment.

TSTC's Biomedical Equipment Technology (BET) can provide you with critical skills and training to enter into this typically recession-proof field. Industry-experienced staff, top-notch equipment and an advisory board comprised of industry experts are just a few of the benefits you'll gain in the biomedical equipment technology program.

Associate of Applied Science Degree Program

TSTC offers a two-year curriculum track which culminates in an associate's degree in Biomedical Equipment Technology.

Tech Prep Associate of Applied Science Degree Program

BET also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree with advanced skills.

BET Advisory Committee

Stu Abrams, Eagle Mountain Associates, League City
Richard Berry, Methodist Willowbrook Hospital, Houston
Jeff Carlier, Parkland Hospital, Dallas
Scott Chandler, Electro Medical Analysis Inc., Kirbyville
Richard Dubord, Aramark, Norman, Okla.
Gary Franklin, Methodist Hospital, San Antonio
Ron Greenwalt, Children's Medical Center of Dallas, Dallas
Ernie Kacher, Methodist Hospital, Houston
Tim Lecuyer, MD Anderson Cancer Center, Houston
Gary Lucht, Central Texas Veterans Healthcare System, Temple
David Merkel, Vanguard Resources, Greenville
Matthew Michalec, Spacelabs Medical, Dallas
Brian Montgomery, Crest Services, Lewisville
Mike Overcash, Hillcrest Hospital, Waco
Ricky Powers, Vanguard Resources, San Antonio
Gene Schott, Community Health Systems, Victoria
Brian Smith, Crest Services, Lewisville
Scott Sovocool, Community Health Systems, Grandbury
Doug Stephens, Stephens International Recruiting Inc., Lakeview, Ark.
Andrew Stiles, St. Joseph Regional Health Center, Bryan
Jason Wagner, Philips Medical Services, Mobile, Ala.
Greg Wallace, Healthcare Biomedical Services-Waco, Waco
Doug Watson, Aramark, Waco

Biomedical Equipment Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
IEIR	1371	DC/AC Electronics	3
BIOM	1101	Biomedical Equipment Technology	1
BIOM	1205	Soldering Skills and Shop Safety	2
ITSC	1325	Personal Computer Hardware	3
ENGL	1301	Composition I	3
MATH	1332	College Math	3
		Semester Total	**15**

^ Institutional Credit Only

Second Semester			Credits
BIOM	1309	Applied Biomed Equipment Technology	3
CETT	1379	Solid State Components and Applications	3
ITNW	1325	Fundamentals of Networking Technologies*	3
ACGM	X3XX	Gen Ed Humanities Fine Arts Course	3
ACGM	X3XX	Gen Ed Social Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
BIOM	2311	General Medical Equipment I	3
BIOM	1341	Medical Circuits/Troubleshooting	3
BIOM	2301	Safety in Healthcare Facilities	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**12**

Fourth Semester			Credits
BIOM	1315	Medical Equipment Networks	3
BIOM	1350	Diagnostic Ultrasound Imaging Systems	3
BIOM	2319	Fundamentals of X-ray and Medical Imaging Systems	3
BIOM	2315	Physiological Instruments I	3
		Semester Total	**12**

Fifth Semester			Credits
BIOM	2331	Biomedical Clinical Instrumentation	3
BIOM	2339	Physiological Instruments II	3
BIOM	2343	General Medical Equipment II	3
BIOM❖	2357	Biomedical Equipment Proficiency Review	3
		Semester Total	**12**

Sixth Semester			Credits
BIOM	2680	Cooperative Education - Biomedical Technology/Technician	6
		Semester Total	**6**

❖ This course has been designated as a capstone course (see index for explanation).

Medical Imaging Systems Technology

Specialization of Biomedical Equipment Technology

The Biomedical Equipment Technology department at TSTC developed the Medical Imaging Systems Technology program to focus on the repair of medical imaging equipment used in a variety of healthcare facilities. This program is the first training program in the nation among two-year colleges to provide service technician training for X-ray, computerized tomography, nuclear medicine, ultrasound equipment and magnetic resonance imaging.

Students get hands-on experience on excellent equipment, such as a GE CIT High Speed Single Slice Scanner, valued at approximately $100,000. Students who train in the program get lots of lab time, ensuring they are work-ready when they hit the market.

Associate of Applied Science Degree Program

The two-year Medical Imaging Systems Technology program offers specialized, hands-on instruction focusing on X-ray machines and other imaging modalities such as ultrasound, computerized tomography (CT Scan) and nuclear medicine equipment. The curriculum culminates in an Associate of Applied Science degree.

Medical Imaging Systems Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
IEIR	1371	DC/AC Electronics	3
BIOM	1101	Biomedical Equipment Technology	1
BIOM	1205	Soldering Skills and Shop Safety (TP)	2
ENGL	1301	Composition I	3
ITSC	1325	Personal Computer Hardware	3
MATH	1332	Contemporary Mathematics I*	3
		Semester Total	**15**

^Institutional credit only

Second Semester			Credits
ACGM	X3XX	Gen Ed Humanitie/Fine Arts Course*	3
CETT	1379	Solid State Components & Applications	3
BIOM	1309	Applied Biomedical Equipment Technology	3
ITNW	1325	Fundamentals of Networking	3
ACGM	X3XX	Gen Ed Social Sciences Course*	3
		Semester Total	**15**

Third Semester			Credits
CHEM	1305	Introductory Chemistry I	3
BIOM	1341	Medical Circuits/Troubleshooting	3
BIOM	2301	Safety in Healthcare Facilities	3
BIOM	2311	General Medical Equipment I	3
		Semester Total	**12**

Fourth Semester			Credits
BIOM	1350	Diagnostic Ultrasound Imaging System	3
BIOM	2315	Physiological Instruments I	3
BIOM	1315	Medical Equipment Networks	3
BIOM	2319	Fundamentals of X-ray and Medical Imaging Systems	3
		Semester Total	**12**

Fifth Semester			Credits
BIOM	2347	R/F X-ray systems	3
BIOM	2333	Digital Radiography	3
BIOM	2345	Advanced Imaging Systems	3
BIOM	2377	Medical Imaging Communication and Storage	3
		Semester Total	**12**

Sixth Semester			Credits
BIOM	2680	Cooperative Education-Biomedical Technology/Techician*	6
		Semester Total	**6**

*See the department for a list of **approved** electives required in Math/Science, Humanities, Social/Behavioral Science or other course sequences that can be substituted for this course.

❖ This course has been designated as a capstone course (see index for explanation).

Building Construction Technology

The current climate in Texas bodes well for those in the building construction industry, as it does in the entire U.S. In fact, construction is one of the nation's largest industries and one that maintains the most consistent job growth.

It's also an industry that typically pays above-average wages and offers plenty of job opportunities. The U.S. Department of Labor reports that earnings in construction are higher than the average for all industries.

But, to get started in the field will take exceptional training. With TSTC's Building Construction Technology, you quickly learn the skills you need to get started in this lucrative career.

Students in the program get the hands-on experience required to succeed in this industry. Coursework includes blueprint reading and sketching, OSHA regulations, floor and wall systems, concrete, exterior and interior finishes, roof systems, masonry and more. Labs are conducted both on campus and off for plenty of practice in the field.

TSTC's expert staff also have actual field experience, while the labs feature state-of-the-art equipment and tools. This, and industry advisors who contribute first-hand knowledge and fresh input, are just a few of the advantages offered at TSTC that can provide you with extraordinary advantages come hiring time.

Associate of Applied Science Degree Program

In TSTC's two-year Building Construction Technology program, you can learn the key elements it takes to build a career in this field. Students in this technology get crucial hands-on experience on the latest tools in the industry, backed by a knowledgeable staff and advisors in key positions within the industry. With an Associate of Applied Science degree, you can find excellent job opportunities not only in Texas, but throughout the country.

Certificate Program

TSTC also offers certificate options in Building Construction Craftsman and Residential Energy Efficiency Specialist that can help you learn specific skills in a shorter amount of time. The Building Construction Craftsman course that covers the important basics of building construction craftsmanship, including roof, floor and exterior finish systems, as well as OSHA regulations, communicating with trades, and other important courses.

Building Construction Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CNBT	1416	Construction Technology I	4
CNBT	2310	Commercial/Industrial Blueprint Reading	3
CNBT	1315	Field Engineering I	3
OSHT	1405	OSHA Regulations - Construction Industry	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
CNBT	1342	Building Codes and Inspections	3
CRPT	1315	Conventional Wall Systems	3
CRPT	1323	Floor Systems	3
CNBT	1449	Concrete - Commercial and Industrial	4
ACGM	X3XX	Gen Ed Math/Natural Sciences Courses	3
		Semester Total	**16**

Third Semester			Credits
CRPT	1341	Conventional Exterior Finish Systems*	3
CRPT	1345	Conventional Interior Finish Systems	3
CRPT	1411	Conventional Roof Systems	4
ENGL	1301	Composition I	3
		Semester Total	**13**

Fourth Semester			Credits
CNBT	1346	Construction Estimating I	3
WDWK	1413	Cabinet Making I	4
CNBT	1302	Mechanical, Plumbing and Electrical Systems in Construction I	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Courses	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Courses	3
		Semester Total	**16**

Fifth Semester			Credits
CNBT	2342	Construction Management I	3
MBST	1407	Masonry I	4
PFPB	2308	Piping Standards and Materials	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**13**

*See the department for a list of **approved** academic/general education electives, including cooperative educational opportunities, that can be substituted for this course.

Building Construction Craftsman

Certificate of Completion

Total Credits: 41

First Semester			Credits
TECH^	1100	Tech Success	
CTEX	10XX	Tech Success Seminars (3 as assigned)	1
OSHT	1405	OSHA Regulations - Construction Industry	4
CNBT	1416	Construction Technology I	4
CNBT	2310	Commercial/Industrial Blueprint Reading	3
TECM	1303	Technical Mathematics	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
CRPT	1315	Conventional Wall Systems	3
CRPT	1323	Floor Systems	3
CNBT	1449	Concrete - Commercial and Industrial	4
MBST	1407	Masonry I	4
		Semester Total	**14**

Third Semester			Credits
CRPT❖	1341	Conventional Exterior Finish Systems**	3
CRPT	1345	Conventional Interior Finish Systems	3
CRPT	1411	Conventional Roof Systems	4
PFPB	2308	Piping Standards and Materials	3
		Semester Total	**13**

** CNBT 2380 or CNBT 2680 (Co-op) may be taken in place of the capstone course.

❖ This course has been designated as a capstone course (see index for explanation).

Residential Energy Efficiency Specialist

Certificate of Completion

Total Credits: 27

First Semester			Credits
TECH^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
CNBT	1302	Mechanical, Plumbing & Electrical Systems in Construction I	3
CNBT	2310	Commercial/Industrial Blueprint Reading	3
EECT	1300	Technical Customer Service	3
RBPT	1400	Fundamentals of Residential Building Science	4
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
CNBT	2317	Green Building	3
HART	1451	Energy Management	4
RBPT	2450	Residential Retrofit Strategies	4
WECM	X3XX	Technical Elective	3
		Semester Total	**14**

Chemical/Environmental Laboratory Technology

Chemical technicians play a vital role in the ongoing search to solve problems through research and development, helping to invent and improve products and processes and even cure diseases.

As laboratory instrumentation and procedures have become more complex, the role of science technicians has expanded. Chemical technicians set up, operate and maintain laboratory instruments; monitor experiments; make observations; calculate and record results; and other important tasks to help science continue its march toward progress.

Careers are available in many industries, from petrochemical and semiconductor manufacturing, to textiles, plastics and agricultural professions. Job opportunities are usually best for those who have received hands-on education on equipment used in laboratories or production facilities – like those available at TSTC.

TSTC's Chemical/Environmental Technology (CHT) program can help students learn the skills needed in this complex profession. Students get the most up-to-date training, backed by knowledgeable, experienced staff and industry-standard equipment to ensure they are ready to hit the job market fully prepared.

And CHT is one of only two programs in Texas approved by the American Chemical Society!

Associate of Applied Science Degree Program

In TSTC's two-year Chemical/Environmental Laboratory Technology program, you can learn the basic chemical processes and have access to equipment such as chromatographs, spectrometers, mass spectrophotometers, as well as work in a wet chemical laboratory. With an Associate of Applied Science degree in Chemical/Environmental Laboratory Technology, you can look forward to excellent career opportunities and outstanding starting salaries.

Tech Prep Associate of Applied Science Degree Program

CHT also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree with advanced skills.

The Chemical/Environmental Laboratory Technology department requires that students demonstrate basic reading, writing and mathematical skills before enrolling.

CHT Advisory Committee

David Anderson, Dynamac, Richardson
Walter Dunlap, Huntsman Chemicals, The Woodlands
Ruben Gonzalez, Conoco Phillips, Sweeny
Gary Gruber, Consultant, Lorena
Steve Hawkes, Albemarle Corp., Pasadena
William Heiser, Advanced Concepts & Technology I (ACT-I), Waco
Carolyn Kane-Kraus, Consultant, Irving
Tim McCormick, Chevron Phillips Chemical Co., Kingwood
Oscar Polk, Eastman Chemical Co., Longview
Beth Poole, SIEP-EPU Woodcreek, Houston
Joseph Sharold, Equistar Chemicals LP, Channelview
William Walton, GE Water & Processing Technology, The Woodlands
Cynthia Windle, Marathonnorco Aerospace Inc., Waco

Chemical/Environmental Laboratory Technology

Associate of Applied Science Degree

Total Credits: 69

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CHEM	1305	Introductory Chemistry I	3
CHEM	1105	Introductory Chemistry I Lab	1
CTEC	1113	Introduction to Chemical Technology	1
CTEC	1205	Chemical Calculations I	2
ENGL	1301	Composition I	3
MATH	1314	College Algebra	3
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
CHEM	1307	Introductory Chemistry II	3
CHEM	1107	Introductory Chemistry II Lab	1
CTEC	1206	Chemical Calculations II	2
CTEC	1345	Chemical Laboratory Safety	3
ITSC	1309	Integrated Software Applications I	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Third Semester			Credits
CHEM	2323	Organic Chemistry I	3
CHEM	2123	Organic Chemistry I Lab	1
SCIT	1543	Applied Analytical Chemistry	5
PHYS	1401	College Physics I	4
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**16**

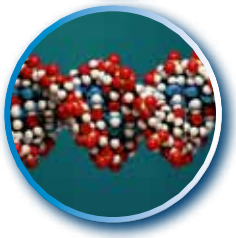
Fourth Semester			Credits
CHEM	2325	Organic Chemistry II	3
CHEM	2125	Organic Chemistry II Lab	1
CTEC	1441	Applied Instrumental Analysis I	4
CTEC	2445	Unit Operations	4
		Semester Total	**12**

Fifth Semester			Credits
CTEC	1349	Environmental Chemistry	3
CTEC❖	2333	Comprehensive Studies in Chemical Technology	3
CTEC	2431	Applied Instrumental Analysis II	4
EPCT	2335	Advanced Environmental Instrumental Analysis*	3
		Semester Total	**13**

* See the department for a list of **approved** academic/general education electives that can be substituted for this course.

❖ This course has been designated as a capstone course (see index for explanation).

Science, Technology, Engineering & Mathematics



Computer Maintenance Technology

Computers have become an integral part of everyday life at home, work and school, and the monumental rate at which the technology has advanced has opened the doors to ever-expanding career opportunities for individuals who can keep pace with the technology.

Computer Maintenance Technology (CMT) at TSTC provides an intense, broad-based instructional program designed to develop technicians who can do just that.

While there are many paths of entry to a computer maintenance degree, TSTC's Computer Maintenance Technology program provides a swift, sure way to ensure you have the skills it takes to land that job at hiring time. As a technology that is continually evolving, technicians will learn not only the basics, but how to troubleshoot future problems and stay on top of the rapidly changing industry.

The CMT program features an industry-experienced staff with an advisory committee that ensures all programs are current. Courses cover everything from basic electronics to multimedia and data acquisition. CMT has specifically designed its curriculum to educate strategic thinkers who can accommodate the computers of today and tomorrow.

Associate of Applied Science Degree Program

In the two-year Computer Maintenance Technology program, you can learn computer operations, electronics, troubleshooting and repair skills. The curriculum also covers Local and Wide Area Networks, data and telecommunications, and computer integration. The CMT Associate of Applied Science degree focuses on design, installation and maintenance of computer systems in stand-alone, LAN and WAN environments, as well.

Tech Prep Associate of Applied Science Degree Program

CMT also offers a Tech Prep program. The competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

Certificate Program

TSTC also offers a Computer Maintenance Cetificate of Completion option that covers the important basics of system maintenance.

The Computer Maintenance Technology department recommends the completion of two units of high school algebra and at least one unit of science, preferably physics, before starting the curriculum. The program also requires that students demonstrate basic reading, writing and mathematical skills before enrolling.

CMT Advisory Committee

Chad Baucum, Farm Credit Bank, Round Rock
Paul Gerhardt, Synergy Residential Services, Waco
Rusty Haferkamp, RKH Consulting, Waco
Larry Kaska, LaVega I.S.D., Waco
Peter Lange, AVAI Ventures, Austin
Andrea Lively, Waco I.S.D., Waco
James Matus, Brazos River Authority, Waco
Jeff McEntire, TCEQ, Marble Falls
Dale Norwood, Waco I.S.D., Waco
Dick Perley, Fultron Systems, Waco
Charles Sanders, HOT Network Consultants, Waco
David Sandlin, Pilgrim's Pride, Waco
Mike Searight, MCC, Waco

Computer Maintenance Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSY	1300	Fundamentals of Information Security	3
ITSE	1329	Programming Logic and Design	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
CPMT	1304	Microcomputer System Software	3
IEIR	1371	Electricity Principles	3
ITNW	1325	Fundamentals of Networking Technologies	3
ITSC	1325	Personal Computer Hardware	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
CPMT	1307	Electronic and Computer Skills	3
CPMT	1345	Computer Systems Maintenance	3
CPMT	1349	Computer Networking Technology	3
CPMT	2345	Computer System Troubleshooting	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fourth Semester			Credits
CPMT	1343	Microcomputer Architecture	3
CPMT	1347	Computer System Peripherals	3
CPMT	2337	Microcomputer Interfacing	3
CPMT	2349	Advanced Computer Networking Technology	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fifth Semester			Credits
CPMT	2333	Computer Integration	3
CPMT❖	2350	Industry Certifications	3
CSIR	1359	Digital Data Communication	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Computer Maintenance Technician

Certificate of Completion

Total Credits: 36

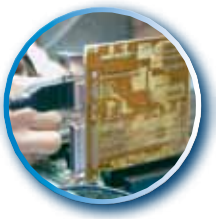
First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1304	Microcomputer System Software	3
IEIR	1371	Electricity Principles	3
ITSC	1325	Personal Computer Hardware	3
LAWT	1301	Copyright and Ethical Issues	3
		Semester Total	**12**

^ Institutional Credit Only

Second Semester			Credits
CPMT	1307	Electronic and Computer Skills	3
CPMT	1345	Computer Systems Maintenance	3
CPMT	1349	Computer Networking Technology	3
POFT	1301	Business English	3
		Semester Total	**12**

Third Semester			Credits
CPMT	1347	Computer System Peripherals	3
CPMT	2333	Computer Integration	3
CPMT	2345	Computer System Troubleshooting	3
CPMT	2349	Advanced Computer Networking Technology	3
		Semester Total	**12**

Courses and course sequencing are subject to change to meet student and/or department needs.


Home Technology Integration

Specialization of Computer Maintenance Technology

One of the most exciting and upcoming areas of CMT is Home Technology Integration. Everyone from construction giants to homeowners is now integrating this technology into their building plans.

"Smart" homes are not necessarily new to the market, but what has changed is the total integration of the home or business environment — from turning on the oven to viewing your internal environment while away — and its affordability.

Career opportunities exist for technicians with the skills needed to design, install and maintain the subsystems necessary to integrate these high-tech home products.

In the CMT program, students can earn a certificate in Home Technology Integration where they get real-world experience working in a house on campus. The program teaches students a wide range of skills, including electronics, residential wiring, A/C controls, networking, firewalls, audio/video networks, security systems and more.

Home Technology Integration

Certificate of Completion

Total Credits: 35

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
EECT	1200	Technical Customer Service	2
CPMT	1304	Microcomputer System Software	3
CPMT	2302	Home Technology Integration	3
CETT	1371	Electrical Principles and Applications	3
		Semester Total	**11**

^Institutional Credit Only

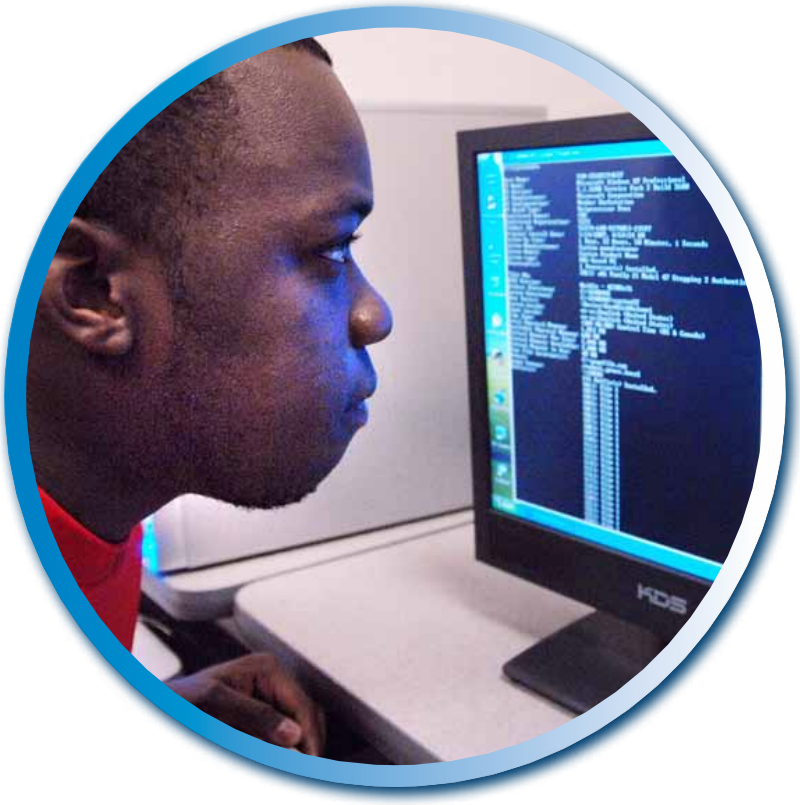
Second Semester			Credits
EECT	1340	Telecommunications Transmission Media	3
ELPT	1329	Residential Wiring	3
CPMT	1345	Computer Systems Maintenance	3
CPMT	1349	Computer Networking Technology	3
		Semester Total	**12**

Third Semester			Credits
ITSY	2301	Firewalls and Network Security	3
EEIR	1307	Introductory Security Systems	3
CPMT❖	2370	Home Automation	3
CPMT	2371	Audio/Video Networks	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Computer Networking & Systems Administration

We live in an increasingly interconnected world, where virtually any serious business must plug in — to computers, that is. More and more, the demand for a strong network to keep business running smoothly continues to increase, even in smaller organizations.



Behind the scenes, there are opportunities evolving into some of the most important positions in a company: network and systems administrators. In fact, is it so vital the federal government lists it among its top 50 in-demand occupations and is actively encouraging people to enter the field.

At TSTC, you can gain the critical skills and knowledge you need to enter the industry. The Computer Networking & Systems Administration Technology (CNS) program prepares technicians to build, manage and maintain communication systems through a variety of associate degrees and certifications. Depending upon your interest, you can choose to become a system administrator and/or specialize in Microsoft network environment.

Through classroom instruction and hands-on training, students learn everything from client and server operating systems to Cisco equipment, Microsoft, UNIX, Linux and much more.

Associate of Applied Science Degree Program

The two-year CNS program includes classroom and laboratory instruction that focuses on building extensive experience in Microsoft, Novell Netware and UNIX System Administration. The Associate of Applied Science degree program includes courses covering client operating systems, server operating systems, Cisco equipment, UNIX, Linux, Windows Network strategies, network cabling systems, Local Area Network (LAN) design and management, network protocol design and implementation and internetworking of multi-vendor and divergent systems.

Certificate Program

TSTC also offers a Computer Networking & Systems Administration Certificate of Completion, designed specifically for individuals already active in the computer industry, who already have a strong basic knowledge of computers or those already holding degrees or industry certifications who want to add to or update their skill base.

Tech Prep Associate of Applied Science Degree Program

CNS also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

Computer Networking & Systems Administration requires that students demonstrate basic reading, writing and mathematical skills before enrolling.

CNS Advisory Committee

Jay Allen, Torchmark, McKinney
Cully Bennefield, Baylor University, Waco
Carlos Gomez, Americas L&D, Round Rock
Melanie Hoag, Southwestern University, Georgetown
Jim Hudson, Dell Computers, Round Rock
Pat Hykkonen, Container Store, Carrollton
Paul Ingram, Perseus, Round Rock
Charlie Jackson, Forney ISD, Forney
Terry Joy, University of Texas - Austin, Austin
Joseph Juchniewicz, Accudata Systems Inc., Dallas
Jeannie Kotch, Reynolds & Reynolds, College Station
Jeremy Lange, Curves International, Woodway
Richard Leonburger, PC Networking Services, Waco
Way Matthews, Geotrace, Houston
Rick Mattocks, ITS Business Affairs-Baylor University, Waco
Robert Maurer, Kerrville Public Utility Board, Kerrville
Mike Mellina, AT&T, Waco
William Menger, ConocoPhillips, Houston
Matthew Michalec, Spacelabs, ANOSI Systems Co., Lewisville
Eric Reyes, Round Rock
Manny Robinson, First American Flood Data Services, Austin
William Roming, Spectra Logic, Troy
Brandon Tomlinson, Baylor University, Waco
Tommy Trogden, XIOtech-A Seagate Company, Austin

John Uptmore, Alcon Labs, Fort Worth
Patrick Wallek, Wilsonart International Inc., Temple
Larry Whitfill, Cisco Systems, Austin
Jerry Zotigh, Hourglass, Computer Service Center, Waco

Computer Networking & Systems Administration

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
ITSY	1300	Fundamentals of Information Security	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ITNW	1308	Implementing and Supporting Client Operating Systems	3
ITNW	1325	Fundamentals of Networking Technologies	3
ITSC	1325	Personal Computer Hardware	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Third Semester			Credits
BMGT	1309	Information and Project Management	3
ITNW	1345	Implementing Network Directory Services	3
ITCC	1301	Cisco Exploration 1 - Network Fundamentals	3
ITSC	1316	Linux Installation and Configuration	3
ENGL	2311	Technical Writing	3
		Semester Total	**15**

Fourth Semester			Credits
ITCC	1304	Cisco Exploration 2 - Routing Protocols and Concepts	3
ITCC	2308	Cisco Exploration 3 - LAN Switching and Wireless	3
ITNW	1353	Supporting Network Server Infrastructure	3
WECM	X3XX	Technical Elective	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fifth Semester			Credits
ITCC	2310	Cisco Exploration 4 - Accessing the WAN	3
ITNW	1354	Implementing and Supporting Servers	3
ITNW	2350	Enterprise Network	3
ITNW	2354	Internet/Intranet Server	3
		Semester Total	**12**

Note: See the department for a list of **approved** courses that can be substituted

System Administration

The System Aministration Certificate of Completion is designed for those who want to learn the basic networking skills in a shorter period of time. This program can be completed in as little as three semesters. The certificate includes courses in hardware, desktop support, Cisco networking, Microsoft networking, Internet technologies and basic problem-solving logic.

Systems Administration

Certificate of Completion

Total Credits: 42

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITNW	1325	Fundamentals of Networking Technologies	3
ITSC	1325	Personal Computer Hardware	3
ITSY	1300	Fundamentals of Information Security	3
		Semester Totals	**12**

^Institutional Credit Only

Second Semester			Credits
ITCC	1301	Cisco Exploration 1 - Network Fundamentals	3
ITNW	1308	Implementing and Supporting Client Operating Systems	3
ITNW	1345	Implementing Network Directory Services	3
ITNW	2321	Networking with TCP/IP	3
ITSC	1316	Linux Installation and Configuration	3
		Semester Totals	**15**

Third Semester			Credits
ITCC	1304	Cisco Exploration 2 - Routing Protocols and Concepts	3
ITNW	1354	Implementing and Supporting Servers	3
ITNW	2354	Internet/Intranet Server	3
ITSC	1358	UNIX System Administration I	3
ITSY	2301	Firewalls and Network Security	3
		Semester Total	**15**

Computer Science Technology

The need for software development professionals has mushroomed to meet rapidly changing technology demands. As programmers retire and more advanced programs are needed, the demand is rapidly increasing.

TSTC's Computer Science Technology (CST) uses several system platforms such as Windows server, Oracle Server and Microsoft SQL server systems in the development of software. Workstations in the CST labs are interfaced through a departmental framework that provides local, as well as intra-net resources, giving the developer a realistic experience. CST offers a variety of specializations to help focus more closely on your field of choice.

CST offers intense instruction to learn the fundamentals and then progress to intermediate and more advanced levels of programming. CST students gain the techniques used to write, test and maintain the detailed instructions computers follow to perform functions. With concentrated hands-on courses, CST majors develop the technical skills needed to design, test and implement logical software applications used in the industry. Companies around the world diligently seek such computer programmers, game developers and software engineers.

CST faculty members are experienced in computer science, art, business, engineering and mathematics. An advisory committee of industry leaders guides the program in maintaining the most current applicable curriculum for careers in this exciting and rewarding field.

CST Advisory Committee

Ron Barnett, Complete Systems Inc., Waco
Robert Black, Central Freight Line Systems Inc., Waco
Michael Dye, Central Freight Line Systems Inc., Wichita Falls
Joel Jackson, Cubix Software Inc., Longview
Shane Jensen, Texas Farm Bureau, Waco
Randy Massingill, American Income Life Insurance, Waco
Ed Middlebrook, Central Freight Lines, Waco
Bill Tanner, University of Mary Hardin-Baylor, Belton
Aaron Thibault, Gearbox Software, Plano
Mark Wilcox, Cubix Software Inc., Longview

Business Applications Programming

Specialization of Computer Science Technology

The Business Applications Programming degree is a specialization in the Computer Science Technology. The maturing of network technology has made possible the distribution of data and computing over a variety of hardware and software platforms. User-friendly graphical interfaces running on a client system can access data that is available to multiple users across a network. A growing number of businesses and organizations are using the Internet to collaborate with customers, clients, and suppliers. The curriculum for this specialization begins with fundamental programming, database, and networking concepts.

As a student, you will receive training using programming languages such as, C++, C#, Visual Basic, Java, and ASP. You will receive hands-on training with Server-based database implementation and applications, including Microsoft SQL Server, Microsoft IIS, Oracle 11g, and ASP application server. In addition, deployment of information using Internet technology is covered in several courses. .

Associate of Applied Science Degree Program

Upon successful completion of the requirements, TSTC will award you an Associate of Applied Science degree. As a graduate, you can seek positions in the industry as an entry-level programmer with knowledge and skills applicable to a client/server environment.

Industry Certification

Microsoft Corporation offers a series of examinations leading to Microsoft Certified Solutions Developer (MCSD) and other Microsoft certifications, which students are encouraged to pursue.

Computer Science Technology Business Applications Programming

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
ITSY	1300	Fundamentals of Information Security	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ITSE	1345	Introduction to Oracle SQL	3
ITSE	1307	Introduction to C++ Programming	3
MATH	1314	College Algebra	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**12**

Third Semester			Credits
ITSE	1332	Introduction to Visual Basic.NET Programming	3
ITSE	2333	Implementing a Database on Microsoft SQL Server	3
ITSE	2317	Java Programming	3
ITSE	2331	Advanced C++ Programming	3
		Semester Total	**12**

Fourth Semester			Credits
ITSE	1330	Introduction to C# Programming	3
ITSE	2334	Advanced Visual Basic.NET Programming	3
ITSE	2345	Data Structures	3
ITSE	2354	Advanced Oracle PL/SQL	3
		Semester Total	**12**

Fifth Semester			Credits
INEW	2330	Comprehensive Software Project: Planning and Design	3
ITSE	2353	Advanced C# Programming	3
ITSE	1350	System Analysis and Design	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Sixth Semester			Credits
INEW❖	2332	Comprehensive Software Project: Coding, Testing, and Implementation	3
ITSE	1392	Special Topics in Computer Programming	3
ENGL	2311	Technical Writing	3
		Semester Total	**9**

❖ This course has been designated as a capstone course (see index for explanation).

Graphics, Gaming & Simulation Design

Specialization of Computer Science Technology

The Graphics, Gaming, and Simulation Design degree is a specialization in the Computer Science Technology. Our faculty expertise, multiple computer labs, and industry contacts provide the students the advantage they need to get ahead and make a place for them in the game industry.

The curriculum for the designers specializes in game modeling, texturing, animation and game scripting. We use the latest industry-standard software, including 3ds Max, Photoshop, MotionBuilder, Mudbox and the Unity game engine.

As a student, you will receive hands-on instruction in techniques ranging from low poly modeling to high poly modeling, and from unwrapping to texture creations. You will also receive training on our Vicon8i Motion Capture system, which is used extensively in project development throughout multiple courses. Many companies today use the motion capture, including medical science to advance research, business to conduct trade, and even education to create innovative learning environments. In addition, the specialization introduces the student to design and creation of systems and programs that meet the graphics and simulation needs of business and industry.

Associate of Applied Science Degree Program

Upon successful completion of the requirements, TSTC will award you an Associate of Applied Science degree. As a graduate, you can seek positions in the industry as an entry-level animator, design artist, and more. Graduates have found employment in such places as NASA, Rockstar, Big Huge Games, Energyz Studios, and GearBox Software, among others.

Computer Science Technology
Graphics, Gaming & Simulation Design

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
ARTC	1302	Digital Imaging I	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
GAME	1306	Design and Creation of Games	3
GAME	1336	Introduction to 3D Game Modeling	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Mathematics Course	3
		Semester Total	**12**

Third Semester			Credits
GAME	2341	Game Scripting	3
GAME	1314	Character Sculpting	3
GAME	1328	Video Game Design	3
GAME	1334	Video Game Art I	3
		Semester Total	**12**

Fourth Semester			Credits
GAME	1304	Level Design	3
GAME	2309	Video Game Art II	3
GAME	2336	Lighting, Shading, and Texture	3
GAME	2332	Project Development I	3
		Semester Total	**12**

Fifth Semester			Credits
GAME	2359	Game and Simulation Group Project	3
ITSE	1350	System Analysis and Design	3
ENGL	2311	Technical Writing	3
GAME	2334	Project Development II	3
		Semester Total	**12**

Sixth Semester			Credits
GAME	2308	Portfolio for Game Development	3
ACGM	X3XX	Gen Ed Social/ Behavioral Science Course	3
INEW	2332	Comprehensive Software Project: Coding, Testing, and Implementation	3
		Semester Total	**9**

Graphics, Gaming & Simulation Programming

Specialization of Computer Science Technology

The Graphics, Gaming, and Simulation Programming degree is a specialization of Computer Science Technology. It is designed to prepare students for entry into the world of graphics and simulation programming.

Graphics and simulation is used in several segments of Information Technology, including game design and creation, educational enhancement, industrial training, aerospace simulation, and global defense. The curriculum for this specialization is more specialized than other curricula of Computer Science Technology.

Graphics, gaming and simulation programmers tend to push hardware and software to their limits. Although C++ is the primary programming language, other languages incorporated into the curriculum include C# for XNA design. After mastering the fundamentals of C++, the student moves into advanced applications of C++ in animation programming, multi-user interface programming, advanced mathematical applications, and artificial intelligence. Additionally, tools such as OpenGL and DirectX are included in this curriculum.

As a final point, the student designs and develops a comprehensive software project that is a culmination of all their course work throughout the degree. This project and prior work are used to create a portfolio to present to potential employers.

Associate of Applied Science Degree Program

In this specialization, students learn to design and create systems to meet the graphics and simulation programming needs of business and industry. Upon successful completion of the requirements, TSTC will award you an Associate of Applied Science degree. As a graduate, you can seek positions in the industry as an entry-level programmer with knowledge and skills applicable to computer graphics, gaming and simulation.

Computer Science Technology Graphics, Gaming & Simulation Programming

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
ITSY	1300	Fundamentals of Information Security	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ITSE	2305	Windows Programming	3
ITSE	1307	Introduction to C++ Programming	3
MATH	1314	College Algebra	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**12**

Third Semester			Credits
GAME	1343	Game and Simulation Programming I	3
GAME	1349	OpenGL Programming I	3
ITSE	2331	Advanced C++ Programming	3
ENGL	2311	Technical Writing	3
		Semester Total	**12**

Fourth Semester			Credits
GAME	1353	Multi-User Game Programming I	3
GAME	1359	Game and Simulation Programming II	3
GAME	2302	Mathematical Applications for Game Development	3
ITSE	2345	Data Structures	3
		Semester Total	**12**

Fifth Semester			Credits
GAME	2303	Artificial Intelligence Programming I	3
GAME	2333	Game and Simulation Programming III	3
GAME	2359	Game and Simulation Group Project	3
ITSE	1350	System Analysis and Design	3
		Semester Total	**12**

Sixth Semester			Credits
GAME	2343	Multi-User Game Programming II	3
INEW	2332	Comprehensive Software Project: Coding, Testing, and Implementation	3
ACGM	X3XX	Gen Ed Social/Behavioral Science Course	3
		Semester Total	**9**

Dental Assistant

The dental assistant is a vitally important member of the dental office team. Dental assisting requires diverse and challenging skills, but it is a growing career field that offers many opportunities and benefits.

In fact, the U.S. Department of Labor reports that job prospects for dental assistants should be excellent. Dentists are expected to hire more assistants to perform routine tasks so they may devote their time to more complex procedures.

Dental assistants are responsible for setting up exam rooms, measuring blood pressure, exposing radiographs, processing dental X-ray film, performing oral examinations, preparing charts, making teeth impressions, pouring molds and fabricating temporary crowns. Dental assistants also use their skills and knowledge in office management, oral health counseling, laboratory procedures, dental radiography and radiation safety to assist in all phases of dental treatments.

As a self-paced program, the Dental Assistant (DA) certificate plan allows students to sign up for courses they can successfully complete each term. Students advance to the next course after completing the requirements of the first, at their own pace. The program takes dedication and students with excellent study habits.

Certificate Program

As a Dental Assistant student, you can learn the latest in dental assisting procedures. The one-year Certificate of Completion program focuses on teaching you the skills needed on the job ... skills like measuring blood pressure, taking X-rays, preparing study models and applying four-handed dentistry techniques. The faculty will provide individualized, self-paced instruction, allowing personal, one-on-one attention.

The DA department is accredited by the Commission on Dental Accreditation and is organized for self-paced, individualized instruction. Enrollment for a full-time student is 12 credit hours; however, students may enroll part-time. And, with the flexible scheduling, students can work classes around part-time jobs.

TSTC graduates can boost their professional credibility with industry certifications. TSTC's accreditation from the American Dental Association's Commission on Dental Accreditation (CODA) allows graduates eligibility to take the Dental Assistant National Board Examination and the Texas Dental Radiation Health and Safety, Jurisprudence and Infection Control Examination. And with the program's CODA standing, all TSTC DA students can take the state exam within the program prior to graduation — providing them the convencience and comfort of testing in a familar place.

Prior to entering their clinical practicum, students will take X-rays of patients. Finding patients will be the responsibility of the student. Also, students are responsible for their own transportation when assigned to the practicum (field experience) courses. **Liability insurance is required** and will be handled through the college.

Note: The Texas Department of State Health Services requires that all students enrolled in health-related courses (such as Dental Assistant) which involve direct patient contact submit to the College Records Office and the Dental Assistant Program at time of registration a signed physician's record documenting all immunizations listed: Diphtheria-tetanus, Measles, Mumps, Rubella, Varicella, Hepatitis B, and Tuberculin Purified Protein Derivative (PPD) skin test that is current within the 12-month period prior to enrollment. All immunizations, with the exception of Hepatitis B must be complete prior to registration. Students may be enrolled provisionally for up to two semesters until the Hepatitis B series is completed. The first Hepatitis B dose must be given prior to registration.

Students residing in campus housing are strongly encouraged to have Poliomyelitis (Polio) and Bacterial Meningitis immunizations.

DA Advisory Committee

Andrea Anderson, Dr. Brad Willis, Waco
Dena Brooks, Dr. John Scott, Waco
Jeannette Cunningham, Stonewood Dental, Robinson
Dr. Daniel Davis, Waco
Dr. Thomas "Rusty" Dunavent, Central Texas Endodontics, Waco
Ann Goldsmith, Dr. Corbett Locke, Waco
Stacey Grendahl, Dr. Mark McCall, Waco
Dr. Jeff Hull, Waco
Michelle Johnson, Dr. David Rhoden, Waco
Dr. Clifton Martin, Riverside Dental-Family Health Center, Waco
Pam May, Riverside Dental-Family Health Center, Waco
Dr. Janet Ouellette, Waco
Melissa Rhodes, Dr. Wayne Parks, Waco
Dr. Amanda Scarborough, Hillsboro
Dr. Zach Schwab, Waco
Dr. Taylor Starr, Starr General Dentistry Inc., Waco
Ellen Webb, Dr. Michael T. Thrasher, Waco

Dental Assistant

Certificate of Completion

Total Credits: 39

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DNTA	1241	Dental Laboratory Procedures	2
DNTA	1245	Preventive Dentistry	2
DNTA	1311	Dental Science	3
DNTA	1315	Chairside Assisting	3
POFT	1325	Business Math and Machine Applications	3
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
DNTA	1205	Dental Radiology	2
DNTA	1301	Dental Materials	3
DNTA	1347	Advanced Dental Science	3
EECT	1200	Technical Customer Service	2
POFT	1301	Business English	3
		Semester Total	**13**

Third Semester			Credits
DNTA	1251	Dental Office Management	2
DNTA	1349	Dental Radiology in the Clinic	3
DNTA	1453	Dental Assisting Applications	4
DNTA❖	1466	Practicum-Dental Assistant	4
		Semester Total	**13**

Please note: For safety reasons, students may not enroll in DNTA 1205, DNTA 1349 or DNTA 1466 while pregnant.

❖ This course has been designated as a capstone course (see index for explanation).

Diesel Equipment Technology

Diesel equipment and repair is a challenging industry that requires intense skills in both repair of diesel engines and computerized diagnostic equipment. But the rewards – and wages – can be well worth it.

There are many opportunities in the industry, repairing trucks, construction equipment, agriculture equipment, airline ground support, offshore oil rigs, marine and public transportation, which are all supported by diesel engines. Because of the vast uses of highly advanced pneumatic, hydraulic and electronic systems technology, industry needs quality trained technicians to repair and maintain the equipment.

The Diesel Equipment Technology (DET) at TSTC can help you meet these challenges and start you on a great career path. With hands-on, laboratory intensive work and experienced professionals sharing their knowledge, it won't be long before you will develop the skills required for this important occupation.

DET offers several areas of specialization. Choose from Agriculture Equipment, Construction Equipment, Heavy Truck, John Deere Construction & Forestry, Marine and Outdoor Power Equipment specializations.

The program is also offered at the Fort Bend Technical Center and the Texas State Marine Education Center in Palacios.

DET Advisory Committee

Doug Allen, Halliburton, Alvardo
Harris Allen, Allen Jensen, Waco
Homer Aparicio, Dow Pipeline Corp., Bay City
Randy Argo, Fort Worth Freightliner, Ft. Worth
Mike Barefield, Texas Outdoor Power, Georgetown
Casey Bavinck, Schneider National Carriers, Dallas
Bill Beardslee, Inland Truck Parts Company, Dallas
Bill Betts, Equipment Depot, Irving
Terry Boriack, Best Industrial Services & Supply, Giddings
Robert Brooks, Volvo & Mack Trucks of Waco, Waco
Lester Burrell, Ryder, Grand Prairie
Clint Butler, Waukesha-Pearce Industries Inc., Houston
Jody Clayton, C & O Equipment Company, Keller
Jim Cross, Rush Truck Center of San Antonio, San Antonio
Doug Deere, DHL, Coppell
Charles Derrick, Diesel Power Supply Company, Waco
Deven Detloff, John Deere Construction Equipment Co., Davenport
Mike Dobbs, Stewart & Stevenson, Waco
Virgil Dobyns, Mustang Tractor & Equipment Co., Houston
Steve Edgar, Waco Transit, Waco
David Edwards, Mustang Tractor & Equipment Co., Houston
Ricky Engelke, CMC Inc., Seguin
Evan Engler, Rush Truck Center, Sealy
John Evans, John Deere Construction Equipment Co.
Billy Fink, Sunbelt Rentals (Nations Rent), Ft. Worth
Larry Folmar, Central Texas International, Waco
Mike Foster, Cummins Southern Plains Inc., Arlington
Claudio Garcia Jr., Maverick Transportation, Little Rock, Ark.
Adam Gilbertson, RDO Equipment Co., Fargo, N.D.
John Goldsmith, Mack Trucks, Irving
Don Hardwick, Holt-CAT, Waco
Dave Harsha, John Deere Construction Equipment Co., Flower Mound
James Hartensteiner, Houston Freightliner Inc., Houston
Jerry Hayes, Mack Trucks, Irving
Sam Hopkins, CenterPoint Energy, Houston
Richard Hutchens, Waukesha-Pearce Industries Inc., Houston
Charles Johnson, Generac Power Systems, Waukesha, Wisc.
Anna Keyes, Mustang Tractor & Equipment Co., Houston
Terry Laws, Stewart & Stevenson, Inc., Dallas
Richard Ludewig, Structural Metals Inc., Seguin
Stuart Lumpkin, Blue Mountain Equipment, McKinney
Ronny Mangold, Rip Griffin Travel Centers, New Braunfels
Lynn McKinnie, Zachry Construction Corp., San Antonio
Randy Miley, Pegues Hurst Ford/Sterling, Longview
April Mitchell, RDO Equipment Co., Fargo, N.D.
Shilo Monney, Southern Field Maintenance, Victoria
Ken Nave, Inland Truck Parts Company, Dallas
Vince Neuhaus, Brazos Valley Equipment, Waco
Richard Ogden, Con-Way Southern Express, Dallas
Robert Ortolani, Magneto Power, Dallas
Troy Ottmer, Rush Equipment, Houston
Scott Owens, Sterling Trucks, Longview
Lloyd Padalecki, CMC Inc., Seguin
Lynn Pagels, Duncan Freightliner, Waco
Revis Parkison, Rush Truck Center of Dallas, Irving
Ken Payne, Mustang Tractor & Equipment Co., Houston
George Polster, Cummins Southern Plains Inc., Arlington
Brent Reid, Performance Truck, Cleveland
Charles Rhodes, Ryder, Dallas
Joe Russo, Mustang Tractor & Equipment Co., Houston
David Schultze, Rush Trucking, Waco
Phillip Simmons, Dallas Area Rapid Transit, Dallas
Jimmy Smith, Mid Coast Diesel Service, Port Lavaca
Edward Sparks, CenterPoint, Houston
Harvy Stahl, CMC Inc., Seguin
Randal Straten, Volvo & Mack Trucks of Waco, Waco
Troy Taglarino, Nations Rent, Ft. Worth
Eric Terkelsen, Stewart & Stevenson Inc., Dallas
John Toney, Mustang Tractor & Equipment Co., Beaumont
Bodie Traves, JB Hunt Transportation, Dallas

Craig Wallis, W.W. Dock Shrimp Processing/Marine, Palacios
Keith Wallis, W.W. Dock Shrimp Processing/Marine, Palacios
Dwayne Walter, Mustang Tractor & Equipment Co., Houston
BJ Wayla, Wal-Mart Distribution Center, Sealy
Larry Wright, Holt Caterpillar, Dallas
Lee Yarbrough, Rush Trucking, Irving
Greg Yoxsimer, Chevron, Midland
Byron Zipfel, Ogburn's Brake, Ft. Worth

Ft. Bend DET Advisory Committee

Roy Accise, Stewart & Stevenson, Houston
Gary Charbula, Superior Motor Parts of El Campo, El Campo
Albert Davis, Davis Brothers Auto Parts, Rosenberg
John Dibello, Stewart & Stevenson, Houston
Chuck Doom, Houston Freightliner Western Star, Houston
Ray Galletti, Mustang Tractor & Equipment Co., Houston
Art Garcia, CarQuest, San Antonio
Michael Gorski, Cummins Southern Plains, Ltd., Houston
Donald Guerrero, Allied Concrete, Rosenberg
David Perez, Cummins Southern Plains, Ltd., Houston
Fred Pugh, CarQuest, Kingwood
John Quick, Stewart & Stevenson, Houston
Steve Schneider, Houston Coca Cola Bottling Co., Houston
Al Strange, Stewart & Stevenson, Sealy
Pat Vincek, Houston Coca Cola Bottling Co., Houston
James Wagner, Cummins Southern Plains Ltd., Houston
Ron Walker, Mustang Tractor & Equipment Co., Houston
Frank Watson, Performance Kenworth, Houston
Chris Wilson, Rush Truck Center, Sealy

Agriculture Equipment

Specialization of Diesel Equipment Technology

The U.S. Department of Labor reports that what once was a general repairer's job around the farm has evolved into a specialized technical career. Farmers have increasingly turned to farm equipment technicians to service and repair their equipment because the machinery has grown in complexity. Modern equipment uses more computers, electronics and hydraulics, making it difficult to perform repairs without specialized training and tools.

Only skilled technicians with complex training and in-depth understanding of the intricate functions of agriculture equipment can provide the service and maintenance needed to keep today's farms productive. Today's farming operations need individuals like graduates of the Agriculture Equipment Specialization offered through TSTC's DET program.

With superior educational training on the latest industry-standard equipment, Agriculture Equipment Specialization graduates can earn excellent wages and enjoy great career benefits. From equipment dealerships to huge farming operations, organizations nationwide pay top salaries for the skills, knowledge and training you can learn at TSTC.

Associate of Applied Science Degree Program

You can build your skills and develop your knowledge in the two-year Associate of Applied Science degree plan, which requires 72 credit hours of instruction.

Certificate Program

The Diesel Equipment Technology department also offers a one-year curriculum plan in Agriculture Equipment, which leads to a Certificate of Completion.

Diesel Equipment Technology

Agriculture Equipment

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1301	Shop Safety and Procedures	3
DEMR	1317	Basic Brake Systems	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**17**

^Institutional Credit Only

Second Semester			Credits
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			Credits
DEMR	2444	Automatic Power Shift and Hydrostatic Transmissions II	4
AGME	1453	Harvesting Equipment	4
DEMR	1225	Small Air Cooled Engines	2
DEMR	1229	Preventative Maintenance	2
		Semester Total	**12**

Fourth Semester			Credits
DEMR	2335	Advanced Hydraulics	3
DEMR	2346	Advanced Heating, Ventilation, and Air Conditioning (HVAC)	3
ENGL	1301	Composition I	3
WECM	X3XX	Technical Elective	3
		Semester Total	**12**

Fifth Semester			Credits
DEMR❖	2334	Advanced Diesel Tune-up and Troubleshooting	3
DEMR	2348	Failure Analysis	3
DEMR	2432	Electronic Controls	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**16**

Agriculture Equipment

Certificate of Completion

Total Credits: 41

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1301	Shop Safety and Procedures	3
DEMR	1317	Basic Brake Systems	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			Credits
DEMR	2444	Automatic Power Shift and Hydrostatic Transmissions II	4
AGME	1453	Harvesting Equipment	4
DEMR	1225	Small Air Cooled Engines	2
DEMR	1229	Preventative Maintenance	2
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Construction Equipment

Specialization of Diesel Equipment Technology

Construction equipment technicians are often the movers and shakers behind the mobile heavy equipment providers. Industries ranging from construction and logging to surface mining and other sectors often depend upon skilled technicians to keep their equipment in top working order.

Knowledgeable technicians such as the graduates of the DET's Construction Equipment specialty keep construction and surface mining equipment, including bulldozers, cranes, graders and excavators in working order. These technicians can learn the specialized skills critical to the repairing and maintaining of the engines, transmissions, hydraulics and electrical systems powering graders, backhoes and a variety of stripping and loading shovels.

Associate of Applied Science Degree Program

TSTC's Diesel Equipment Technology provides superior educational training on the latest industry-standard equipment in the Construction Equipment Specialization. The two-year curriculum track culminates in an Associate of Applied Science degree.

Certificate Program

The Diesel Equipment Technology program also offers a one-year Certificate of Completion plan in Construction Equipment.

Construction Equipment

Associate of Applied Science Degree

Total Credits: 71

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1317	Basic Brake Systems	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
DEMR	1301	Shop Safety and Procedures	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1421	Power Train I	4
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
		Semester Total	**15**

Third Semester			Credits
HEMR	1501	Tracks and Undercarriages	5
DEMR	1229	Preventative Maintenance	2
DEMR	2444	Automatic, Power Shift, and Hydrostatic Transmissions II	4
		Semester Total	**11**

Fourth Semester			Credits
PSYC	1301	General Psychology	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
DEMR	2335	Advanced Hydraulics	3
DEMR	2346	Advanced Heating, Ventilation, and Air Conditioning (HVAC)	3
ENGL	1301	Composition I	3
		Semester Total	**15**

Fifth Semester			Credits
DEMR❖	2334	Advanced Diesel Tune-up and Troubleshooting	3
DEMR	2348	Failure Analysis	3
DEMR	2432	Electronic Controls	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**16**

Construction Equipment

Certificate of Completion

Total Credits: 40

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1301	Shop Safety and Procedures	3
DEMR	1317	Basic Brake Systems	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			Credits
DEMR	1229	Preventative Maintenance	2
DEMR❖	2444	Automatic, Power Shift and Hydrostatic Transmissions II	4
HEMR	1501	Tracks and Undercarriages	5
		Semester Total	**11**

❖ This course has been designated as a capstone course (see index for explanation).

Heavy Truck

Specialization of Diesel Equipment Technology

In 2007, there were approximately 110 million trucks on U.S. roads. Today, that number has climbed significantly. As freight transportation by truck increases, so, too, will career opportunities for skilled diesel mechanics and service technicians.

DET's Heavy Truck specialization can train you for a long-term and rewarding career repairing and maintaining light, medium and heavy trucks. With hands-on opportunities in intensive labs, students learn from skilled craftsmen who have actual field experience. Moreover, the Heavy Truck Specialization is certified by the National Automotive Technicians Education Foundation and maintains close industry ties to provide the latest, most sought-after instruction.

Through a partnership with Rush Truck Centers, TSTC receives Peterbilt trucks, special equipment and training materials so that Peterbilt dealers statewide can benefit from TSTC graduates with top-of-the-line diesel mechanics skills ... like the many qualified applicants selected by Rush Truck Centers to co-op and work for their shops.

Associate of Applied Science Degree Program

The Diesel Equipment Technology program offers a two-year curriculum that covers basic diesel engine service, repair and troubleshooting, then advances to electronic controls courses. The intensive, hands-on coursework culminates in an Associate of Applied Science degree.

Certificate Program

The Diesel Equipment Technology program also offers a one-year curriculum which leads to a Certificate of Completion.

Heavy Truck

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1301	Shop Safety and Procedures	3
DEMR	1317	Basic Brake Systems	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			Credits
DEMR	1229	Preventative Maintenance	2
DEMR	1447	Power Train II	4
DEMR	1327	Tractor Trailer Service and Repair	3
DEMR	1330	Steering and Suspension I	3
		Semester Total	**12**

Fourth Semester			Credits
DEMR	2346	Advanced Heating, Ventilation and Air Conditioning (HVAC)	3
ENGL	1301	Composition I	3
DEMR	2331	Advanced Brake Systems	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fifth Semester			Credits
DEMR	2348	Failure Analysis	3
DEMR	2432	Electronic Controls	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Elective	3
DEMR❖	2334	Advanced Diesel Tune-up and Troubleshooting	3
		Semester Total	**16**

Heavy Truck Specialization

Certificate of Completion

Total Credits: 41

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1301	Shop Safety and Procedures	3
DEMR	1317	Basic Brake Systems	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			Credits
DEMR	1229	Preventative Maintenance	2
DEMR	1447	Power Train II	4
DEMR ❖	1327	Tractor Trailer Service and Repair	3
DEMR	1330	Steering and Suspension I	3
		Semester Total	**12**

❖This course has been designated as a capstone course (see index for explanation).

John Deere Construction & Forestry Technician

Specialization of Diesel Equipment Technology

The John Deere Company was founded in 1837 and has grown from a one-man blacksmith shop into a corporation that today does business around the world and employs approximately 56,000 people. There are literally thousands of dealerships across North America providing ample job opportunities.

And with the right skills, those job opportunities could be available for you, thanks to a dealer-sponsored program through DET's John Deere Construction & Forestry Technician Program. John Deere and DET have partnered to provide the John Deere dealerships with qualified technicians. The program provides an excellent opportunity for those seeking employment with a well-established employer who distributes and maintains John Deere construction and forestry equipment.

In addition to learning operational concepts of diesel engines, power trains, brakes, electrical and hydraulic systems, air conditioning and shop procedures and safety, students gain on-the-job experience provided by a sponsoring dealership, where they work with experienced John Deere technicians in day-to-day operations.

Associate of Applied Science Degree Program

The Diesel Equipment Technology program offers a two-year curriculum that covers basic diesel engine service, repair and troubleshooting, then advances to electronic controls courses. The intensive, hands-on coursework culminates in an Associate of Applied Science degree.

John Deere Construction & Forestry Technician

Associate of Applied Science Degree

Total Credits: 69

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1317	Basic Brake Systems	3
DEMR	2412	Diesel Engine Testing and Repair II	4
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	1301	Shop Safety and Procedures	3
DEMR	1166	Practicum (or Field Experience) – Diesel Mechanics Technology/Technician	1
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			Credits
DEMR	1680	Cooperative Education – Diesel Mechanics Technology/Technician	6
		Semester Total	**6**

Fourth Semester			Credits
DEMR	2334	Advanced Diesel Tune-up and Troubleshooting	3
HEMR	1401	Tracks and Undercarriages	4
ENGL	1301	Composition I	3
DEMR	1229	Preventative Maintenance	2
PHYS	1315	Physical Science I	3

DEMR	2166	Practicum (or Field Experience) – Diesel Mechanics Technology/Technician	1
		Semester Total	**16**

Fifth Semester			**Credits**
DEMR	2348	Failure Analysis	3
DEMR	1291	Special Topics in Diesel Engine Mechanic and Repairer	2
DEMR	2335	Advanced Hydraulics	3
ACGM	X3XX	Gen Ed Social Science	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**17**

Marine

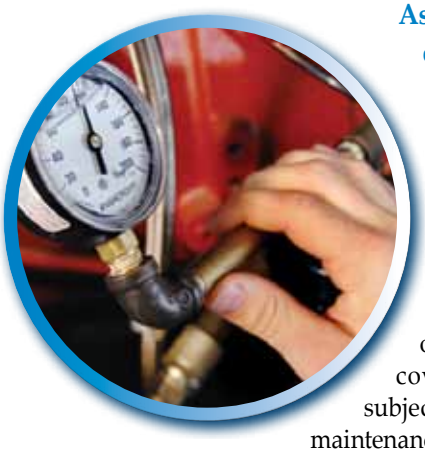
Classes at the Palacios Center will not be offered after the Fall 2010 semester

Specialization of Diesel Equipment Technology

From shrimpers and cruise ships to offshore oil rig engines and pleasure boats, the power equipment used in the marine-related industry includes a surprising array of vehicles and machinery. Every business and organization that uses marine equipment and machinery – from deep sea and costal outfits to land-based equipment or suppliers – relys on qualified, trained technicians to keep their equipment operational.

DET's Marine Specialization at the Texas State Marine Education Center in Palacios provides exceptional training programs focusing on marine diesel equipment. TSTC's specialized training is unique due to the daily contact to the maritime industry on the Gulf Coast, and its ties with industry that help keep the curriculum current, ensuring students learn the latest possible skills.

The Marine Specialization program can open doors to career opportunities in engine dealerships, marinas, shipyards, marine contractors, oilfield applications and other marine-related industries.



Associate of Applied Science Degree Program

The two-year Marine Specialization provides intense, hands-on instruction for the repair and maintenance of marine diesel equipment. The coursework, which culminates in an Associate of Applied Science degree, covers basic and advanced subjects including diesel engine maintenance; testing and repair; electrical systems; heating and air conditioning troubleshooting; power trains; hydraulics; and marine propulsion.

Certificate Program

For faster entry into the workforce, Diesel Equipment Technology also offers a one-year Marine Specialization program that culminates in a Certificate of Completion.

Marine Advisory Committee

Homer Aparacio Jr., Dow Pipeline Corp., Bay City
Patrick Clophus, Wakesha-Pearce Industries Inc., Houston
Robbie Hart, Sewart Supply Inc., Houston
Jimmy Holub, Mustang Tractor & Equipment, El Campo
Ed Keown, Four Brothers Boat Works Inc., Galveston
Mart Maxwell, Glazier Foods, Houston
Rick Ryan, Pier 77 Yacht Center, Galveston
Scott Smith, Performance Diesel Inc., Webster
Tadd Stickler, Diesel Engine & Parts Co. Inc., Houston
Chuck Stephens, Shoppa's Farm Supply Inc., El Campo
Marvin Stuhrenberg, Stuhrenberg Farms, Palacios

Marine Specialization

Associate of Applied Science Degree

Total Credits: 70

First Semester			**Credits**
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1301	Shop Safety and Procedures (TP)	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	1317	Basic Brake System	3
DEMR	2412	Diesel Engine Testing and Repair II	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			**Credits**
DEMR	1416	Basic Hydraulics	4
DEMR	1323	Heating, Ventilation, and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			**Credits**
DEMR	1229	Preventive Maintenance (TP)	2
DEMR	2470	Marine Propulsion Applications	4
DEMR	2371	Marine Auxiliary Equipment and Controls	3
DEMR❖	2471	Marine Systems and Installations	4
		Semester Total	**13**

Fourth Semester			**Credits**
DEMR	2335	Advanced Hydraulics	3
ENGL	1301	Composition I	3
ACGM	X3XX	Gen Ed Social Science Course	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**12**

Fifth Semester			Credits
DEMR	2348	Failure Analysis	3
DEMR	2432	Electronic Controls	4
HUMA	1301	Introduction to Humanities	3
ACGM	X3XX	Gen Ed Elective	3
DEMR❖	2334	Advanced Diesel Tune-up and Troubleshooting	3
		Semester Total	**16**

❖ This course has been designated as a capstone course (see index for explanation).

Marine Specialization

Certificate of Completion

Total Credits: 42

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1301	Shop Safety and Procedures (TP)	3
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine TestingAnd Repair II	4
DEMR	1317	Basic Brake System	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DEMR	1416	Basic Hydraulics	4
DEMR	1323	Heating, Ventilation and Air Conditioning (HVAC) Troubleshooting and Repair	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1421	Power Train I	4
		Semester Total	**15**

Third Semester			Credits
DEMR	1229	Preventative Maintenance (TP)	2
DEMR	2470	Marine Propulsion Applications	4
DEMR❖	2471	Marine Systems and Installations	4
DEMR	2371	Marine Auxiliary Equipment and Controls	3
		Semester Total	**13**

❖ This course has been designated as a capstone course (see index for explanation).

Outdoor Power Equipment

Specialization of Diesel Equipment Technology

In our daily life, we use tons of outdoor power equipment. From landscaping and lawn and garden tools, chainsaws and chippers, there are extensive amounts of equipment to maintain and repair. The vast uses of highly advanced hydraulic and electronic systems in outdoor power equipment means a greater demand for quality trained technicians to keep today's outdoor equipment tuned and maintained.

TSTC provides the focused instruction you need to begin a career in the industry. TSTC's Diesel Equipment Technology and Golf Course & Landscape Management work together to provide superior educational training on the latest industry-standard equipment in the Outdoor Power Equipment Specialization.

A professional industry and knowledgeable, experienced staff provide the foundation, as does industry-standard equipment and intensive hands-on lab time.

Certificate Program

TSTC offers a one-year program in Outdoor Power Equipment for a faster track into the industry. The curriculum culminates in a Certificate of Completion.

Diesel Equipment Technology Outdoor Power Equipment

Certificate of Completion

Total Credits: 25

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1225	Small Air Cooled Engines	2
DEMR	1301	Shop Safety and Procedures	3
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
DEMR	1421	Power Train	4
SMER	1434	Small Engine Two Stroke Overhaul	4
SMER	1437	Small Engine Four Stroke Engine/ Transmission	4
		Semester Total	**12**

Digital Media Design

In today's high-tech world, nearly every job features some aspect of digital media. It is, in fact, transforming how the world communicates. In work or in play, digital media surrounds us —in the Web pages we surf, the television we watch, or even the cell phones we use.

Videos, podcasts, blogs, photos, sound, Web pages and much more are integrated into multimedia presentations to powerfully present messages that make a meaningful impact.

Careers in Digital Media Design are evolving at a rapid rate, and opportunities for job growth are growing by leaps and bounds. From animator to editor, creative director to digital technician, digital media designers are finding jobs with an extensive variety of employers throughout the United States.

The Digital Media Design (DMD) program at TSTC provides students with the skills to design their own multimedia products. In the laboratories and classrooms, you can gain hands-on experience in the world of 2-D and 3-D graphics and animation. Training includes storyboard, script design, preproduction planning and much more.

What's more, you'll get expert training in the latest software, such as Adobe Photoshop and Illustrator, Dreamweaver and Flash, Premiere and Audition, as well as Autodesk 3ds Max and other industry-leading software.

At the conclusion of the program, you'll work on a collaborative project to create a complete multimedia production for a local business – and have a wealth of material to produce a winning portfolio.

Associate of Applied Science Degree Program

The intensive, two-year laboratory and classroom curriculum culminates in an Associate of Applied Science degree.

Tech Prep Associate of Applied Science Degree Program

DMD also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The Digital Media Design department requires that students demonstrate basic reading, writing and mathematical skills before enrolling.

DMD Advisory Committee

Sandy Bennett, Baylor University, Waco
Nancy Boyens, MCC, Waco
Keith Burgess, CBS 11TV, Lindale
Christian Cisneros, Phoenix Sun Media, Lockhart
Stephen Cowart, Baylor University - Mayborn Museum, Waco
Mark Davis, Lockheed Martin Missiles & Fire Control, Dallas
Andy Johnston, Martha Turner Properties, Houston
Brian LaCaze, SYSTRAINC, Houston
Jeremy Mayo, Dell Inc., Round Rock
Kevin Minke, Provenance Media Inc., Houston
Paul Rascher, ArtBlotStudios.com, Richardson
John Schratz, Austin
Dennis Thompson, Lockheed Martin Missiles & Fire Control, Dallas
Jason Weiss, Hood Marketing, Fort Hood

Digital Media Design

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ARTC	1302	Digital Imaging I	3
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic & Design	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ARTV	1370	Character Design for Animation	3
GRPH	1359	Vector Graphics for Productions	3
INDS	1301	Basic Elements of Design	3
ITSE	1301	Web Design Tools I	3
ACGM	X3XX	Gen Ed Math/Natural Science Course	3
		Semester Total	**15**

Third Semester			Credits
ARTV	1345	3-D Modeling and Rendering I	3
ARTV	1351	Digital Video	3
ARTV	2301	2-D Animation	3
RTVB	1329	Scriptwriting	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fourth Semester			Credits
ARTV	1341	3-D Animation I	3
IMED	2305	Multimedia Course Development	3
IMED	2313	Project Analysis and Design	3
IMED	2351	Digital Media Programming	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fifth Semester			Credits
ARTV	2345	3-D Modeling and Rendering II	3
IMED❖	2311	Portfolio Development	3
IMED	2345	Interactive Multimedia II	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Drafting & Design Technology

Practically nothing in this society is built, designed or created without a plan to get started. Somewhere, someone created drawings industry uses to produce a variety of projects.

You could be the one that creates these plans with the special skills and training you'll receive in TSTC's Drafting & Design Technology (DDT).

Drafters today must assemble sketches, and translate written and verbal information from engineers, designers, clients, regulatory agents and much more into a finished set of plans and documents. From these plans, much of what you see in today's society is produced.

Drafting & Design offers two areas of specialization: Architectural/Civil and Mechanical/Electronic. Each of these two-year specializations offer focused curriculums that can lead to good salary and a long-term career.

In many cases, students (who spend more than 60 percent of their times in labs) have the opportunity to take on real-world projects that provides them with an edge when it comes to hiring time.

Associate of Applied Science Degree Programs

The Drafting & Design Technology department offers two areas of specialization, Architectural/Civil and Mechanical/Electronic. Each of these two-year specializations offer focused curriculums that culminate in Associate of Applied Science degrees.

Tech Prep Associate of Applied Science Degree Program

DDT also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

Certificate Program

The Drafting & Design Technology Certificate of Completion curriculum offers a one-year, less intensive track of study.

The drafting field requires good eye-hand coordination with good finger and hand dexterity and the ability to read 3/32" high text on a computer monitor from 18" away. Students should have good high school math and science skills and the ability to read and follow technical instructions and the ability to visualize objects in two and three dimensions.

DDT Architectural/Civil Advisory Committee

Herb Cross, CWA Construction Inc., Waco
B.J. Greaves, ArchiTexas, Waco
Janice S. Jackson, TxDot, Hillsboro
Cathy J. Kraemer, Cross Winton Associates Inc., Waco
Scott McGivney, Datum Engineers Inc., Dallas
Chuck Ogilvie, Frank W. Neal & Associates Inc., Ft. Worth
Jeb Sulak, Beach & Clark Inc., Waco
Marty Vannatter, Malone/Wheeler Inc.

DDT Mechanical/Electronic Advisory Committee

William Bartlett, Tegron LP, Waco
Abel Castillo, National Instruments, Austin
Bryan Clark, Clark Graphic Services, Hewitt
Daniel J. Fahy, Oil & Gas Solutions, Houston
Shawn Grace, Consolidated Rig Works, Ft. Worth
Miles Hobdy, Independent Engineering Consultant, Fulshear
Philip W. Holt, Brazos Electric Cooperative, Waco
Daniel Iiams, Fathoms Tech., Woodway

Drafting & Design Technology

Certificate of Completion

Total Credits: 26

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
TECM	1341	Technical Algebra	3
ITSC	1309	Integrated Software Applications I (TP)	3
LAWT	1270	Laws of Cyberspace and Ethical Issues	2
DFTG	1305	Technical Drafting (TP)	3
DFTG	1309	Basic Computer-Aided Drafting (TP)	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DFTG	1317	Architectural Drafting-Residential	3
DFTG	1329	Electro-Mechanical Drafting	3
DFTG❖	2319	Intermediate Computer-aided Drafting	3
DFTG	2350	Geometric Dimensioning and Tolerances	3
		Semester Total	**12**

❖This course has been designated as a capstone course (see index for explanation).

Architectural/Civil Drafting

Specialization of Drafting & Design Technology

Whether it's as large as a high-rise building or as small as a shed, nothing can be built without first envisioning a plan — a blueprint, sketch or drawing detailing everything a project needs for completion. Drafting is a universal language; it is the common language used in many major industries as a first step to bringing this vision to life.

DDT's Architectural/Civil Drafting Specialization provides the coursework to prepare for drafting applications in commercial architecture; building structures; mechanical, electrical, and plumbing systems for buildings; site work; and many other areas of construction-related drafting.

During your educational training at TSTC, you will use the latest in computer software and hardware to gain valuable experience utilizing today's most popular drafting tool — Computer-Aided Drafting, or CAD, systems. TSTC's DDT program provides students with not only the theory, but more than 900 hours in working lab environments.

Associate of Applied Science Degree Program

TSTC offers an intense, two-year degree plan with coursework specializing in architectural and civil drafting techniques. Graduates of the Associate of Applied Science degree program can apply these skills in a wide range of high-paying, prestigious career positions with organizations such as engineering and architectural services firms that design construction projects, as well as construction, telecommunications and utility companies.

Architectural/Civil Drafting

Associate of Applied Science Degree

Total Credits: 64

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
TECM	1343	Technical Algebra & Trigonometry	3
ITSC	1309	Integrated Software Applications I (TP)	3
ENGL	1301	Composition I	3
DFTG	1305	Technical Drafting (TP)	3
DFTG	1309	Basic Computer-Aided Drafting (TP)	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
PSYC	2301	General Psychology	3
ACGM	X3XX	Gen Ed Social Science Course	3
ARCE	1342	Codes, Specifications and Contract Documents	3
ARCE	1303	Architectural Materials and Methods of Construction	3
DFTG	2319	Intermediate Computer-Aided Drafting	3
DFTG	1317	Architectural Drafting-Residential	3
		Semester Total	**18**

Third Semester			Credits
DFTG	2331	Advanced Technologies in Architectural Design and Drafting	3
DFTG	2372	Architectural Detailing	3
DFTG	2328	Architectural Drafting - Commercial	3
ACGM	X3XX	Gen Ed Math/Natural Sciences	3
DFTG	1473	Civil Engineering Drafting	4
		Semester Total	**16**

Fourth Semester			Credits
ACGM	X3XX	Gen Ed Social Science Course	3
SRVY	1313	Plane Surveying	3
ARCE	1352	Structural Drafting	3
ARCE	2352	Mechanical and Electrical Systems	3
DFTG❖	2338	Final Project-Advanced Drafting	3
		Semester Total	**15**

*Note: For a list of **approved** electives, contact the department.

❖This course has been designated as a capstone course (see index for explanation).

Mechanical/Electronic Drafting

Specialization of Drafting & Design Technology

Demand for drafters varies by specialization, and nothing in the industry is more exciting than mechanical/electronic drafting and design.

No longer are the pen and pencil the standard for drafters. Today in this field, student drafters are taught CADD, (computer-aided design and drafting) and can now produce industrial drawings utilized in industry to produce all types of products. All students will receive instruction in both two- and three-dimensional CAD systems.

The Mechanical/Electronic Drafting Specialization focuses on drafting applications in mechanical,electro-mechanical, process piping, printed circuit board design and many other areas of manufacturing and electronic-related drafting. Students will be exposed to the hottest drawing software on the market including AutoCad, Solid Works and Inventor.

Backed by professionals who have worked in the field and an advisory board of industry experts who guide the program, students learn the strong fundamentals of drafting principles and higher levels of technical drawing sophistication.

Associate of Applied Science Degree Program

The two-year Mechanical/Electronic Drafting Specialization provides focused and hands-on drawing instructions for a wide range of high salaried design career positions with industrial and engineering firms dealing in manufacturing, electronic/electrical, aerospace, telecommunications and the process industries. Some products that may be produced and manufactured may include durable goods, machine parts, aircraft parts, electronic/electrical parts and system designs of industrial plants. The intense curriculum cumulates in an Associate of Applied Science Degree.

Mechanical/Electronic Drafting Technology

Associate of Applied Science Degree

Total Credits: 62

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
TECM	1343	Technical Algebra and Trigonometry	3
ITSC	1309	Integrated Software Applications I	3
ENGL	1301	Composition I	3
DFTG	1305	Technical Drafting	3
DFTG	1309	Basic Computer-Aided Drafting	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
DFTG	1329	Electro-Mechanical Drafting	3
INMT	1319	Manufacturing Processes	3
DFTG	2319	Intermediate Computer-Aided Drafting	3
DFTG	2350	Geometric Dimensioning and Tolerances	3
		Semester Total	**15**

Third Semester			Credits
ACGM	X3XX	Gen Ed Social Science Course	3
DFTG	1358	Electrical/Electronics Drafting	3
DFTG	2302	Machine Drafting	3
DFTG	2323	Pipe Drafting	3
DFTG	2335	Advanced Technologies in Mechanical Design and Drafting	3
		Semester Total	**15**

Fourth Semester			Credits
WECM	X2XX	Approved Technical Drafting Course	2
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
WECM	X3XX	Approved Technical Course	3
DFTG	2305	Printed Circuit Board Design	3
DFTG❖	2306	Machine Design	3
DFTG❖	2338	Final Project – Mechanical/Electronic Drafting	3
		Semester Total	**17**

*Note: For a list of **approved** electives, contact the department.
❖ This course has been designated as a capstone course (see index for explanation).

Electrical Power & Control

The electrical power and control field is more critical today than ever before. Nearly everything we do these days relates to electrical power – from the moment you flick on a switch in your home to the basic appliances you run in your household. And with the changes in the energy industry, a career in the electrical industry is predicted to be more stable than ever before.

Electricity plays a crucial role in today's society. Just ask hospitals that depend upon it for life-saving medical devices, cities that experience chaos in a blackout or homebound people who must have a vital communication link to the outside world. Even our automobiles are turning to electricity to solve energy problems.

As the demand for electricity grows, the need for skilled, knowledgeable technicians continues to increase.

The Electrical Power & Control (EPC) program at TSTC is the only two-year associate degree program in Texas specifically focused on power technology. It provides essential classroom instruction combined with intensive hands-on laboratory training to prepare you for a career – and not just a job.

Students receive a solid foundation in electrical concepts, design, motor and control applications, electronics, measurement and calibration, electrical codes, fuel cell technology, engineering and industrial automation and more — all of which can lead to outstanding job opportunities.

Associate of Applied Science Degree Programs

The Electrical Power & Control department offers three areas of specialization: general electrical power & control, fuel cell and solar technologies. Each of these two-year programs offer specific curriculums that culminate in Associate of Applied Science degrees.

Certificate Program

The Electrical Power & Control curriculum offers a one-year Certificate of Completion in Electrical Construction & Service that can be taken alone or become part of your degree plan.Also, new this year are Certificate of Completion programs in Power Line Technician and Solar Energy.

EPC Advisory Committee

Keith Armstrong, ECP Tech Services, Houston
Alan Autenrieth, Conoco-Phillips, Sweeny
Kevin Barnett, Shermco Industries Inc., Dallas
Eric Beckman, National Switchgear Systems Inc., Lewisville
Pat Beisart, Shermco Industries Inc., Dallas
Rob Bishop, TXU Electric, Glen Rose
Oscar Brown, Brown Industrial Sales & Services., Houston
Thad Brown III, Shermco Industries Inc., Dallas
John Burroughs, Center Point Energy, Katy
Bobby Christmas, Guadalupe Valley Electric Cooperative, Gonzales
Mike Davis, TRANE, McGregor
Dwayne Defrees, Oncor, Waco
Dwayne Defrees, Center Point Energy, Santa Fe
Alan Edwards, Oncor Electric Delevery, Plano
Chris Fetterman, ECP Tech Services, Houston
Tony Flores, Oncor Electric Delivery, Waco
Jarrod Foster, Alliance Inc., Beaumont
John Fry, NRG Texas, Jewett
Randall Gannon, Invista, Victoria
Ramon "Ray" M. Garcia, Invista, Victoria
David Goff, McGregor
Art Gordon, Humphrey & Associates Inc., Fort Worth
Michael Hale, Farmers Electric Cooperative, Greenville
Johnny Hightower, Quantas Utility Services, Mansfield
L.S. (Stan) Huntsinger, Premier Technical Services, Lorena
Mike Huston, The Dow Chemical Co., Freeport
Dennis Janak, Tidal Power Services, Hallettsville
Bert Johnson, Packless Industries, Waco
Walter Koopmann, City of Georgetown, Georgetown
Allan Kunze, Lower Colorado River Authority, Austin
Artis Lawson, City of College Station, College Station
Dwaine Love, United Cooperative Services, Meridian
Dick Lux, Five Star Electric Motors, San Antonio
Mark Lyles, Farmers Electric Cooperative, Greenville
Johnny Marinik, Wilsonart International – North Plant, Temple
Randy Martin, Englobal Engineering, Beaumont
Mike Murray, Tenneco Packaging, Corsicana
Joe Nemmer, Nemmer Electric Inc., Waco
Jerry O'Brien, Specialty Product Sales, Houston
Keith Outlaw, Magnum Engineering & Controls, Round Rock
Raffaele Pacetti, American Marazzi Tile, Sunnyvale

Jeff Page, North Houston Pole Line, Houston
Douglas Powell, National Switchgear Systems Inc., Lewisville
Tom Puccio, T & K Enterprises, Rockdale
Dean Richman, Johnson Controls Inc., Irving
Charles Robertson, North Houston Pole Line, Houston
Danny Rodriguez, Reliant Energy, Houston
Joe A. Scanlin, Scanlin Electric Inc., Stafford
Frank Skelton, North Houston Pole Line, Houston
Rick Solomon, Flint Hills Resources, Corpus Christi,
Kevin Stuckly, Motorola, Austin
Shane O. Sullins, Invista, Victoria
Tim Swanson, TRANE, Carrollton
Terry Taylor, Luminant, Glen Ross
Wayne Taylor, INEOS O&P, Alvin
Kevin Tolly, Plastipak Packaging Inc., Garland
Pablo Torres, TXU Electric, Glen Rose
Kevin Verett PE, Oncor Electric Delivery, Waco
Mollie Walker, NRG Texas LLC, Jewitt
Gerald Wentrcek, Ralph Wilson Plastics, Temple,
Jim White, Shermco Industries Inc., Dallas
Ron Widup, Shermco Industries Inc., Dallas
Jake Willcox, Englobal Engineering, Beaumont
Steve Young, Hamilton County Electric Co-op, Hamilton
Steve Zeder, Square D Field Services, Coppell

Electrical Power & Control
Electrical Systems

Associate of Applied Science Degree
Electrical Systems
Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ENGL	1301	Composition I	3
MATH	1316	Plane Trigonometry	3
CETT	1409	DC-AC Circuits	4
ELPT	2215	Electrical Calculations II	2
		Semester Total	**12**

^ Institutional Credit Only

Second Semester			Credits
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ELPT	1341	Motor Control	3
INTC	1341	Principles of Automatic Control	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Third Semester			Credits
CETT	1325	Digital Fundamentals	3
PHYS	1310	Fundamentals of Physics	3
INTC	1343	Application of Industrial Automatic Control	3
ELPT	2319	Programmable Logic Controllers I	3
		Semester Total	**12**

Fourth Semester			Credits
DFTG	1313	Drafting for Specific Occupations	3
INTC	2336	Distributed Control and Programmable Logic	3
INTC	1355	Unit Operations	3
EEIR	1309	National Electrical Code	3
		Semester Total	**12**

Fifth Semester			Credits
ELPT	2375	Electrical Theory and Devices	3
INTC	2333	Instrumentation and Installation	3
ELPT	1351	Electrical Machines	3
INTC	1356	Instrumentation Calibration*	3
		Semester Total	**12**

Sixth Semester			Credits
ELPT	2331	AC/DC Drives	3
ELPT	2347	Electrical Testing and Maintenance	3
ELPT❖	2343	Electrical Systems Design	3
ELPT	2323	Transformers	3
		Semester Total	**12**

* or ELPT 1380 Cooperative Education - Electrical and Power Transmission Installation/Installer or INTC 1381 Cooperative Education Instrumentation Technology/Technician

❖This course has been designated as a capstone course. (See index for explanation.)

Electrical Construction

Specialization of Electrical Power & Control

Today's homes and businesses rely on electricity more than ever to power advanced entertainment systems, state-of-the-art information systems, communication devices, automated equipment and more. And the professionals trained in electrical construction and service provide the knowledge and skills needed to effectively deliver that electricity.

The Electrical Construction & Service Certificate program offers specific coursework in residential and commercial wiring systems. The program also provides training opportunities to aid individuals interested in earning licenses specific to the electrical field. The program requires extensive hands-on work with electrical distribution and service applications.

Electrical Power & Control

Certificate of Completion

Electrical Construction

Total Credits: 39

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ITSC	1309	Integrated Software Applications I	3
POFT	1301	Business English	3
ELPT	1221	Introduction to Electrical Safety and Tools	2
DFTG	1325	Blueprint Reading and Sketching	3
ELPT	1215	Electrical Calculations I	2
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
EECT	1200	Technical Customer Service	2
ELPT	1311	Basic Electrical Theory	3
ELPT	1329	Residential Wiring	3
OSHT	1405	OSHA Regulations - Construction Industry	4
ELPT	1225	National Electrical Code I	2
		Semester Total	**14**

Third Semester			Credits
ELPT	1345	Commercial Wiring	3
ELPT	2305	Motors and Transformers	3
ELPT	1340	Master Electrician Exam Review I	3
ELPT	1341	Motor Control	3
		Semester Total	**12**

Fuel Cell Technology

Specialization of Electrical Power & Control

Fuel cell use is on the rise, especially with today's renewable energy initiatives. Fuels cells are now used in transportation, cellular phones, laptop computers and other portable electronics, hospitals and schools and so much more.

TSTC's Fuel Cell Technology curriculum is designed to train diversified technicians and concentrates on the most widely used fuel cell types, applications and renewable energy sources.

The program prepares students by providing a strong background in fuel cell types and applications, electrical power systems, instrumentation processes and mechanical skills, among others.

Graduates of TSTC Waco's Fuel Cell Technology program can enter the market place with strong skills in electronics and electrical power and control. Specific fuel cell qualifications and background will include basic fuel cell installations, troubleshooting and repair and proactive maintenance.

Fuel Cell Technology

Associate of Applied Science Degree

Total Credits: 71

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
HART	1307	Refrigeration Principles	3
MATH	1316	Plane Trigonometry	3
CETT	1409	DC/AC Circuits	4
ENGL	1301	Composition I	3
		Semester Total	**13**

^ Institutional Credit Only

Second Semester			Credits
ELPT	1341	Motor Control	3
FCEL	1305	Fuel Cell and Alternative/Renewable Energy	3
ELPT	2215	Electrical Calculations II	2
INTC	1341	Principles of Automatic Control	3
ELPT	1225	National Electrical Code I	2
		Semester Total	**13**

Third Semester			Credits
ACGM	X3XX	Gen Ed Social Science Course	3
ELPT	2319	Programmable Logic Controllers	3
CHEM	1305	Introductory Chemistry I	3
CHEM	1105	Introductory Chemistry Lab I	1
FCEL	1304	Fuel Cell Mechanics	3
		Semester Total	**13**

Fourth Semester			Credits
ELPT	1351	Electrical Machines	3
ELPT	2375	Electrical Theory and Devices	3
INTC	2333	Instrumentation and Calibration	3
FCEL	2301	Fuel Cell Principles, Components and Controls	3
		Semester Total	**12**

Fifth Semester			Credits
ELPT	2347	Electrical Testing and Maintenance	3
ELPT	2231	AC/DC Drives	2
ELPT	2323	Transformers	3
FCEL❖	2330	Fuel Cell Installation, Commissioning, and Maintenance	3
		Semester Total	**11**

Sixth Semester			Credits
PHYS	1310	Elementary Physics I	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
CNBT	1342	Building Codes and Inspections	3
		Semester Total	**9**

❖ This course has been designated as a capstone course (see index for explanation).

Electrical Power Line Technician

Specialization of Electrical Power & Control

It's been called one of the most challenging of all careers in the energy industry, yet electrical linemen find it one of the most exciting, too. The powerline technician, or lineman, is not for the faint-hearted. It includes sometimes climbing great heights, working in the midst of storms, possibly riding in helicopters and dealing with high voltage wires, among other fascinating tasks.

And there's never been a better time to enter the field. As the electrical power needs of the nation continue to grow, the industry will require hundreds of thousands of new and replacement workers throughout the United States. The field is so booming, in fact, the federal government has ranked Electrician and Journeyman Lineman among its Top 50 In-demand Occupations (Careervoyages.gov). Moreover, retirements are expected to create very good job opportunities for new workers, particularly for electrical power line installers. Line installers and repairers held about 275,000 jobs in 2006.

Because of this need, TSTC works with industry to provide skilled technicians through its Certificate of Completion program, offered by the Electrical Power & Control Technology.

Students in the Electrical Power Line program will receive plenty of hands-on instruction, learning to use the actual tools of the trade with equipment such as hotline sticks; digger derrick, pole, and bucket trucks; and much more. In addition to installation, line installers and repairers are responsible for maintenance of electrical, telecommunications, and cable television lines. Workers periodically travel in trucks, helicopters and airplanes to visually inspect the wires and cables. Sensitive monitoring equipment can automatically detect malfunctions on the network, such as loss of current flow.

The curriculum is shaped with the help of industry advisers who actually work in the sector, ensuring all students receive instruction that easily translates into the job skills employers seek today. Students learn everything from live-line safety and climbing skills to electrical theory, troubleshooting distribution systems and even commercial drivers license driving skills.

Electrical Power & Control

Certificate of Completion
Electrical Power Line Technician
Total Credits: 42

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CVOP	1201	Commercial Drivers License Driving Skills	2
EECT	1200	Technical Customer Service	2
ELPT	1215	Electrical Calculations I	2
LNWK	1301	Orientation and Line Skill Fundamentals	3
LNWK	1311	Climbing Skills	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
EEIR	1309	National Electrical Code	3
ELPT	1311	Basic Electrical Theory	3
LNWK	1291	Special Topics in Lineworker	2
OSHT	1405	OSHA Regulations - Construction Industry	4
		Semester Total	**12**

Third Semester			Credits
ELPT	2323	Transformers	3
LNWK	2322	Distribution Line Construction	3
LNWK	2321	Live Line Safety	3
LNWK	2324	Troubleshooting Distribution Systems	3
		Semester Total	**12**

Fourth Semester			Credits
ELPT	1680	Cooperative Education - Electrical Power Transmission Installation/Installer General	6
		Semester Total	**6**

Solar Energy

Specialization of Electrical Power & Control

Due to rising gas prices and the pressure to move to renewable energy in the United States, the solar energy industry is booming. The American Solar Energy Society and renewable energy and energy efficiency industries created a total of 8.5 million jobs in 2006, with more on the way. In fact, the solar energy sector is predicted to become a $15 billion industry by 2020, experts predict.

Major companies, such as Chevron, BP Global, DuPont and other giants now have or are adding solar divisions. New companies in Texas, too, are joining in the effort. There are, in fact, more than 50 solar-related companies which have

sprung up in the past decade, with more expected to come online in the coming years.

That's why TSTC's Electrical Power & Control Technology has developed a two-year degree in solar energy. It is, in fact, one of only two such schools in the state to offer such a degree, and one of the few in the entire United States.

Solar energy can be used for residential, commercial and some industrial applications and major technology has developed around solar thermal (heating of fluids) and solar photovoltaic PV (generation of electrical power). Jobs are available in electrical marketing, building and construction, solar energy companies and many others. Technicians are needed to sell, manufacture, design, install and maintain equipment.

TSTC's Solar Energy program can accelerate a career for you in this growing industry. Our association with the Texas Renewable Energy Education Consortium, the State Energy Conservation Office and others, ensures you are getting the most current education in the industry. That, and our experienced staff, combined with industry advisors, can help put you on a fast-track for the solar energy job market.

Solar Energy Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ENGL	1301	Composition I	3
DFTG	1325	Blueprint Reading and Sketching	3
ELPT	2215	Electrical Calculations II	2
IEIR	1302	Introduction to Direct Current Circuits	3
HART	1307	Refrigeration Principles	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
OSHT	1405	OSHA Regulations-Construction Industry	4
IEIR	1304	Alternating Current Circuits for Industrial Applications	3
ELPT	1329	Residential Wiring	3
DFTG	1313	Drafting for Specific Occupations	3
SOLR	1371	Introduction to Solar and Alternative Energy Technologies	3
		Semester Total	**16**

Third Semester			Credits
SOLR	1373	Foundations of Solar Thermal Systems for Solar Energy Technology	3
SOLR	1372	Foundations of Solar Photovoltaic Power Generation	3
ELPT	2305	Motors and Transformers	3
ELPT	1345	Commercial Wiring	3
EEIR	1309	National Electrical Code	3
		Semester Total	**15**

Fourth Semester			Credits
ELPT	1341	Motor Control Transformers	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
MATH	1316	Plane Trigonometry	3
ACGM	X3XX	Gen Ed Social Science Course	3
SOLR	2374	Solar System Equipment and Components	3
		Semester Total	**15**

Fifth Semester			Credits
SOLR	2375	Solar System Design, Installation, Troubleshooting and Repair	3
PHYS	1310	Elementary Physics	3
ELPT	2319	Programmable Logic Controllers I	3
ELPT	2337	Electrical Planning and Estimating	3
		Semester Total	**12**

Solar Energy Technician

Certificate of Completion

Total Credits: 42

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
OSHT	1405	OSHA Regulations-Construction Industry	4
DFTG	1325	Blueprint Reading and Sketching	3
ELPT	2215	Electrical Calculations II	2
IEIR	1302	Introduction to Direct Current Circuits	3
HART	1307	Refrigeration Principles	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
IEIR	1304	Alternating Current Circuits for Industrial Applications	3
DFTG	1313	Drafting for Specific Occupations	3
ELPT	1329	Residential Wiring	3
SOLR	1371	Introduction to Solar and Alternative Energy Technologies	3
		Semester Total	**12**

Third Semester			Credits
SOLR	1372	Foundations of Solar Photo-Voltaic Power Generation	3
SOLR	1373	Foundations of Solar Thermal Technology	3
ELPT	1345	Commercial Wiring	3
EEIR	1309	National Electrical Code	3
ELPT	2305	Motors and Transformers	3
		Semester Total	**15**

Electronics Technology

Technological changes have opened exceptional career opportunities for skilled individuals who can think creatively and solve detailed problems, especially those who know and understand electronics.

And there's an infinite variety of positions available within the industry. Whether power tools, substations, commercial outfits and more, the field of electronics touches just about every aspect of our society.

The Electronics Technology program at TSTC offers the training and skills that can lead to an outstanding career with future job stability. You can gain in-depth knowledge needed to succeed in the field, as well as the practical, hands-on experience that companies nationwide are seeking.

The ELT curriculum offers a solid base of electronics courses and a concentration on microprocessor instruction — the framework for almost unlimited electronics applications. Students also will gain the competitive edge by learning LabView, the most up-to-date program used in the industry..

Associate of Applied Science Degree Program

TSTC offers a two-year program in Electronics Technology that thoroughly covers both classroom theory and laboratory work. The curriculum also provides instruction in more advanced electronics applications, such as automatic testing and optoelectronics, and culminates in an Associate of Applied Science degree.

Tech Prep Associate of Applied Science Degree Program

ELT also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The ELT department recommends the completion of two units of high school mathematics, selected from algebra, trigonometry and geometry, and at least one unit of science, preferably physics and/or chemistry. The program requires students to demonstrate reading, writing and mathematical skills before enrolling.

ELT Advisory Committee

Ed Barker, L-3 Communications, Waco
Scott Beasley, ESA, Fort Worth
Jonathan Booth, Brazos Electric Power Cooperative Inc., Waco
Sid Frasier, Electronic Assistance Corporation, Temple
Anthony Jackson, Chevron Phillips Chemical Company, The Woodlands
Neil Johnson, McLennan County Co-op., McGregor
Eric Nail, Odyssey Technical Solutions, Round Rock
W. Keith Patterson, EFW Inc., Fort Worth,
Ezban F. Robertson Jr., HAI, New Orleans, La.
Steve Romero, National Instruments, Austin
David Simmons, Metrum, Waco
Andrew Wlazlinski, Globalstar, Clifton

Electronics Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CETT	1307	Fundamentals of Electronics	3
IEIR	1302	Introduction to Direct Current Circuits	3
MATH	1314	College Algebra	3
ENGL	1301	Composition I	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
CETT	1321	Electronic Fabrication	3
CSIR	2301	Communication Electronics Components	3
MATH	1316	Plane Trigonometry	3
IEIR	1304	Alternating Current Circuits for Industrial Applications	3
		Semester Total	**12**

Third Semester			Credits
CSIR	1325	Digital Fundamentals	3
CETT	2339	Amplifier Analysis	3
EECT	1371	Power Source Design	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Fourth Semester			Credits
PHYS	1310	Fundamentals of Physics	3
CSIR	1344	General Communications Circuits I	3
CETT	2335	Advanced Microprocessor	3
CETT	1357	Linear Integrated Circuits	3
		Semester Total	**12**

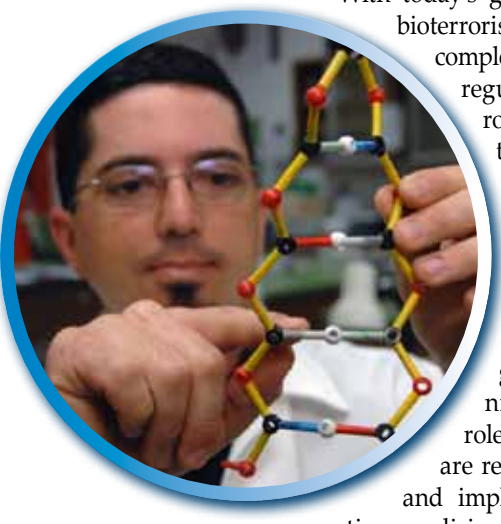
Fifth Semester			Credits
CETT	2337	General Microcomputer Control	3
CSIR	1341	Transceiver Troubleshooting I	3
EECT	1340	Telecommunications Transmission Media	3
ELPT	1341	Motor Control	3
		Semester Total	**12**

Sixth Semester			Credits
CETT❖	2449	Research and Design Project	4
ELPT	2319	Progammable Logic Controllers I	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
EECT	2271	Automatic Testing	2
		Semester Total	**12**

EECT Co-op classes maybe used for different courses, depending on the learning objectives of the position.

❖ This course has been designated as a capstone course (see index for explanation).

Environmental Health & Safety Technology



With today's global pollution, threat of bioterrorism and the increasing complexity of governmental regulations, careers in environmental health and safety are more essential than ever before.

Environmental health and safety technicians have become a vital and necessary player in the global market. These technicians play an important role within companies and are responsible for interpreting and implementing safety regulations, policies and procedures, and for enforcing government safety codes.

In TSTC's Environmental Health & Safety Technology (EHS), you can get the necessary education and skills to create a career path that can lead to stable employment. TSTC's experienced staff offers instruction in specializations focusing on Environmental Compliance, Health Physics and Safety Compliance.

Supported by professionals in the industry, you'll get the latest, hands-on instruction possible to ensure a career that's not only pays well, but ever evolves to keep technicians interested in the field.

EHS Advisory Committee

Richard Anderson, Travelers Property Casualty, Dallas
Sheila Beyer, Packaging Corporation of America, Waco
Hugh (Bill) Bryant, Austin
Ralph Castillo, Houston
Albert Condello III, Coulter Field Airport, Bryan
Harley Davis, Salado
Anna Dunbar, Texas Natural Resources, Waco
Dave Gorum, Safety Services International Inc., Marble Falls
Stanley Gutierrez, Republic Waste Service, Houston
Ralph Henderson, Dallas
Ralph Heyer, Radiation Training Manager, Campbell
Shelia Hillis, Northstar Food Service, Dallas
Robert Hoffland, HEI Environmental, Conroe
David Johnson, Brazos Valley Safety Services, Bryan
Michael Marler, South Texas Project Electric Generating Station, Bay City
Jim McCarroll, Brazos River Authority, McGregor
Jose Mirales, Alliance Bank., Temple
Michael Mitchell, State Farm Insurance Co., Austin
Polly Porter, TCEQ, Waco
Keith Reddick, US EPA Region 6, Dallas
Dr. Richard Riess, Scott & White Clinic, College Station
Ron Scheele, Memorial Hospital SW, Houston
Christy A. Shriver, San Antonio
A. L. (Al) Simmons, A. L. Simmons Consultants, Richardson
Pete Slavik, TAS Environmental, Fort Worth
Debra Sloane, Medical Plastics Lab, Gatesville
Tracy Tipping, The University of Texas, Austin
Mike Truitt, Ludlum Measurements, Sweetwater
Linda Vickers, Texas Department of Insurance, Fort Worth

Environmental Compliance Technician

Specialization of Environmental Health & Safety Technology

As an industry-based environmental compliance technician, you can help ensure industry complies with environmental regulations, while maximizing a company's economic progress. In the TSTC Environmental Compliance Technician Specialization, you will receive unique hands-on training in the practical skills needed to establish a career in a variety of companies in markets throughout the United States.

Associate of Applied Science Degree Program

The EHS department offers a two-year curriculum that progresses from basic health and safety courses to more advanced instruction, such as radiation physics and toxicology. The coursework culminates in an Associate of Applied Science degree.

Tech Prep Associate of Applied Science Degree Program

EHS also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The EHS department requires students to demonstrate basic reading, writing and mathematical skills before enrolling.

Environmental Compliance Technician

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ENGL	1301	Composition I	3
EPCT	1305	Environmental Regulations Overview	3
EPCT	1307	Introduction to Environmental Safety/Health	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
ITSC	1309	Integrated Software Applications	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
OSHT	2401	OSHA Regulations – General Industry	4
NUCP	1319	Radiation Physics	3
BIOL	1406	General Biology	4
		Semester Total	**17**

Third Semester			Credits
EPCT	1213	Contingency Planning	2
EPCT	1347	Waste Minimization and Pollution Prevention	3
EPCT	2333	Environmental Toxicology	3
EPCT	1217	Environmental Geology	2
CHEM	1406	Introduction Chemistry for Allied Health	4
		Semester Total	**14**

Fourth Semester			Credits
OSHT	1405	OSHT Regulations – Construction Industry	4
EPCT	1341	Principles of Industrial Hygiene	3
EPCT	1249	Environmental Regulation Interpretation and Applications	2
EPCT	1243	Treatment Remediation and Disposal Techniques	2
EPCT	1344	Environmental Sampling and Analysis	3
		Semester Total	**14**

Fifth Semester			Credits
BIOL	2406	Environmental Biology	4
EPCT	2359	Risk Analysis & Site Survey	3
OSHT	2320	Safety Training Presentation Techniques	3
OSHT	1221	Fire Protection System	2
EPCT	1301	Hazwoper Training and Related Topics	3
		Semester Total	**15**

Radiation Protection & Health Physics*

Specialization of Environmental Health & Safety

The field of radiation protection, or health physics as it is known in industry, is a valuable addition to any workplace. TSTC's offers two options in this area: an Advanced Technical Certificate in Health Physics can lead you to a career that's financially rewarding, as well as challenging. A student may also earn an associate degree in Radiation Protection Technology.

Individuals who work in this industry require special knowledge of the benefits of radiation and its potential harmful effects. This advanced technical certificate offers the hands-on experience and skills necessary to provide basic radiation safety for industry, educational institutions, first responders and medical facilities and other fields where environmental health and safety is vital to the company. With the expansion of the nuclear power industry, especially in Texas, these programs will position the graduate or the ATC holder to enter the specialized workforce required by nuclear power.

Associate of Applied Science Degree Program

The EHS department offers a two-year curriculum that progresses from basic radiation safety courses to more advanced instruction, such as radiation physics and toxicology solid state radiation detection systems and waste management/disposal. The coursework culminates in an Associate of Applied Science degree in Radiation Protection Technology (RPT) which is in high demand across the country.

Advanced Technical Certificate

Another option for students is to obtain an Advanced Technical Certificate-Health Physics and includes intense, hands-on coursework to prepare students for the challenges found in a wide range of areas including industrial, environmental, medical, nuclear power, and manufacturing fields. The ATC-Health Physics may only be awarded to an individual who possesses a college degree in a related area.

Radiation Protection Technology

Associate of Applied Science Degree

Total Credits: 71

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
EPCT	1307	Introduction to Environmental Safety and Health	3
NUCP	1319	Radiation Physics	3
ENGL	1301	Composition I	3
ACGM	X3XX	Gen Ed Social Science Course	3
MATH	1314	College Algebra	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
EPCT	1305	Environmental Regulations Overview	3
IRAD	1301	Radiation Detection Measurement I	3
ITSC	1309	Integrated Software Applications I	3
BIOL	1406	Environmental Biology	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts	3
		Semester Total	**16**

Third Semester			Credits
IRAD	2371	Radiation Detection Measurement II	3
NUCP	2301	Radiation Protection I	3
NUCP	1270	Nuclear Power Plant Fundamentals	2
CHEM	1406	Introductory Chemistry I	4
		Semester Total	**12**

Fourth Semester			Credits
NUCP	1341	Personnel and Environmental Monitoring	3
NUCP	1371	Introduction to Nuclear Systems	3
NUCP	1391	Special Topics in Nuclear/Nuclear Power Technology/Technician	3
NUCP	2402	Radiation Protection II	4
		Semester Total	**13**

Fifth Semester			Credits
NUCP	2311	Radioactive Waste Disposal and Management	3
NUCP	2331	Radiation Protection III	3
NUCP	2335	Radiological Emergencies	3
NUCP	2379	Reactor Physics	3
OSHT	2320	Safety Training Presentation Techniques	3
		Semester Total	**15**

*Pending Texas Higher Education Coordinating Board Approval

Health Physics

Advanced Technical Certificate

Total Credits: 16

Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
NUCP	1391	Special Topics in Nuclear/Nuclear Power Technology/Technician	3
IRAD	1301	Radiation Detection Measurement I	3
NUCP	2301	Radiation Protection I	3
NUCP	2335	Radiological Emergencies	3
NUCP	2402	Radiation Protection II	4
		Semester **Total**	**16**

NOTE: A college student may begin taking the course requirements of the ATC Health Physics Advanced Technical Certificate prior to graduation, but must complete their college degree prior to completing and applying for the ATC.

Safety Compliance Technician

Specialization of Environmental Health & Safety Technology

The Safety Compliance Technician Specialization program has become vital to a society which places a premium on safety in the workplace. Workers compensation claims have skyrocketed, costing companies millions of dollars.

It is the role of the Safety Compliance Technician to help companies comply with current Occupational Safety & Health Administration and Texas Workers' Compensation Commission regulations. Technicians who can do this can have a fantastic future in the field.

The EHS curriculum for the Safety Compliance Technician includes instruction on the hazards of machines, safe work methods and first aid and cardiopulmonary resuscitation procedures, among other lessons. As a safety compliance technician, you can learn to anticipate, recognize, evaluate and control industrial health hazards and arrange plant lay-out for safety.

Associate of Applied Science Degree Program

The EHS department offers a two-year curriculum that focuses on the skills and knowledge needed to help companies establish programs to prevent industrial and occupational injuries. Safety compliance technicians are responsible for interpreting and implementing safety regulations, policies and procedures and for enforcing government safety codes.

The Safety Compliance Technician Specialization program culminates in an Associate of Applied Science degree and offers an in-depth study of current Occupational Safety and Health Administration and Texas Workers' Compensation Commission regulations, including maintaining accident and illness records.

Safety Compliance Technician

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ENGL	1301	Composition I	3
EPCT	1305	Environmental Regulations Overview	3
EPCT	1307	Intro to Environmental Safety and Health	3
ACGM	X3XX	Gen Ed Social Science	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
BIOL	1406	General Biology	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ITSC	1309	Integrated Software Applications I	3
OSHT	2401	OSHA Regulations – General Industry	4
NUCP	1319	Radiation Physics	3
		Semester Total	**17**

Third Semester			Credits
OSHT	1209	Physical Hazards Control	2
EPCT	1213	Contingency Planning	2
CHEM	1406	Intro. Chemistry for Allied Health	4
EPCT	2333	Environmental Toxicology	3
OSHT	2270	Noise Control & Acoustics Engineering	2
		Semester Total	**13**

Fourth Semester			Credits
OSHT	1405	OSHA Regulations	4
EPCT	1341	Principles of Industrial Hygiene	3
OSHT	2309	Safety Program Management	3
OSHT	1316	Material Handling	3
OSHT	1313	Accident Prevention, Inspection and Investigation	3
		Semester Total	**16**

Fifth Semester			Credits
OSHT	1221	Fire Protection Systems	2
EPCT	2331	Industrial Hygiene Applications	3
OSHT	2320	Safety Training Presentation Techniques	3
OSHT	2388	Internship Occupational Safety and Health Technology/Technician	3
OSHT	2370	Safety and Health First Aid Certification	3
		Semester Total	**14**



Food Service/Culinary Arts

People tend to think that great chefs are born that way, but that's not true. They are made — through a mixture of skills, practice and talent. Planning, preparing and creating delicious food is not an accident. People must learn the ins and out of the business, which is more than just mixing and baking. There's budgeting, ordering, shopping, menu planning and meal presentation to consider, as well as contingency planning and dealing with feeding large crowds. And with an increasingly health-conscious society, dietary planning for restaurants, hospitals, hotels and other institutions now requires more knowledge and skills than ever before.

As a Food Service/Culinary Arts student, you'll not only learn to how to mix the right ingredients together to whip up appetizing meals, you'll also learn the dozens of associated tasks that will give you an edge above the competition in the field.

And the training will be well worth it. The food service industry is one of the most rapidly growing service sectors in the economy. The field is so important, the federal government lists it among its associated careers in the top 10 of the growing industries in the U.S.

Career opportunities exist in all areas of the industry, from basic food preparation to full production restaurant management.

TSTC's Food Service/Culinary Arts Department provides practical, hands-on instruction, experienced chefs and staff, top advisors and real-world experience to help you prepare for a successful profession in the industry.

Associate of Applied Science Degree Program

There's a lot more to cooking than most people know. TSTC's Food Service/Culinary Arts program covers cooking, baking, food preparation, purchasing, cost analysis and service. The Food Service/Culinary Arts department at Texas State Technical College teaches food related topics including nutrition, sanitation and safety, food service equipment, baking and quantity procedures. As a graduate, you may work in a production position in restaurants and cafeterias, hospitals, nursing homes, hotels, private clubs, schools, universities, catering services, bakery and deli operations, as well as recreational and manufacturing food services and fast food management.

Tech Prep Associate of Applied Science Degree Program

FSC also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

Certificate Program

A skill development program is available for a faster means to enter a career in the food service industry. The certificate is also useful if you have another degree and wish to gain additional knowledge in food service.

Most courses stress weight and measurement accuracy and consistency of product; therefore, great emphasis is placed on functional mathematics. You will be required to show basic reading, writing and mathematical skills before entering into this program. Most food service positions require the ability to lift 50 pounds.

FSC Advisory Committee

Phil Adkins, Shipley Do-Nuts, Waco
Ron Diebold, Ridgewood Country Club, Waco
Ben Hernandez, Baylor University-Aramark, Waco
JCarl Murphy, Sysco, Waco
Jerry Opperman, CEC, Catholic Student Center at Baylor University, Waco
Paula Owen, George's, Waco
Len Pawelek, Green Room Grille, Waco
Clifford Reece, WISD, Sodexho, Waco
Don Speed, Retired, Waco
David Sted, The Colony
Liz Taylor, Waco Convention & Visitors Bureau, Waco
Roger Williams, Ben E Keith, Moody
Rick Wilson, On The Border, Dallas

Food Service/Culinary Arts

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CHEF	1205	Sanitation and Safety	2
FDNS	1301	Introduction to Foods	3
HAMG	1321	Introduction to Hospitality Industry	3
IFWA	1217	Food Production and Planning	2
ITSC	1309	Integrated Software Applications I	3
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
CHEF	1401	Basic Food Preparation	4
IFWA	1318	Nutrition for the Food Service Professional	3
RSTO	1221	Menu Management	2
RSTO	1304	Dining Room Service	3
ENGL	1301	Composition I	3
		Semester Total	**15**

Third Semester			Credits
CHEF	2301	Intermediate Food Preparation	3
PSTR	1301	Fundamentals of Baking	3
RSTO	1301	Beverage Management	3
RSTO	1325	Purchasing for Hospitality Operations	3
ACGM	X3XX	Gen Ed Math/Natural Science Course	3
		Semester Total	**15**

Fourth Semester			Credits
CHEF	1345	International Cuisine	3
PSTR	2331	Advanced Pastry Shop	3
RSTO	1313	Hospitality Supervision	3
RSTO	2301	Principles of Food and Beverage Controls	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fifth Semester			Credits
RSTO❖	2505	Management of Food Production and Service	5
HAMG*	2305	Hospitality Management and Leadership	3
ACGM	X3XX	Gen Ed Social Science Course	3
ACGM	X3XX	Gen Ed Elective Course	3
		Semester Total	**14**

*or BUSI 2301 Business Law

❖ This course has been designated as a capstone course (see index for explanation).



Culinarian

Certificate of Completion

Total Credits: 49

First Semester			Credits
TECH^	1100	Tech Success	
CTEX	10XX	Tech Success Seminars (3 as assigned)	1
CHEF	1205	Sanitation and Safety	2
FDNS	1301	Introduction to Foods	3
HAMG	1321	Introduction to Hospitality Industry	3
IFWA	1217	Food Production and Planning	2
ITSC	1309	Integrated Software Applications I	3
		Semester Total	**13**

^Institutional Credit Only

Second Semester			Credits
CHEF	1401	Basic Food Preparation	4
IFWA	1318	Nutrition for the Food Service Professional	3
RSTO	1221	Menu Management	2
RSTO	1304	Dining Room Service	3
		Semester Total	**12**

Third Semester			Credits
CHEF	2301	Intermediate Food Preparation	3
PSTR	1301	Fundamentals of Baking	3
RSTO	1301	Beverage Management	3
RSTO	1325	Purchasing for Hospitality Operations	3
		Semester Total	**12**

Fourth Semester			Credits
CHEF	1345	International Cuisine	3
PSTR	2331	Advanced Pastry Shop	3
RSTO	1313	Hospitality Supervision	3
RSTO	2301	Principles of Food and Beverage Controls	3
		Semester Total	**12**

Food Service Operations

Certificate of Completion

Total Credits: 37

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CHEF	1205	Sanitation and Safety	2
FDNS	1301	Introduction to Foods	3
HAMG	1321	Introduction to Hospitality Industry	3
IFWA	1217	Food Production and Planning	2
ITSC	1309	Integrated Software Applications I	3
		Semester Total	**13**

^ Institutional Credit Only

Second Semester			Credits
CHEF	1401	Basic Food Preparation	4
IFWA	1318	Nutrition for the Food Service Professional	3
RSTO	1221	Menu Management	2
RSTO	1304	Dining Room Service	3
		Semester Total	**12**

Third Semester			Credits
CHEF	2301	Intermediate Food Preparation	3
PSTR	1301	Fundamentals of Baking	3
RSTO	1301	Beverage Management	3
RSTO	1325	Purchasing for Hospitality Operations	3
		Semester Total	**12**

Culinary Assistant

Certificate of Completion

Total Credits: 26

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CHEF	1305	Sanitation and Safety	3
FDNS	1301	Introduction to Foods	3
HAMG	1321	Introduction to Hospitality Industry	3
IFWA	1217	Food Production and Planning	2
ITSC	1309	Integrated Software Applications I	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
CHEF	1401	Basic Food Preparation	4
IFWA	1318	Nutrition for the Food Service Professional	3
RSTO	1221	Menu Management	2
RSTO	1304	Dining Room Service	3
		Semester Total	**12**

Geospatial Technology

GIS (Geographic Information Systems) has become a multi-billion dollar global industry. The U.S. government uses it in the military. Online companies such as Google use it for recreation purposes, and even automobiles are equipped with the technology that has been credited with saving lives.

Geospatial Technology (GIS) at TSTC provides hands-on programs in GIS and surveying that can lead you to exciting and profitable careers. The world today has critical needs for spatial information, making GIS a major player in information technology due to its ability to link database information with mapping and analytical capabilities.

TSTC instructors have worked in the field and gathered input from industry advisors who know precisely what training is needed. Students also spend the majority of their times in labs, gathering first-hand knowledge that will lead to lucrative careers for highly trained GIS/GPS and surveying professionals.

Associate of Applied Science Degree Program

The Geospatial Technology Department offers an intense, two-year curriculum with coursework in three GIS specializations, Geographic Information Systems Analyst, GIS-Web Specialist and Geomatics (Land/Civil Surveying). These areas of specialization offer focused curriculums that prepare students for work in those industries and culminate in an Associate of Applied Science degree.

Certificate Program

The Geospatial Technology Department offers a less intense, one-year curriculum focusing on Global Positioning Systems (GPS) that culminates in a Certificate of Completion. This program is designed to prepare the student to become a skilled GPS technician. There are many career opportunities for GPS technicians, who spend extensive time doing outside fieldwork, often with opportunities to travel.

GIS Advisory Committee

Ronnie Bruggman, U.S. Army Corps of Engineers, Waco
Ron Diaz, City of San Marcos, San Marcos
Carl Dorton, McLennan County 911, Waco
Jan Funderburgh, Smith County 911, Tyler
Gerald Gandes-Bery, McLennan County Appraisal District, Waco
Robert Leathers, McLennan County 911, Waco
Sunny Lindsey, City of Colleyville, Colleyville
Nelly Perez, McLennan County 911, Waco
Melinda Polley, Trinity Analytical Services, Grand Prairie
Todd Snelgrove, City of Bryan, Bryan
Nathan Turner, Chesapeake Energy Corp., Fort Worth
Ken Utton, Chesapeake Energy Corporation, Cleburne

Geospatial Technology

Certificate of Completion

Total Credits: 24

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DFTG	1313	Drafting for Specific Occupations	3
GISC	1311	Introduction to Geographic Information Systems (GIS)	3
SRVY	1309	Surveying Measurement	3
ACGM	X3XX	Gen Ed Math Course	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
BMGT	1301	Supervision	3
SRVY	1335	Land Surveying Applications	3
SRVY	1341	Land Surveying	3
SRVY	1342	Global Positioning System Techniques for Surveying and Mapping	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Geographic Information Systems Analyst-

Specialization of Geospatial Technology

Specialized information is used for capturing, storing, querying, analyzing and displaying geographic data. Students in this specialization learn a vast array of applications for use in this growing and dynamic field. GIS is not just maps, but smart maps that can examine, analyze and explain information in new ways, making critical decisions easier and more effective.

As a student in the specialization of GIS Information System Analyst, you'll learn all the basics and then some, including programming, implementing a database, techniques for surveying and mapping and more.

Geographic Information Systems Analyst

Associate of Applied Science Degree

Total Credits: 69

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DFTG	1313	Drafting for Specific Occupations	3
GISC	1311	Introduction to Geographic Information Systems (GIS)	3
ITSC	1309	Integrated Software Applications I	3
LAWT	1301	Copyright and Ethical Issues	3
ACGM	X3XX	Gen Ed Math Course	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
GISC	1301	Cartography and Geography in Geographical Information Systems (GIS) and Global Positioning Systems	3
ITSE	1346	Database Theory and Design	3
SRVY	1309	Surveying Measurement	3
GEOL	1403	Physical Geology	4
		Semester Total	**13**

Third Semester			Credits
GISC	1421	Introduction to Raster-Based Geographic Information Systems (GIS)	4
GISC	2320	Intermediate Geographic Information Systems (GIS)	3
ITSE	2305	Windows Programming	3
SRVY	1342	Global Positioning System Techniques for Surveying and Mapping	3
		Semester Total	**13**

Fourth Semester			Credits
GISC	2301	Data Acquisition and Analysis in Geographic Information Systems (GIS)	3
ITSE	1345	Introduction to Oracle SQL	3
ITSE	2349	Advanced Visual Basic Programming	3
ACGM	X3XX	Gen Ed Social Science Course	3
ENGL	1301	Composition I	3
		Semester Total	**15**

Fifth Semester			Credits
ITSE	2333	Implementing a Database on Microsoft SQL Server 7.0	3
GISC❖	2411	GIS Applications	4
GEOG	1302	Cultural Geography	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**13**

GIS Web Specialist

Associate of Applied Science Degree

Total Credits: 66

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
GISC	1311	Introduction to Geographic Information Systems (GIS)	3
IMED	1316	Web Design I	3
ITSE	1302	Computer Programming	3
LAWT	1301	Copyright and Ethical Issues	3
ACGM	X3XX	Gen Ed Math Course	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
GISC	1301	Cartography and Geography in Geographical Information Systems (GIS) and Global Positioning Systems	3
ITSE	1307	Introduction to C++ Programming	3
ITSE	1346	Database Theory and Design	3
GEOL	1403	Physical Geology	4
		Semester Total	**13**

Third Semester			Credits
GISC	1421	Introduction to Raster-Based Geographic Information Systems (GIS)	4
GISC	2320	Intermediate Geographic Information Systems (GIS)	3
ITSE	1311	Beginning Web Programming	3
SRVY	1342	Global Positioning System Techniques for Surveying and Mapping	3
		Semester Total	**13**

Fourth Semester			Credits
GISC	2301	Data Acquisition and Analysis in Geographic Information Systems (GIS)	3
ITSE	2317	Java Programming	3
ENGL	1301	Composition I	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Fifth Semester			Credits
GISC	2411	Geographic Information Systems (GIS) Applications	4
INEW	2338	Advanced Java Programming	3
ITSE	2333	Implementing a Database on Microsoft SQL Server	3
GEOG	1302	Cultural Geography	3
		Semester Total	**13**

GIS Web Specialist

Specialization of Geospatial Technology

Web-based GIS applications are standard today in many industries world-wide, and those who want a career in the field can find exciting opportunities. The GIS Web Specialist meets specific requirements for rapidly growing markets seeking employees with both strong GIS analytical abilities and Web-based skills.

Geomatics Technology (Land/Civil Surveying)

Specialization of Geospatial Technology

Land Surveying is a career field that continues to grow by leaps and bounds. Highly in demand by countless industries, the federal government expects steady growth through 2014. Land Surveying is a critical part of land development in charting the Earth's surface features through surveys and maps. And new technology is changing the way surveyors and surveying technicians conduct their job. Computers, satellites and other forms of technology keep this field on a fast-evolving track.

In TSTC's Geomatics Technology (Land/Civil Surveying), students learn the major skills that can lead to a promising career, including the tools and techniques used in land surveying, remote sensing, Geographic Information Systems (GIS), Global Navigation Satellite Systems, photogrammetry and related forms of earth mapping. With your newly acquired skills, you can find work in a variety of industries, including local, state and federal governments and private and non-profit sectors in an extensive range of related scientific and technical fields, such as agriculture and soils, archeology, biology, cartography, ecology, environmental sciences, forestry and range, geology; hydrology, land appraisal and real estate, urban planning and more.

Geomatics Technology Advisory Committee

James Carr, Vannoy & Associates Inc., Waco
Ronald Carroll, Ronald Carroll Surveyors Inc., Temple
Michael Evans, Hydrotech Engineering Inc., Arlington
Jerry Goodson, Jerry Goodson Surveryor, Lampasas
Charles A. Hamilton, Texas Department of Transportation, Waco
Kevin Hessel, GE Walker & Associates, Waco
K. Paul Holt, Central Texas Chapter AGC, Waco
Joe Mayfield P.E., City of Waco, Waco
Ronnie W. Parker, TxDOT-Waco District, Waco
Robert L. Young, Frontier Surveying & Digital Mapping Services L.P., Ft. Worth

Geomatics (Land/Civil Surveying)

Associate of Applied Science Degree

Total Credits: 68

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
GISC	1311	Introduction to Geographic Information Systems (GIS)	3
SRVY	1301	Introduction to Surveying	3
SRVY	1309	Surveying Measurement	3
ENGL	1301	Composition I	3
		Semester Total	**12**

Second Semester			Credits
DFTG	1313	Drafting for Specific Occupations	3
GISC	1301	Cartography and Geography in Geographical Information Systems (GIS) and Global Positioning Systems	3
SRVY	1335	Land Surveying Applications	3
SRVY	1341	Land Surveying	3
MATH	X3XX	Gen Ed Math Course	3
		Semester Total	**15**

Third Semester			Credits
SRVY	1315	Surveying Calculations	3
SRVY	1342	Global Positioning System Techniques for Surveying and Mapping	3
SRVY	2309	Computer Aided Mapping	3
SRVY	2455	Advanced Boundary Project	4
		Semester Total	**13**

Fourth Semester			Credits
SRVY	1343	Surveying - Legal Principles I	3
SRVY	2331	Geodetic Surveying and Mapping	3
SRVY	2335	Geodetic Surveying and Mapping Application	3
ACGM	X3XX	Gen Ed Social Science Course	3
GEOG	1302	Cultural Geography	3
		Semester Total	**15**

Fifth Semester			Credits
SRVY	2339	Engineering Design Surveying	3
SRVY	2341	Engineering Design Surveying Lab	3
SRVY	2344	Surveying - Legal Principles II	3
GEOL	1403	Physical Geology	4
		Semester Total	**13**

^Institutional Credit Only

Golf Course & Landscape Management

Did you know golfing is the world's largest working sports organization? Or that more than 500,000 people call the golf course their office? It's true, and if a job in the great outdoors sounds appealing, then TSTC's Golf Course & Landscape Management Technology (GLM) could be just the ticket for students seeking anything but a conventional career. Part science, part horticulture and part environmental, the program is anything but routine.

Consider that the turfgrass industry includes golf courses, athletic fields, parks, businesses, schools and home lawn care, among others. It takes strong management and technical skills to break into the industry, but salaries are worth it. The GLM program at TSTC provides intensive, hands-on training in today's ever-growing turfgrass and landscape design industries.

Students have access to TSTC's par-4, four-hole golf course, green houses, organic bunker and industry-standard landscaping equipment. The program maintains ongoing agreements with local nurseries and golf courses, as well as a link to cooperative education employers. And the staff really knows what its doing. The July 2007 issue of the Turfnet's online magazine ranked TSTC's GLM certificate program No. 9 in its Top Turf Schools in the nation, joining the likes of Rutgers, Michigan State and Pennsylvania State universities.

After fine-tuned training, students have graduated and gone on to become employed at such prestigious locales as South Hill, Tierra Verde Golf Club, Sea Island, Dallas Athletic Club, White Bluff Resort, Bandit Golf Club, Austin's Hyatt Regency, The Hills of Lakeway, and Augusta, home of the Masters.



Associate of Applied Science Degree Program

The two-year Golf Course & Landscape Management curriculum covers the basics of plants, soils and horticulture before advancing to turfgrass science, plant diseases and irrigation courses. The comprehensive instructional program culminates in an Associate of Applied Science degree.

Certificate Program

Those interested in entering the field of golf course and landscape management more quickly can choose to enroll in the one-year curriculum. This track, which leads to a Certificate of Completion, is also useful if you have a degree and wish to gain additional industry knowledge.

GLM Advisory Committee

Richard Blackshear, Virkim Inc., Hewitt
Debbie Boyd, Greenlife Nursery, Waco
Gary Brooks, Rhone Poulenc Co., Weatherford
Renee Davis, Country Colors Greenhouse, Waco
J.D. Franz, Cottonwood Creek Golf Course, Waco
Casey Hendrix, Texscapes Landscape & Irrigation, Ennis
Kent Knowles, Brookside Equipment, Houston
Paul Luna, Premier Lawn Care, Hewitt
Jeff Martin, The Jeff Martin Group, North Richland Hills
David May, Cameron Park Zoo, Waco
Shannon McDaniel, Fitzgerald Lawnscaper LTD., Woodway
Ray McFarland, Heartland Country Club, Houston
Melody Mitchell, Parks & Community Services, Ft. Worth
Trevor Ogden, Parkway Research, Austin
Evonne Sandas, Tierra Verde Golf Club, Arlington
Pat Searight, Landscapes Unlimited, Melissa
William Stewart, International Plant Nutrition Institution, San Antonio
Perry Turnbow, Peak Performance, Sherman
Donna Woods, Outdoor Concepts, China Spring

Golf Course & Landscape Management

Associate of Applied Science Degree

Total Credits: 71

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
HALT	1301	Principles of Horticulture	3
HALT	1303	Herbaceous Plants	3
HALT	1305	Horticultural Soils	3
HALT	1324	Turfgrass Science and Management	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^ Institutional Credit Only

Second Semester			Credits
DEMR	1225	Small Air Cooled Engines	2
HALT	1320	Horticultural Calculations	3
HALT	1327	Horticultural Equipment Management	3
HALT	1331	Woody Plant Materials	3
HALT	2318	Soil Fertility and Fertilizers	3
		Semester Total	**14**

Third Semester			Credits
HALT	1313	Economic Entomology	3
HALT	1319	Landscape Construction	3
HALT	2312	Turfgrass Maintenance	3
HALT	2323	Horticultural Pest Control	3
SPNL	1342	Business Spanish	3
		Semester Total	**15**

Fourth Semester			Credits
ACNT	1329	Payroll and Business Tax Accounting	3
HALT	1307	Plant Diseases	3
HALT	1338	Irrigation Water Management and Conservation	3
HALT	1346	Specialized Turfgrass Management	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Fifth Semester			Credits
HALT❖	1345	Golf/Sports Field/Park Management	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ACGM	X3XX	Gen Ed Elective	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

❖This course has been designated as a capstone course (see index for explanation).

Golf Course & Landscape Management

Certificate of Completion

Total Credits: 41

First Semester			Credits
TECH^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1225	Small Air Cooled Engines	2
HALT	1301	Principles of Horticulture	3
HALT	1303	Herbaceous Plants	3
HALT	1305	Horticultural Soils	3
HALT	1324	Turfgrass Science and Management	3
		Semester Total	**14**

^ Institutional Credit Only

Second Semester			Credits
HALT	1320	Horticultural Calculations	3
HALT	1327	Horticultural Equipment Management	3
HALT	1331	Woody Plant Materials	3
HALT	2318	Soil Fertility and Fertilizers	3
		Semester Total	**12**

Third Semester			Credits
HALT	1313	Economic Entomology	3
HALT	1319	Landscape Construction	3
HALT	2312	Turfgrass Maintenance	3
HALT	2323	Horticultural Pest Control	3
SPNL	1342	Business Spanish	3
		Semester Total	**15**

Note: See the Department for a list of **approved** academic/general education electives, as well as cooperative educational opportunities, that can be substituted to complete degree requirements.

Golf Course & Landscape Equipment Technology

Specialization of Golf Course & Landscape Management

With more than 20 million people playing golf in the U.S. and Texas alone on over two million acres of cultivated turf grass, the enormous opportunities available for equipment technicians makes this career choice a great one. Jobs are available on golf courses, athletic fields, parks, businesses and in home lawn care, all which rely on technicians to keep their equipment maintained and up to date.

TSTC offers specific curriculum through the GLM program that can provide students with an opportunity for a stable career. The training you will receive features hands-on experience and instruction unmatched in Texas. The program focuses on the practical knowledge you need in the profession, including machine shop skills, basic electrical systems, diesel engine testing and repair, basic welding processes, management skills and more.

Associate of Applied Science Degree Program

In the two-year Golf Course & Landscape Equipment Technology, TSTC provides training for technicians to repair highly advanced hydraulic, electronic and reel maintenance systems. The intensive curriculum culminates in an Associate of Applied Science degree.

Certificate Program

TSTC also offers a one-year Golf Course & Landscape Equipment Technology program that leads to a Certificate of Completion.

Golf Course & Landscape Management Equipment Technology

Associate of Applied Science Degree

Total Credits: 70

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
DEMR	1405	Basic Electrical Systems	4
DEMR	1416	Basic Hydraulics	4
ENGL	1301	Composition I	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**14**

^ Institutional Credit Only

Second Semester			Credits
DEMR	1301	Shop Safety and Procedures	3
HALT	1320	Horticultural Calculations	3
HALT	1327	Horticultural Equipment Management	3
SPNL	1342	Business Spanish	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
DEMR	1225	Small Air Cooled Engines	2
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
HALT	2312	Turfgrass Maintenance	3
ENGL	2311	Technical Writing	3
		Semester Total	**16**

Fourth Semester			Credits
DEMR	1229	Preventative Maintenance	2
DEMR	1421	Power Train I	4
DEMR	2432	Electronic Controls	4
HALT	2310	Advanced Landscape Irrigation	3
		Semester Total	**13**

Fifth Semester			Credits
HALT❖	1345	Golf/Sport Field/Park Management	3
MCHN	1338	Basic Machine Shop I	3
WLDG	1307	Introduction to Welding Using Multiple Processes	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**12**

❖This course has been designated as a capstone course (see index for explanation).

Golf Course & Landscape Equipment Technician

Certificate of Completion

Total Credits: 39

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
HALT	1324	Turfgrass Science and Management	3
DEMR	1416	Basic Hydraulics	4
HALT	1303	Hebacious Plants	3
DEMR	1405	Basic Electrical Systems	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
DEMR	1301	Shop Safety and Procedures	3
HALT	1327	Horticulture Equipment Management	3
HALT	1320	Horticultural Calculations	3
SPNL	1342	Business Spanish	3
		Semester Total	**12**

Third Semester			Credits
HALT	2312	Turfgrass Maintenance	3
DEMR	1225	Small Air Cooled Engines	2
DEMR	1410	Diesel Engine Testing and Repair I	4
DEMR	2412	Diesel Engine Testing and Repair II	4
		Semester Total	**13**

Note: See the Department for a list of **approved** academic/general education electives, as well as cooperative educational opportunities, that can be substituted to complete degree requirements.

Landscape Design

Specialization of Golf Course & Landscape Management

In 2006, homeowners alone spent a record $44.7 billion to hire professional lawn and landscape service technicians, providing a niche for those who want to work in the landscaping industry. That figure continues to grow. In Texas alone, the landscape industry generates approximately $5 billion a year.

Today, it's one of the hottest career fields is the turfgrass industry, contributing more than $45 billion annually to our economy. What's more, the U.S. boasts an excess of 4.5 million acres of turf, offering a wealth of possibilities for skilled landscape design professionals.

GLM students in the Landscape Design program focus on specific skills and practical knowledge involving the design, installation and maintenance of the outdoor living environment. Students get hands-on experience and exceptional instruction that provides everything they need to know to become successful in the field.

TSTC also has an articulation agreement with Tarleton State University and other schools, so you can continue your education and pursue a four-year degree.

Associate of Applied Science Degree Program

In the two-year Landscape Design Specialization, you can develop a variety of the knowledge and skills in landscape design, plant material identification, plant disease diagnosis, garden design, residential and commercial landscaping and more. A full-time, academically prepared student can complete the associates degree in approximately two years.

Landscape Design

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
HALT	1301	Principles of Horticulture	3
HALT	1303	Herbaceous Plants	3
HALT	1205	Horticulture Soils	2
HALT	1324	Turfgrass Science and Management	3
ENGL	1301	Composition I	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
HALT	1327	Horticulture Equipment Management	3
HALT	1320	Horticultural Calculations	3
HALT	2318	Soil Fertility and Fertilizers	3
HALT	1331	Woody Plant Materials	3
SPNL	1342	Business Spanish	3
		Semester Total	**15**

Third Semester			Credits
HALT	1313	Economic Entomology	3
HALT	2323	Horticultural Pest Control	3
HALT	1319	Landscape Construction	3
ARTC	1321	Illustrated Techniques	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Fourth Semester			Credits
HALT	1353	Landscape Computer Design	3
HALT	1307	Plant Diseases	3
HALT	1338	Irrigation Water Management and Conservation	3
HALT	1322	Landscape Design	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fifth Semester			Credits
HALT	1351	Landscape Business Operations	3
HALT❖	2431	Advanced Landscape Design	4
ACGM	X3XX	Gen Ed Elective	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**13**

❖This course has been designated as a capstone course (see index for explanation).

High Performance Computing

Cloud computing, high performance computing and extreme digital services are changing the computer industry as we know it. Supercomputing or HPC, as it is known, has been taken to a whole new level, with the largest machines reaching computational speeds of more than a petaflop (Think a thousand trillion floating point operations per second!).

Nearly every industry is using the technique of supercomputing to solve some of humanity's most amazing challenges - from finding cures for long-standing diseases, to deciphering the latest problems in quantum physics.

Associate of Applied Science Degree Program

Backed by experienced staff and an advisory board of industry experts, you can learn to support, build, maintain and program supercomputers - and have the skills for a job that is both challenging and greatly rewarding.

HPC Advisory Committee

Brad Armosky, Texas Advanced Computing Center
Jay Looney, Clearview Management, Dallas
Way L. Mathews, Geotrace, Houston
Matthew Pevey, Clearview Management, Waco
Kevin Pursley, BP, Houston
Bryan White, Server Beach, San Antonio
Peg Williams, Cray, Austin

High Performance Computing

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH^	1100	Tech Success for Computer Graphics	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
ITSY	1300	Fundamentals of Information Security	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional credit only

Second Semester			Credits
ITSC	1325	Personal Computer Hardware	3
ITSC	1341	Principles of Open-Source Software	3
ITSE	1307	Introduction to C++ Programming	3
ITNW	1325	Fundamentals of Networking Technologies	3
ACGM	X3XX	Gen Ed Elective Course	3
		Semester Total	**15**

Third Semester			Credits
ITSC	1316	Linux Installation and Configuration	3
ITSE	2331	Advanced C++ Programming	3
ITNW	1345	Implementing Network Directory Services	3
HART	1307	Refrigeration Principles	3
MATH*	1342	Elementary Statistical Methods	3
		Semester Total	**15**

*or MATH 1316 Plane Trigonometry

Fourth Semester			Credits
IEIR	1371	Electrical Principles and Applications	3
ITNW	2313	Networking Hardware	3
ITNW	2359	Web Server Support and Maintenance	3
ITNW	2372	Supercomputer Construction	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fifth Semester			Credits
ITNW	2373	High Performance Computing Systems Support	3
ITNW	2374	Parallel Programming with MPI	3
ITSC	2346	Computer Center Management	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts	3
		Semester Total	**12**

Industrial Systems & Engineering Technology

Every major industry requires a technician's expertise to determine the most effective ways to use the basic factors of production — people, machines, materials, information and energy. The Industrial Systems & Engineering Technology (ISE) department at TSTC offers a curriculum in Industrial Systems designed to help you learn mechanical and electrical applications for industries, ranging from manufacturing to food processing, pharmaceutical production to healthcare facility operations

With comprehensive, hands-on practical instruction in four areas applying to each of these industries (and more), you can gain a wealth of information that can provide you with a secure career and plenty of opportunities. ISE offers a variety of areas of instruction, including Facilities Engineering & Management Technology, Industrial Systems Technology and Plumbing & Pipefitting.

Best of all, TSTC maintains close ties with established professionals, including members of organizations such as the International Maintenance Institute and the Fluid Power Society, providing peer support and involvement to enhance your career.

Facilities Engineering & Management Technology

Specialization of Industrial Systems & Engineering Technology

Today's facilities engineering technicians need an ever-increasing range of skills and knowledge. Technicians help determine the causes of component failure and test manufactured products to maintain quality, as well as estimate the time and cost to complete projects to save companies money.

Students in the Facilities Engineering & Management Technology gain a strong foundation of understanding everything from supervision to safety, with the ability to tackle an organization's air conditioning, electrical systems and mechanical repair needs, and more. You will learn a wide range of skills necessary to manage and maintain the systems found in industrial, commercial and healthcare facilities, and be prepared for great career opportunities in a growing field.

Associate of Applied Science Degree Program

The coursework in Facilities Engineering & Management Technology includes intense lab work in air conditioning, electrical systems, mechanical systems and management. The two-year curriculum culminates in an Associate of Applied Science degree.

FEM Advisory Committee

Rick Andrewartha, Samsung, Austin
James Eslick, Omni Dallas Parkwest Hotel, Dallas
Chuck Huddleston, Texas Wesleyan College, Fort Worth
Alvin McVea, Dillard's Dept. Store, Fort Worth
Pat Mitchell, Hyatt Hill Country Resort, San Antonio
Ricky Powers, Vanguard Resources Inc., San Antonio
Stuart E. Smith, Medcath Inc., Addison
Todd Turner, Young & Pratt Services Inc., Austin
John Wallace, DeTar Regional Healthcare System, Victoria

Facilities Engineering & Management Technology

Associate of Applied Science Degree

Total Credits: 71

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
CNBT	2310	Commercial/Industrial Blueprint Reading	3
INMT	1305	Introduction to Industrial Maintenance	3
PFPB	2308	Piping Standards and Materials	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
CNBT	1342	Building Codes and Inspections	3
HYDR	1305	Basic Hydraulics	3
ELPT	1311	Basic Electrical Theory	3
INMT	2303	Pumps, Compressors and Mechanical Drives	3
		Semester Total	**12**

Third Semester			Credits
INMT	1380	Cooperative Education — Manufacturing Technology/Technician	3
		Semester Total	**3**

Fourth Semester			Credits
CBFM	1329	Maintenance Coordination and Scheduling	3
CNBT	1302	Mechanical, Plumbing & Electrical Systems in Construction I	3
ELPT	1345	Commercial Wiring	3
ENGL	1301	Composition I	3
PHYS	1310	Fundamentals of Physics	3
		Semester Total	**15**

Fifth Semester			Credits
CBFM	2213	Building Maintenance Management	2
RBTC	1309	Pneumatics	3
ENTC	1349	Reliability and Maintainability	3
ELPT	1341	Motor Control	3
MATH	1314	College Algebra	3
		Semester Total	**14**

Sixth Semester			Credits
CBFM	1303	Boiler Maintenance	3
INMT❖	2345	Industrial Troubleshooting	3
INMT	2301	Machinery Installation	3
ELPT	2319	Programmable Logic Controllers I	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

❖ This course has been designated as a capstone course (see index for explanation).

Industrial Systems Technology

Specialization of Industrial Systems & Engineering Technology

The two-year Industrial Systems Technology specialization provides curriculum with intense instruction in an array of courses designed to build knowledge and skills in hydraulics, pneumatics, automated conveyor systems, pumps and compressors, turbines, three-phase electric motor controls, pipe fitting, sheet metal, high voltage, air conditioning and refrigeration and welding.

Students can build diverse, hands-on skills in a range of areas — from welding to hydraulics, electrical and more, making them some of the most sought-after graduates in the industry.

Associate of Applied Science Degree Program

The program, which culminates in an Associate of Applied Science degree, offers the flexibility for graduates to spread their talents into many areas of industry or choose to specialize in one.

Tech Prep Associate of Applied Science Degree Program

ISE also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

Certificate Program

In addition, the ISE department offers a one-year Industrial Systems Mechanics option. This curriculum also covers an array of subjects, from hydraulics to pneumatics, from pumps to pipefitting and culminates in a Certificate of Completion.

ISE Advisory Committee

Gary Baldwin, Bimbo Bakeries USA, Houston
Felipe Belgodere, The Minute Maid Company, Waco
Ron Benningfield, Featherlite Building Products, Austin
Jacob Carroll, Nucor - Bar Mill Group-Jewett Division, Jewett
Dan Casae, Wilsonart International Inc., Temple
Daniel Castillo, FMC, Houston
Jason Coleman, Nucor - Bar Mill Group-Jewett Division, Jewett
Vaughn Costa, 3M Traffic Control, Brownwood
Pete Delgado, Invista, Victoria
Mark Dietz, Lower Colorado River Authority, Austin
John Engert, Mrs. Baird's Bread, Houston
Edward Foster, The Mundy Company, Houston
Daniel Garza II, 3M Traffic Control Materials Division, Brownwood
Timothy Gest, Kettle Foods, Fort Worth
Gene Grindle, San Miguel Electric Cooperative, Christine
Ernest Guillory, The Munday Company, Houston
Ken Hanson, Sterling Foods, San Antonio
Gerry Harris, Chaparral Steel, Midlothian
Mack Jones, U. S. Silica, Kosse

Charlie Mabe, Dow Chemicals, Port Lavaca
Donald L. McDonald, Nucor - Bar Mill Group-Jewett Division, Jewett
Del McLane, Parsons Brinckerhoff, Waxahachie
Gilbert Nieto, Acme Brick, Sealy
Gene Patteson, Lower Colorado River Authority, Austin
Oscar Polk, Eastman Chemical Company, Longview
Mark Reichmann, Saint-Gobain Abrasives, Stephenville
Clarence Richter, Whitney High School, Whitney
Bob Schubert, Western International Gas & Cylinders Inc., Bellville
John Silcott, Celanese Chemicals, Houston
Richard Titus, Hospira, Austin
Barry Ward, INEOS, Alvin
Robert J. Wegner, ALON USA, Big Spring
Joe Whiddon, Exxon Mobil, Baytown
Jon Williamson, Owens Corning, Waxahachie
Dean Woodward, Eastman Chemical Company, Longview
Manuel Zaragoza, VISUAL

Industrial Systems Technology

Associate of Applied Science Degree

Total Credits: 71

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
INMT	1305	Introduction to Industrial Maintenance	3
DFTG	1325	Blueprint Reading and Sketching	3
HYDR	1201	Rigging and Conveying Systems	2
PFPB	2308	Piping Standards and Materials	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
INMT	2303	Pumps, Compressors & Mechanical Drives	3
WLDG	1307	Introduction to Welding Using Multiple Processes	3
ELPT	1311	Basic Electrical Theory	3
ENGL	1301	Composition I	3
MATH	1332	College Mathematics	3
		Semester Total	**15**

Third Semester			Credits
INMT	1380	Cooperative Education —Manufacturing Technology/Technician	3
		Semester Total	**3**

Fourth Semester			Credits
HYDR	1305	Basic Hydraulics	3
ELPT	1345	Commercial Wiring	3
CBFM	1329	Maintenance Coordination and Scheduling	3
CBFM	1303	Boiler Maintenance	3
		Semester Total	**12**

Fifth Semester			Credits
ENTC	1349	Reliability and Maintainability	3
RBTC	1309	Pneumatics	3
ELPT	1341	Motor Control	3
ACGM*	X3XX	Gen Ed Elective	3
		Semester Total	**12**

Sixth Semester			Credits
INMT	2301	Machinery Installation	3
INMT❖	2345	Industrial Troubleshooting	3
INMT	1355	Industrial Power Plant Systems	3
ELPT	2319	Programmable Logic Controllers I	3
HUMA	1301	Introduction to Humanities I	3
		Semester Total	**15**

Note: See the department for a list of **approved** academic/general education electives that can be substituted for this course.
❖ This course has been designated as a capstone course.
(see index for explanation).

Industrial Systems Mechanic

Certificate of Completion

Total Credits: 41

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
INMT	1305	Introduction to Industrial Maintenance	3
HYDR	1201	Rigging and Conveying Systems	2
DFTG	1325	Blueprint Reading and Sketching	3
ELPT	1319	Fundamentals of Electricity I	3
PFPB	2308	Piping Standards and Materials	3
		Semester Total	**14**

^Institutional Credit Only

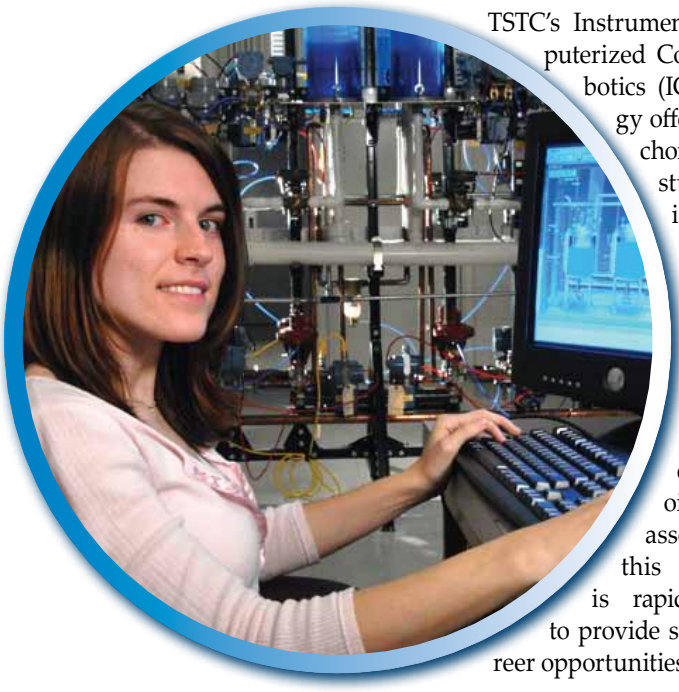
Second Semester			Credits
ELPT	1345	Commercial Wiring	3
CBFM	1303	Boiler Maintenance	3
WLDG	1307	Introduction to Welding Using Multiple Processes	3
INMT	2303	Pumps, Compressors & Mechanical Drives	3
		Semester Total	**12**

Third Semester			Credits
HYDR	1305	Basic Hydraulics	3
INMT	1355	Industrial Power Plant Systems	3
INMT	2301	Machinery Installation	3
ELPT	1341	Motor Control	3
INMT❖	1380	Cooperative Education	3
		Semester Total	**15**

❖ This course has been designated as a capstone course.
(see index for explanation).

Instrumentation, Computerized Controls & Robotics

Computerized control systems lie at the foundation of almost every manufacturing industry. Through amazingly complex structures of electronic and mechanical hardware, computer software, engineering controls and more, instrumentation technicians can monitor, adjust and regulate virtually every industrial process.



TSTC's Instrumentation, Computerized Controls & Robotics (ICR) technology offers students a choice ofin-depth study in either instrumentation control applications or robotics, both of which are prevalent in today's society. From the oil fields to the assembly lines, this technology is rapidly evolving to provide substantial career opportunities.

Students can choose from computer control applications such as smart transmitters, fiber optics, programmable logic controllers, fieldbus applications or automated controls, or study robotics and robotic arms and associated applications. The program is designed to prepare graduates to work in areas of installation and calibration, maintenance, testing and troubleshooting, computer instrumentation and robotic interfacing, networking and more.

ICR Advisory Committee

Reginald Augustus, Chevron Phillips, Pasadena
Norbe Almareze, CITGO Refinery, Corpus Christi
Alan Autenrieth, Conoco-Phillips, Sweeny
Ben Basquez, Diamond Shamrock, Three Rivers
Eric Beckman, National Switchgear Systems Inc., Lewisville
Scott Bedell, Vinson Process Controls, Carrollton
Rob Bishop, Luminant Power, Glen Rose
Matt Bogle, Vinson Process Controls-Emerson, Carrollton
Ricky Bond, INEOS USA LLC, Alvin
Ron Brackeen, TXU Electric, Glen Rose
Enrico Calloway, ExxonMobil Corp., Baytown
Mike Davis, The Trane Company, McGregor
Marlin Earley, Waco
John Fry, NRG Texas, Jewett
Randall Gannon, Invista, Victoria
Ramon "Ray" M. Garcia, Invista, Victoria
Tom Gomez, Pleasanton
Art Gordon, Humphrey & Associates Inc., Fort Worth
Greg Graziadio, Puffer-Sweiven Inc., Stafford
Harry Herndon, Solo Cup, Dallas
Jeff Huddleston, Logical Solutions, Richardson
L.S. (Stan) Huntsinger, Premier Technical Services, Lorena
Jerry Hutson, Siemens SBT, Irving
Bert Johnson, Packless Industries, Waco
Charles P. King, Formosa Plastics Corp., Point Comfort
Russell Koliba, Equistar Pipeline, Bay City
Walter Koopmann, City of Georgetown, Georgetown
Allan Kunze, Lower Colorado River Authority, Austin
Mark Lyles, Farmers Electric Cooperative, Greenville
Frank M. Mahnich, Wunderlich-Malec Engineering, Carrollton
Cheryl Marthiljohni, Invista, Victoria
Randy Martin, Englobal Engineering, Beaumont
Shaun Millington, Sew-Eurodrive Inc., Dallas
Mike Murray, Tenneco Packaging, Corsicana
Wes Nance, Bayer Material Science LLC, Baytown
Charles Parks, ExxonMobil, Beaumont
Steve Paxton, Lyondell Chemical, Channelview
John Payne, British Petroleum, Houston
Tri Pazoureck, Honeywell International Inc., Richardson
Ben Polasek, Flint Hills Resources, Corpus Christi
Douglas Powell, National Switchgear Systems Inc., Lewisville
Stephen Ralls, San Miguel Electric Cooperative Inc., Jourdanton
Dean Richman, Johnson Controls Inc., Irving
Rey Rosas, The Dow Chemical Co, Port Lavaca
Robert Rosenberg, Honeywell International Inc., Richardson
Darryl Ross, T.E.A.M. Solutions Inc., Grand Prairie
Marcus N. Rubio, Celanese, Bay City
Mark Schroller, The Dow Chemical Co., Port Lavaca
Terry Selman, Luminant Power, Fairfield
Wayne Snyder, Johnson Controls Inc., San Antonio
Kathy Stroud, Invista, Victoria
David Taylor, Rohm & Haas TX Inc., Deer Park
Terry Taylor, Luminant Power, Glen Rose
Wayne Taylor, INEOS O&P, Alvin
Larry Thomson, INEOS, Alvin
Kevin Tolly, Plastipak Packaging Inc., Garland
Pablo Torres, Luminant Power, Glen Rose
June Vanzant, Plastipak Packaging Inc., Garland
Noel Villarreal, INEOS, Alvin
Robert Walls, Sherwin Alumina Plant, Corpus Christi
Tom Welling, Cargill, Waco
Scott Wells, Open Tech, San Antonio
J. Dean Wheeler, ALON USA (FINA), Big Spring
Roy Wiesner, Eastman Chemical Company, Longview
Jake Willcox, Englobal Engineering, Beaumont
Claude Winslow, Valero Energy Corp., San Antonio
Allen Wish, SMC, Austin
Larry Witt, Weed Instrument Co. Inc., Round Rock
Ken Wright, Preferred Sales Agency, Houston

Instrumentation, Computerized Controls & Robotics Instrumentation Specialization

Instrumentation

Specialization of Instrumentation, Computerized Controls & Robotics

Manufacturing and process industries are the backbone of the American economy, and they use the latest in electronics and digital computers. As the technology evolves, skilled technicians are needed to keep up with demand and learn the newest techniques to keep American companies on track.

TSTC's Instrumentation Specialization has a long-standing history of producing top-notch technicians, flexible and knowledgeable in the industry. Besides commanding top salaries, these technicians reap the rewards of undertaking a career that's anything but ordinary.

Associate of Applied Science Degree Program

During the first five semesters, students in the ICR Associate of Applied Science degree programs complete a common course of study with the EPC (Electrical Power & Control) Associate of Applied Science degree program. This allows students the option of completing both associate degrees with the addition of one extra semester. Those who choose the Computerized Control Systems specialization will then focus on courses distinctive to the applicable industries.

Instrumentation, Computerized Controls & Robotics Instrumentation Specialization

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
CETT	1409	DC-AC Circuits	4
ENGL	1301	Composition I	3
MATH	1316	Plane Trigonometry	3
ELPT	2215	Electrical Calculations II	2
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ELPT	1341	Motor Control	3
INTC	1341	Principles of Automatic Control	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Third Semester			Credits
CETT	1325	Digital Fundamentals	3
INTC	1343	Application of Industrial Automatic Control	3
ELPT	2319	Programmable Logic Controllers I	3
PHYS	1310	Fundamentals of Physics	3
		Semester Total	**12**

Fourth Semester			Credits
DFTG	1313	Drafting for Specific Occupations	3
INTC	2336	Distributed Control and Programmable Logic	3
INTC	1355	Unit Operations	3
EEIR+	1309	National Electrical Code	3
		Semester Total	**12**

+or INTC 1380 or 1381, Cooperative Education - Instrumentation Technology/Technician)

Fifth Semester			Credits
ELPT	2375	Electrical Theory and Devices	3
INTC	2333	Instrumentation and Installation	3
INTC	1356	Instrumentation Calibration	3
INTC	1350	Digital Measurement and Controls	3
		Semester Total	**12**

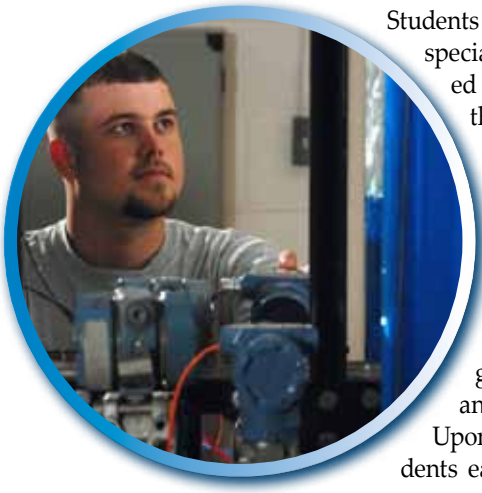
Sixth Semester			Credits
INTC	1258	Flow and Measurement Calibration	2
INTC	1348	Analytical Instrumentation	3
INTC❖	2350	Fieldbus Process Control Systems	3
CHEM	1105	General Chemistry (lab)	1
CHEM	1305	General Chemistry (lecture)	3
		Semester Total	**12**

❖This course has been designated as a capstone course. (see index for explanation)!

Robotic Systems

Specialization of Instrumentation, Computerized Controls & Robotics

Robots, once thought of as a futuristic fantasy, are now standard in the working world, used in automotive manufacturing, electronics, semiconductors, metals and plastic and similar industries. As the manufacturing world continues to evolve in technology, the demand for robotics professionals who know these systems increases.



Students in TSTC's Robotic Systems specialization focus on automated manufacturing processes, the role of robots and all support equipment through specialized instruction in motion programming, vision systems, conveyor systems, computer networking, automated sorting systems, PLC programming, sensor systems and computer integration. Upon graduation, many students earn great salaries with extensive opportunities for advancement.

Robotic Systems

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
ENGL	1301	Composition I	3
CETT	1409	DC-AC Circuits	4
MATH	1316	Plane Trigonometry	3
ELPT	2215	Electrical Calculations II	2
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
ELPT	1341	Motor Control	3
INTC	1341	Principles of Automatic Control	3
RBTC	1305	Robotic Fundamentals	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Third Semester			Credits
CETT	1325	Digital Fundamentals	3
PHYS	1310	Fundamentals of Physics	3
INTC	1343	Application of Industrial Automatic Control	3
ELPT	2319	Programmable Logic Controllers I	3
		Semester Total	**12**

Fourth Semester			Credits
RBTC	2339	Robot Programming and Diagnostics	3
ITSE	1307	Introduction to C++ Programming	3
NUCP	1270	Nuclear Power Plant Fundamentals	2
RBTC	2447	Computer Integrated Manufacturing	4
		Semester Total	**12**

Fifth Semester			Credits
RBTC	1345	Robot Interfacing	3
RBTC	1341	Vision Systems	3
RBTC	2445	Robot Application, Set-up, and Testing	4
ELPT	2231	AC/DC Drives	2
		Semester Total	**12**

Sixth Semester			Credits
ELPT	1351	Electrical Machines	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
INTC	2336	Distributed Control and Programmable Logic	3
DFTG	1313	Drafting for Specific Occupations	3
		Semester Total	**12**

❖This course has been designated as a capstone course (see index for explanation).

Laser Electro-Optics Technology

Lasers are a common part of our society today. No longer just the imagination of science-fiction fantasies, lasers are used in multiple industries.

Often referred to as Photonics, the technology involves cutting-edge use of lasers, optics, fiber optics and electro-optic devices in everything from medicine to manufacturing. The U.S. Military, engineering, environmental and information technology, biomedicine and even construction now utilize the technology to make major advancements in their respective industries.

TSTC's Laser Electro-Optics Technology (LET) offers students a chance to get in on this amazing field. The first in the nation to offer such a program, it features state-of-the art equipment, strong industry input and experienced staff that can bring students quickly up to speed to enter this exciting industry.

Best of all, opportunities abound, as professionals indicate a shortage of technicians in the industry.

Associate of Applied Science Degree Program

In the two-year Laser Electro-Optics Technology program, you can develop an understanding and proficiency in lasers, electro-optics, optics, electronics and vacuum science. With access to laboratory equipment valued at over $40 million, you can build extensive knowledge and skills as you work toward the Associate of Applied Science degree.

Tech Prep Associate of Applied Science Degree Program

LET also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The Laser Electro-Optics Technology department requires strong mathematics and science skills.

Laser Electro-Optics Technology Advisory Committee

Robert Aguilar, Alcon Labs Inc., Irving, Calif.
Brent Bell, University of Texas Medical Branch, Galveston
Darrin Bellert, Baylor University, Waco
Dr. Bruce Brinson, Rice University, Houston
John Bruce, Alcon Mfg. Ltd., Houston
John Cernosek, Marble Falls
Pat Clark, Medical Laser Dynamics Inc., Highland Village
Evan Corwin, BAE Systems, Austin
Tammy Eveland, American Medical Systems, Houston
Glenn Hermes, Lawrence Livermore National Lab, Livermore, Calif.
John Hoopman, University of Texas Southwestern Medical Center, Dallas
Chris Jaska, Spectra-Physics, Bruceville
Vernon Keith Kanz, Lawrence Livermore National Lab, Livermore, Calif.
Carlos Manzanares, Baylor University, Waco
Mikael Martinez, University of Texas at Austin, Austin
Don Pierson, Waco
David Smauley, Lawrence Livermore National Lab, Livermore, Calif.
Randy Smith, Applied Materials, Allen
Terry Storer, The Laser Medic, Bedford
Michael White, Shermco Industries, Irving

Certificate of Completion

TSTC's LET department also offers a Photonics Technician certificate. After successfully completing this three semester certificate program, students will be award a Lab Technician Certificate of Completion. Students may continue in either the Laser Electro-Optics associate degree program or the Nanotechnology associate degree program.

Photonics Technician

Certificate of Completion

Total Credits: 44

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
LOTT	1372	Overview In Technology	3
NANO	1305	Nanotechnology	3
MATH	1316	Plane Trigonometry	3
SMFT	1211	Vacuum Principles	2
CETT	1409	DC-AC Circuits	4
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
LOTT	1344	Fundamentals of Lasers and Laser Safety	3
ENGL	1301	Composition I	3
LOTT	1443	Geometrical Optics I	4
SMFT	2335	Vacuum Technology	3
		Semester Total	**13**

Third Semester			Credits
CHEM	1305	Chemistry	3
CHEM	1105	Chemistry Lab	1
SMFT❖	2450	Vacuum Thin Films	4
CETT	1379	Solid State Components and Applications	3
LOTT	2572	CW and Pulsed Lasers	5
		Semester Total	**16**

Laser Electro-Optics Technology

Associate of Applied Science Degree

Total Credits: 71

First Semester **Credits**

See certificate program semester one

Second Semester **Credits**

See certificate program semester two

Third Semester **Credits**

See certificate program semester three

Fourth Semester			Credits
LOTT	2559	Laser Electro-Optics Applications	5
LOTT	X2XX	Approved Technical Elective	2
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
LOTT	1301	Introduction to Fiber Optics	3
		Semester Total	**13**

Fifth Semester			Credits
ACGM	X3XX	Gen Ed Social Science Course	3
LOTT❖	2435	Electro-Optics Devices	4
LOTT	2436	Wave Optics	4
LOTT	2332	Laser Maintenance and Repair	3
		Semester Total	**14**

Nanotechnology

Specialization of Laser Electro-Optics Technology

Think of a speck so tiny you can't even see it with the naked eye. Nanometers, objects about one millionth of an inch, are big in power, despite their tiny size. They can provide the building blocks for limitless new or improved products that benefit all of society – from industrial sectors to the medical world.

TSTC's Nanotechnology program can open up this tiny world, teaching you the vastness of this technology with hands-on methods and industry-standard equipment. Nanotechnology students can learn the fundamentals of what they need to know to provide support for developing nano product design; building, installation and nanotechnology equipment monitoring and processes; problem solving; quality assurance; preventive maintenance; and repair of equipment.

Associate of Applied Science Degree Program

After successfuly completing the Photonics Technician certificate program, you may choose to continue in the Nanotechnology program. In the NANO program you can develop an understanding and proficiency in nanotechnology and build extensive knowledge and skills as you work toward the Associate of Applied Science degree.

Nanotechnology Advisory Committee

Alain Diebold, Sematech, Austin,
Anthony Jimenez, Molecular Imprints Inc., Austin
John Randall, Zyvex, Richardson
George Skidmore, Zyvex, Richardson
Kevin Vargason, Intelligent Epitaxy Technology
Ken Vickers, University of Arkansas, Fayetteville, Ark.

Nanotechnology

Associate of Applied Science Degree

Total Credits: 70

First Semester **Credits**

See certificate program semester one

Second Semester **Credits**

See certificate program semester two

Third Semester **Credits**

See certificate program semester three

Fourth Semester			Credits
SMFT	2470	Combined Process	4
NANO	2405	Nano Characterization	4
NANO	2407	Nano Measurements	4
		Semester Total	**12**

Fifth Semester			Credits
ACGM	X3XX	Gen Ed Social Science Course	3
NANO❖	2455	Nano Technology Systems	4
LOTT	2436	Wave Optics	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**14**

❖ This course has been designated as a capstone course (see index for explanation).

Mechanical Engineering Technology

Every mechanical device you use, from your hair dryer to your car's transmission, started as a concept. Through the innovative processes of design, development, building and testing, these concepts became creations. Mechanical engineering technicians help research, design, develop, manufacture and test tools, engines, machines and other mechanical devices. It is, in fact, one of the broadest engineering disciplines.

The Mechanical Engineering Technology program at TSTC combines manufacturing methods and processes with engineering mechanics and design. You can learn to design, develop and build working prototypes of new products using the latest tools and techniques – learning that has real applications and plenty of job opportunities in the industry. And students get instruction in state-of-the-art computer applications on some of the college's most powerful computer systems.

Through a unique partnership with HAAS Automations, MET has established a regional training facility that enhances the learning experience. In this facility, you can learn Computer Numerical Controlled programming and operations on the latest equipment.

Overall coursework emphasizes computer integration of manufacturing processes using PC-based Computer-Aided Drafting/Computer-Aided Manufacturing (CAD/CAM) applications.

In addition to Mechanical Engineering Technology, TSTC's MET program offers specializations in Machining and Plastics Technology.

The program is also offered at the Fort Bend Technical Center.

Associate of Applied Science Degree Program

The two-year Mechanical Engineering Technology program encompasses a comprehensive instructional plan that progresses from initial design concept through finished product. The curriculum, which culminates in an Associate of Applied Science degree, also covers engineering mechanics courses in statics, strength of materials, fluid mechanics, machine design and tool design.

Tech Prep Associate of Applied Science Degree Program

MET also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The MET department recommends that you complete at least two units of high school mathematics and at least one unit of science before enrolling.

MET Advisory Committee

Liberty Bear, Consolidated Casting Corp., Hutchins
John Boggio, Merritt Tool, Kilgore
Edward Brunger, Owens-Brockway, Waco
David Burden, Gearench, Clifton
Dean Burks, CenTex Machining, Round Rock
Sheryn Carter, Bell Helicopter, Fort Worth
Roger Collins, Collins Instruments, Angleton
Johnny DeBaugh, Weatherford, Enterra, Huntsville
Peter Den Harder, Materials Transportation Co., Temple
Robert Dinger, PBV-USA, Stafford
Paul Edwards, Teco-Westinghouse, Waco
Ron Fails, FMC Technologies
Daron Fettig, Longhorn Tool, Lorena
Troy Fuchs, Sparkman Industries, Victoria
Cindy Gale, Grant Prideco-tube Alloy, Houston
Ken Glass, Smith International, Houston
Don Halsey, Halsey Engineering, Denton
J.D. Harvey, Corning Cable Systems LLC., Keller
Tom Holt, Dell Computer, Round Rock
Van Hurlburt, Raytheon, Dallas
Mike Johns, Haas Machine Tools, Dallas
Steve Kline, K-Line, Lorena
Larry Laughrun, Reed-Hycalog Schlumberger, Houston
Wayne Mausbach, Reed-Hycalog, Houston
James McBride, Waco Tool & Die, Waco
Andy McGlothlin, Texas Hydraulics, Temple
James Meadors, Marathon Power Tech, Waco
Rick Morgan, Packless Industries, Waco
Nick Nichols, GeoDiamond, Houston
Brant O'Hair, O'Hair Shutters, Lubbock

Bill Patterson, Bell Helicopter, Fort Worth
Douglas Pifer, Owens Illinois, Waco
Cary Rolfing, Bell Helicopter, Fort Worth
John Schaeffer, Raytheon, Dallas
Richard Smith, Fine Line Prototype, Euless
E.E. Strahan, Schlumberger, Houston
Matthew Sykora, Haas Automation, Dallas
Steve Trout, Alcoa Huck Fasteners, Waco
George Welch, Solar Turbines Inc., DeSoto
Rick Welch, KNUST SBO, Houston

Fort Bend MET Advisory Committee

Jim Clairmonte, Champions Machine Tool Sales, Spring
John Dorman, Gurecky Mfg., Rosenberg
Mark Dupree, Royalty Metal Finishing, Rosenberg
Bryan Engelbrecht, Engelbrecht Manufacturing Inc., Rosenberg
Ron Gere, Regal Machine Tool (Okuma), Houston
Jeff Hazard, TIW Corp., Houston
Kenneth J. Kendrick, Schlumberger WCP-Completion Systems, Houston
David Mikolas, Miko-Cut Machine, Rosenberg
Kevin Motsinger, Romtex Enterprises, LLC, Richmond
Butch Paschall, J&L Industrial Supply, Richmond
Paty Saucedo, Resource Mfg., Stafford
Frank Scantlin, Sunbelt Machine Works Corp., Stafford
Marcus Schulte, Schulte Machine Works, Rosenberg
Bradley Stavinoha, AOC Acetylene Oxygen Co., Rosenberg
Rick Wadley, Wadko Precision Inc., Eagle Lake
Richard Wong, Weatherford Enterra, Pearland

Mechanical Engineering Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
INMT**	1319	Manufacturing Processes	3
ENGL	1301	Composition I	3
MATH	1314	College Algebra	3
MCHN	1338	Basic Machine Shop I	3
MCHN	1201	Beginning Machine Shop	2
		Semester Total	14

^Institutional Credit Only

Second Semester			Credits
ENTC	1371	Engineering Computer Graphics I	3
MATH	1316	Plane Trigonometry	3
MCHN	1354	Intermediate Machining II	3
MCHN	2303	Fundamentals of Computer Numerical Controlled (CNC) Machine Controls	3
WLDG	1307	Introduction to Welding Using Multiple Processes	3
		Semester Total	**15**

Third Semester			Credits
EGRT	1305	Engineering Materials	3
IEIR	1371	Basic Electrical Theory	3
MCHN	2335	Advanced CNC Machining	3
MCHN	2447	Specialized Tools and Fixtures	4
		Semester Total	**13**

Fourth Semester			Credits
ENTC	1443	Statics	4
ENTC❖	2310	Machine Design	3
INMT	1343	Computer Aided Design/Computer Aided Manufacturing (CAD/CAM)	3
PHYS	1310	Elementary Physics*	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**16**

Fifth Semester			Credits
ENTC	1410	Fluid Mechanics with Applications	4
ENTC	1423	Strength of Materials	4
MCHN	2338	Advanced Computer-Aided Manufacturing (CAM)	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**14**

*PHYS 1410 may be substituted for PHYS 1310

** See the department for a list of **approved** academic/general education electives, including cooperative educational opportunities that can be substituted for this course.

❖This course has been designated as a capstone course (see index for explanation).

Machining

Specialization of Mechanical Engineering Technology

The Machining Specialization focuses on instruction that progresses through a series of machine tool operation courses designed to constantly challenge process skills on manual and Computer Numerical Controlled (CNC) machines. In addition to comprehensive machine tool instruction, you can learn the various types of materials utilized by today's manufacturing industry.

With a staff who has worked in the field and an industry advisory committee that keeps the program abreast of changes, students have the competitive edge when it comes to hiring time.

Certificate Program

The one-year Machining Specialization curriculum, designed to prepare you as a skilled general machinist, culminates in a Certificate of Completion. Laboratory instruction emphasizes actual equipment to help prepare you for interesting, rewarding career opportunities in a wide variety of industries.

Machining Technology

Certificate of Completion

Total Credits: 39

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
INMT	1319	Manufacturing Processes**	3
MCHN	1201	Beginning Machine Shop	2
MCHN	1320	Precision Tools and Measurements	3
MCHN	1338	Basic Machine Shop I	3
MCHN	1343	Machine Shop Mathematics*	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
ENTC	1371	Engineering Computer Graphics I	3
MCHN	1354	Intermediate Machining II	3
MCHN	2303	Fundamentals of Computer Numerical Controlled (CNC) Machine Controls	3
WDLG	1307	Introduction to Welding Using Multiple Processes	3
		Semester Total	**12**

Third Semester			Credits
MCHN	1330	Statistical Process Control for Machinists	3
MCHN	2335	Advanced CNC	3
MCHN	2341	Advanced Machining Operations I	3
MCHN❖	2447	Specialized Tools and Fixtures	4
		Semester Total	**13**

*Indicates those courses which meet the competencies approved by the Texas Skill Standards Board, NIMS and NTMA.

** See the department for a list of **approved** academic/general education electives, including cooperative educational opportunities that can be substituted for this course.

❖ This course has been designated as a capstone course. (see index for explanation).

Media Communication & Information Technology

Communication and the way we transmit ideas is undergoing major changes. The explosion of social media on the Web, evolution of technology on television and in photography, changes in advertising and design and communication, processes through video and digital means and much more are rapidly changing our society.

To get ahead in this multi-billion dollar industry takes skills and training. TSTC's Media Communication & Information Technology (MCI) program can introduce you to this exciting world, providing you with excellent career alternatives and the opportunity to make above-average wages.

In this evolving field, you'll become familiar with television and video production, digital photography, video and digital photography equipment and more while you learn to master the craft that shapes today's visual and audio messages throughout the world – whether on television, through the Internet or in print format.

From experienced faculty, you'll learn the fundamentals of using a television studio; manipulating lights, microphones, cameras and accessories; digital photography and with computer-based digital imaging programs; generating computer-based graphics and presentations; integrating audio into projects; and other critical skills that can launch you into an exceptional career with plenty of options.

Associate of Applied Science Degree Program

The two-year Media Communication & Information Technology program provides unique, hands-on instruction with a photography lab and studio, a video production studio, digital video and audio editing labs. The curriculum, which culminates in an Associate of Applied degree, also encompasses learning in more than four computer labs equipped with PC and Macintosh computers, scanners, digital cameras, CD-ROM recorders and full-frame, full-motion video capture boards.

Tech Prep Associate of Applied Science Degree Program

MCI also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

The MCI department requires students to demonstrate basic reading, writing and mathematical skills before enrolling.

MCI Advisory Committee Meeting

Corey Carbonara, Baylor University
Paul Concilio, Studio Pro Production, Waco
Douglas Fitzjarrell, Photographer, Waco
Michael Korpi, Baylor University, Waco
Mike Lee, KXXV Channel 25, Waco
Bob Malish, Canon USA, Inc.
Mark Randolph, WCCC-10 Studio, Waco
Jackie Roberts, Waco ISD, Waco

Media Communication Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
ARTC	1302	Digital Imaging I	3
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
INDS	1301	Basic Elements of Design	3
ITSE	1301	Web Design Tools	3
PHTC	1341	Color Photography I	3
RTVB	1310	Introduction to Mass Communications	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
ARTV	1343	Digital Sound	3
ITSW	1310	Introduction to Presentation Graphics Software	3
PHTC	2301	Intermediate Photography	3
RTVB	1325	TV Studio Production	3
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**15**

Fourth Semester			Credits
PHTC	2343	Portfolio Development	3
PHTC	2345	Illustrative Photography II	3
RTVB	1321	TV Field Production	3
RTVB	1391	Special Topics in Radio and Television Broadcasting	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fifth Semester			Credits
ARTV ❖	2341	Advanced Digital Video	3
IMED	2388	Internship - Digital Communication and Media/Multimedia	3
PHTC	2349	Photo Digital Imaging II	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Network Security Technology

The number of security breaches involving sensitive data since 2005 totals almost 262 million according to the Privacy Rights Clearing House. These breaches crossed all sectors, including health care, financial, education, public administration and much more. The economic impact of those hacking and stealing data has now reached into the billions, creating a major problem for nearly every business today.

Network security has become a profession all its own, with companies moving it from a lower position to a top priority job. To get in on this evolving technology, you will need the skills and training it takes to counteract those who drain society of vital resources, money and time.

The Network Security Technology (NST) program is a leader in the education and understanding of this incredibly sensitive – and growing – field. Students can gain an in-depth understanding of computer networking, operating systems and administration, encryption, firewalls and so much more, preparing for a career that can make a big impact on the marketplace.

While at TSTC, you'll get the intense, practical training needed to combat today's hackers. Courses cover the physical and logical aspects of security, allowing you to take a proactive stance against network threats and develop the skills needed to prevent intrusion.

Associate of Applied Science Degree Program

Upon successfully completing all required coursework, TSTC will award you an Associate of Applied Science degree in Network Security Technology. A full-time, academically prepared student can earn the degree in approximately 20 months.

Certificate Program

Texas State Technical College also offers a Certificate of Completion in Network Security and Digital Forensics Investigations. A full-time, academically prepared student can complete the certificate programs in approximately eight months.

NST Advisory Committee

Rick Andrews, DPS, Austin
Patrick E. Braxton, University of Texas Health Science Center, San Antonio
David Chewning, L-3 Communications, Waco
James Cornett, Texas Farm Bureau, Waco
Derrick Day, US Secret Service, Irving
Rusty Haferkamp, RKH Consulting, Waco
Linda Gail Jenkins, Intetechsystems, Robinson
Sgt. Chris Kingrey, Waco Police Department, Waco
Alvin Packard, Emerson Construction, Temple
Dr. Cyrus Peikan, Airscanner, Dallas
Craig Phelps, Dell, Austin

Network Security Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
ITSY	1300	Fundamentals of Information Security	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ITNW	1325	Fundamentals of Networking Technologies	3
ITSC	1325	Personal Computer Hardware	3
ITSY	2343	Computer System Forensics	3
MATH	X3XX	Gen Ed Mathematics Course	3
NSTC	2376	Security + Certification Prep	3
		Semester Total	**15**

Third Semester			Credits
ENGL	2311	Technical Writing	3
ITCC	1301	Cisco Exploration 1 - Network Fundamentals	3
ITSY	2342	Incident Response and Handling	3
ITNW	2321	Networking with TCP/IP	3
ITNW	1345	Implementing Network Directory Services	3
		Semester Total	**15**

Fourth Semester			Credits
ITSY	2301	Firewalls and Network Security	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ITCC	1304	Cisco Exploration 2 - Routing Protocols and Concepts	3
ITSC	1316	Linux Installation and Configuration	3
ITMT	2340	Designing Security for Microsoft Networks	3
		Semester Total	**15**

Fifth Semester			Credits
ACGM	X3XX	Gen Ed Social/Behavioral Science Course	3
ITCC	2308	Cisco Exploration 3 - LAN Switching and Wireless	3
ITDF	1300	Introduction to Digital Forensics	3
ITSY❖	2359	Security Assessment and Auditing*	3
		Semester Total	**12**

*Note: ITNW 1380 or ITSC 2380 and ITNW 1680 can substitute for ITSY 2359

Network Security Specialist

Certificate of Completion

Total Credits: 27

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
ITSC	1325	Personal Computer Hardware	3
ITSY	1300	Fundamentals of Information Security	3
ITNW	2321	Networking with TCP/IP	3
ITSY	2343	Computer System Forensics	3
ITSC	1316	Linux Installation and Configuration	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ITSY	2342	Incident Response and Handling	3
ITSY	2301	Firewalls and Network Security	3
NSTC	2376	Security + Certification Prep	3
ITSY❖	2359	Security Assessment and Auditing*	3
		Semester Total	**12**

*Note: ITNW 1380 or ITSC 2380 and ITNW 1680 can substitute for ITSY 2359

❖ This course has been designated as a capstone course (see index for explanation).

Digital Forensics Technology

Specialization of Network Security Technology

The use of Digital Forensics is still a relatively new concept, and the prevalence of this technology in our society and how we use it – especially in investigations – has grown exponentially.

Digital evidence can be collected from many sources. This includes computers, cell phones, digital cameras, hard drives, CD-ROM, USB memory devices and more.

It takes skills to work in the field of Digital Forensics and TSTC is prepared to provide the expertise needed for this exciting technology. Crime in the United States has taken a high-tech turn – to computers, that is. In today's advance society, computers are often one of the main tools used in everything from security breaches to financial fraud. Because the use of computers in the commission of crimes is so widespread these days, those who understand digital forensics can enter a career field where the demand is soaring.

Digital Forensics Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
ITSY	1300	Fundamentals of Information Security	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
ITNW	1325	Fundamentals of Networking Technologies	3
ITSC	1325	Personal Computer Hardware	3
ITSY	2343	Computer System Forensics	3
MATH	X3XX	Gen Ed Mathematics Course	3
NSTC	2376	Security + Certification Prep	3
		Semester Total	**15**

Third Semester			Credits
ITDF	1300	Introduction to Digital Forensics	3
ITDF	1305	Fundamentals of Digital Data Storage	3
ITNW	2321	Networking with TCP/IP	3
ENGL	2311	Technical & Business Writing	3
CJSA	1327	Fundamentals of Criminal Law	3
		Semester Total	**15**

Fourth Semester			Credits
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
ITSY	2342	Incident Response and Handling	3
ITDF	2320	Digital Forensics Collection	3
ITSC	1316	Linux Operating System	3
ITSY	2301	Firewalls and Network Security	3
		Semester Total	**15**

Fifth Semester			Credits
ITDF	2335	Comprehensive Digital Forensics Project	3
ITDF	2325	Digital Forensics Tools	3
ITDF	2330	Digital Forensics Analysis	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Digital Forensics Investigation

Advanced Technical Certificate

The Digital Forensics Investigation curriculum leads to an Advanced Technical Certificate and requires students to complete 24 credit hours in advanced courses, including the fundamentals of digital data storage, digital forensics collection and analysis and other specialized skills.

Digital Forensics Investigation

Advanced Technical Certificate

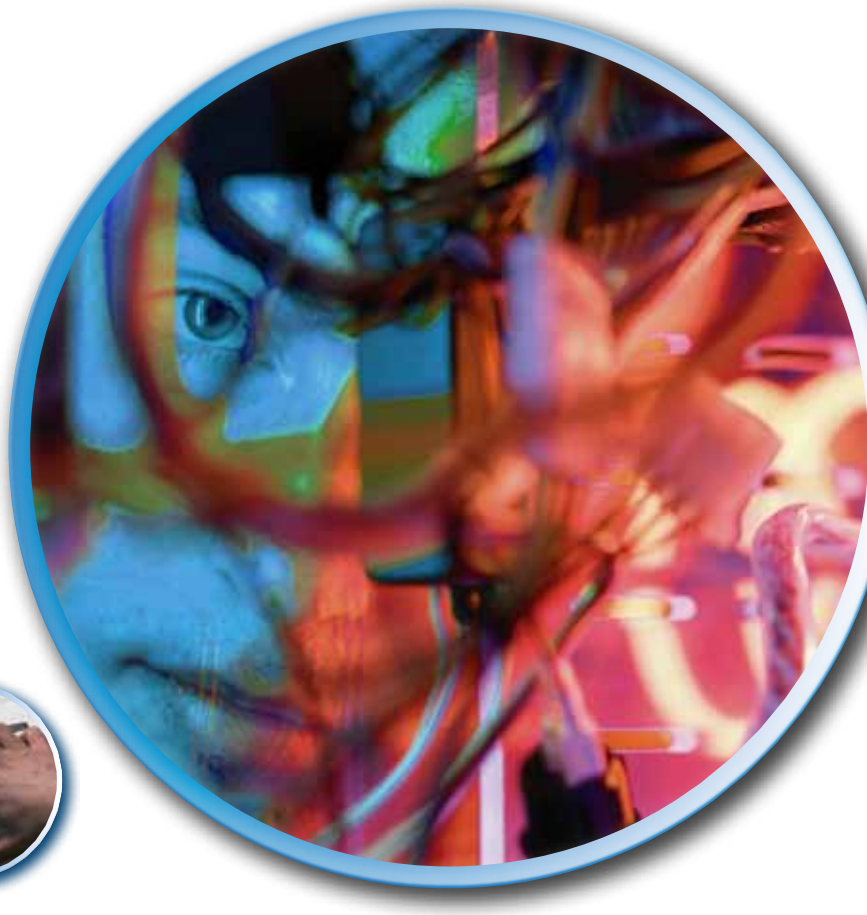
Total Credits: 24

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
ITSY	2343	Computer System Forensics	3
ITDF	1300	Introduction to Digital Forensics	3
ITDF	1305	Fundamentals of Digital Data Storage	3
CJSA	1327	Fundamentals of Criminal Law	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
ITDF	2320	Digital Forensics Collection	3
ITDF	2325	Digital Forensics Tools	3
ITDF	2330	Digital Forensics Analysis	3
ITDF	2335	Comprehensive Digital Forensics Project	3
		Semester Total	**12**

Note: Certificate candidates must have a related computer degree (AAS or higher) in either Network Security or Computer Network and Systems Administration or a criminal justice degree with three years of computer experience.



Pharmacy Technician

Specialization of Chemical Technology

The pharmaceutical industry has exploded in the past few decades, creating many job opportunities for those who work in the industry. According to the U.S. government, pharmacy technicians held about 285,000 jobs in 2006, with continued growth expected as Baby Boomers reach their senior years.

From hospitals to home-health aids, America offers unprecedented opportunities in medical fields, including related areas such as the pharmaceutical industry. That's why TSTC's Pharmacy Technician program will be an important step to start a fast-paced and growing career. These days, jobs are available in hospitals, nursing homes, assisted-living facilities, retail or mail-order pharmacies, grocery stores, department stores and other venues.

TSTC's Pharmacy Technician Specialization focuses on the specific skills needed in today's fast-paced, high-volume pharmacy. The curriculum includes three semesters of intense classroom and laboratory instruction designed to prepare graduates for the Certified Pharmacy Technician, or CPhT, examination. Administered by the Pharmacy Technician Certification Board, this credential demonstrates that the technician has mastered the skills applicable to pharmacy and is ready to undertake a new career.

CHT Pharmacy Technician Advisory Committee

Phillip Bowers, Wal-Mart Pharmacy, Waco
Debra Carey-Gorton, Providence Health Center, Waco
Traci Crain, Family Health Center, Waco
Lynn Everett, Lynn's LaVega Pharmacy, Waco
Thomas Guerra, HEB Grocery Co., Waco
Dwayne Howard, Providence Health Center, Waco
Troy Hudson, Wal-Mart Pharmacy, Hillsboro
Lanny Lewis, Pharmacist, McGregor
Albert Olsovsky, HEB Pharmacy, Waco
Glenn Rebber, Family Health Center, Waco
Fred Stewart, Providence Health Center, Waco
Jeanne Waggener, Wal-Mart Pharmacy, Waco

Pharmacy Technician

Certificate of Completion

Total Credits: 37

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
PHRA	1313	Community Pharmacy Practice	3
PHRA	1205	Drug Classification	2
PHRA	1301	Introduction to Pharmacy	3
PHRA	1209	Pharmaceutical Mathematics I	2
ITSC	1309	Integrated Computer Applications	3
		Semester Total	**13**

^ Institutional Credit Only

Second Semester			Credits
PHRA	1247	Pharmaceutical Mathematics II	2
PHRA	1349	Institutional Pharmacy Practice	3
PHRA	1345	Intravenous Admixture and Sterile Compounding	3
PHRA	2461	Clinical	4
		Semester Total	**12**

Third Semester			Credits
PHRA	1441	Pharmacy Drug Therapy and Treatment	4
PHRA	1202	Pharmacy Law	2
PHRA	2462	Clinical-Pharmacy Technician/Assistant	4
PHRA❖	1243	Pharmacy Technician Certification Review	2
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Note: The first semester class size is limited to 25 students. Enrollment in these courses is by test scores only and is on a "first-come" basis. Applicants must have "passing" scores on all sections of the Accuplacer or other standardized assessment tools and not be required to take remedial courses. Students in a remedial course sequence must retake and pass all sections of the placement test prior to enrolling in the pharmacy technician courses.

Note: Students will be required to register with the State Board of Pharmacy as a "Technician Trainee" during their first semester and prior to starting their clinical assignment. This registration process includes a criminal background check and is no additional cost. Students with a criminal history or a drug abuse history are ineligible to participate in the clinical courses and to sit for the National Pharmacy Technician Certification Examination. Prior to starting a clinical assignment students are required to submit to, and possibly pay for, a drug screening test. They are also required to purchase additional insurance.

Also offered at Texas State Marine Education Center in Palacios.

Plumbing & Pipefitting

Specialization of Industrial Systems & Engineering Technology

Whether residential, commercial or industrial, only a qualified plumber has the skills required to install and service the vast array of plumbing and heating equipment available today. Advances in technology call for even more graduates, as the Texas State Board of Plumbing Examiners reports a huge shortage in the field. And, the federal government projects a 10 to 20 percent growth rate in the industry through 2014, listing it among its Top 50 in-demand occupations.

TSTC has responded to this shortage by developing practical and comprehensive hands-on instruction where students build the skill base for financial and professional success. Additionally, when new students register in the Plumbing & Pipefitting program, they are registered with the state of Texas as an apprentice. TSTC training credits are applied toward the hours needed to obtain a professional license.

Associate of Applied Science Degree Program

Upon successfully completing all required coursework, TSTC will award you an Associate of Applied Science degree in Plumbing & Pipefitting. A full-time, academically prepared student can earn the degree in approximately two years.

Certificate Program

The one-year Plumbing & Pipefitting Specialization progresses from basic to advanced coursework in plumbing, piping, construction, fabrication, rigging, welding and more. The intense curriculum culminates in a Certificate of Completion.

Plumbing & Pipefitting Advisory Committee

Ken Boen, Boen Plumbing Inc., Waco
Greg Holloway, Specialty Plumbing Service, Katy
James M. Kruse Sr. P.E., Lochridge-Priest, Waco
Craig Mundt, Lonestar Plumbing, Pflugerville
Randy Pederson, Fox Service Co., Austin
John Pratt, Pratt Plumbing Co., Moody
Larry Ross, Mr. Rooter Plumbing, Waco
Rickey Shelton, Shelton Plumbing Inc., Waco
James Urbanek, Lochridge-Priest, Waco
Mickey Williams, Fox Mechanical Company, Austin
Kenny Willis, Willis Plumbing Co. Inc., Waco
Wilbur Willis, Willis Plumbing Co. Inc., Waco

Plumbing & Pipefitting

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
CNBT	2310	Commercial/Industrial Blueprint Reading	3
PFPB	1223	Plumbing Codes I	2
PFPB	2308	Piping Standards and Materials	3
PFPB	2309	Residential Construction Plumbing I	3
PFPB	2349	Field Measuring, Sketching, and Layout	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
OSHT	1405	OSHA Regulations - Construction Industry	4
PFPB	1321	Plumbing Maintenance and Repair	3
PFPB	1347	Backflow Prevention	3
PFPB	2336	Commercial Construction and Fixture Setting	3
PFPB	2343	Advanced Pipe Practices	3
		Semester Total	**16**

Third Semester			Credits
INMT	1680	Cooperative Education - Manufacturing Technology/Technician	6
		Semester Total	**6**

Fourth Semester			Credits
CNBT	1302	Mechanical, Plumbing & Electrical Systems in Construction I	3
CNBT	1346	Construction Estimating I	3
PFPB	2357	Plumbing Codes II	3
ENGL	1301	Composition I	3
		Semester Total	**12**

Fifth Semester			Credits
PFPB	1353	Commercial Plumbing II	3
CNBT	2342	Construction Management I	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Courses	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**12**

Sixth Semester			Credits
PFPB	1340	Lawn Irrigation Systems	3
PFPB	2315	Intermediate Technologies for Piping Trades	3
ACGM	X3XX	Gen Ed Elective Course	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

Plumbing & Pipefitting

Certificate of Completion

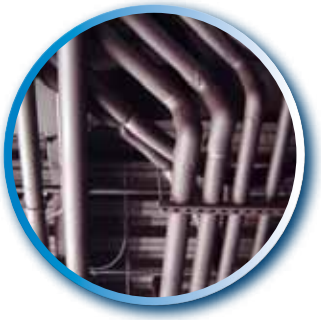
Total Credits: 36

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
CNBT	2310	Commercial/Industrial Blueprint Reading	3
PFPB	1223	Plumbing Codes I	2
PFPB	2309	Residential Construction Plumbing I	3
PFPB	2308	Piping Standards and Materials	3
PFPB	2349	Field Measuring, Sketching and Layout	3
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
OSHT	1405	OSHA Regulations - Construction Industry	4
PFPB	1321	Plumbing Maintenance and Repair	3
PFPB	1347	Backflow Prevention	3
PFPB	2336	Commercial Construction and Fixture Setting	3
PFPB	2343	Advanced Pipe Practices	3
		Semester Total	**16**

Third Semester			Credits
INMT	1680	Cooperative Education — Manufacturing Technology/Technician	6
		Semester Total	**6**



Telecommunications Technology

Technological advances are expanding the range of services offered in telecommunications, opening up job opportunities like never before.

That's good news for students who enter the programs of Telecommunications Technology (TEL). The telecommunications industry delivers voice communications, data, graphics, television, and video at ever increasing speeds and in an increasing number of ways. No longer is wireline telephone communication the primary service of the industry; instead, wireless communication services, Internet service, and cable and satellite program distribution now make up an increasing share of the industry.

The Telecommunications Technology program at TSTC is recognized by the Texas Skill Standards Board. What this means for students is industry-endorsed training that puts them in line to earn industry certifications and licenses such as the Fiber Optic Installer certification, Fujitsu Central Officer Installer Level I/II, the FCC's General Radiotelephone Operator License and Technical Customer Specialist.

Curriculum and standards were developed and endorsed by industry giants such as Texas Cable and Telecommunications Association, Time-Warner Cable, Cox Communications, Comcast Communications and other industry giants, helping ensure that students get the most up-to-date training in the market.

Telecommunications offers a variety of specializations, including Global Communication Systems Installer, Radio Communications Electronics and Teleconferencing Systems, all of which can pave the way to an excellent and exciting career.

Associate of Applied Science Degree Program

The Telecommunications Technology program is designed to prepare students for the communications industry through educational training in the installation, operation and maintenance of communication infrastructures using the full range of communication transport systems culminating in an Associate of Applied Science degree.

Certificate Program

The college offers one-year certificates programs in Global Communication Systems Installer and Radio Communication Electronics. These intense, hands-on curriculums culminates in a Certificate of Completion.

Tech Prep Associate of Applied Science Degree Program

TEL also offers a Tech Prep program. This competency-based, six-year program of study begins in the ninth grade of high school and results in an Associate of Applied Science degree.

TEL Advisory Committee

Harold Adams, Adams Communications, Waco
Carlos Ancira, Cabling & Wireless Solutions, Valley Mills
Larry Blare, City of Waco, Waco
Wayne Canaday, McLennan County Maintenance, Waco
Daniel Cate, Baylor University, Waco
Jim Eberhart, Southwestern Bell Communications, Waco
Brent Graves, Brazos Electric Power, Weatherford
Paul Gravitt, US Ultracom, Lorena
Darrell Klimitchek, South Texas Electric Co-op Inc., Nursery
Alvin Lowrance, MCI, Richardson
Jimmy McBee, Simplex-Grinnell, Round Rock
Bob McDarmont, CANUX, Richardson
Steven Muhr, Burlington Northern Santa Fe Railroad (BNSF), Ft. Worth
Chet Niederhofer, City of Austin, Austin
Joseph Nors, Federal Bureau of Investigation, San Antonio
Win Phinney, MCI: North Texas Operations: TFO South Central Manager, Irving
Robert Pilcher, Cingular Wireless, Plano
Wesley Ramos, Grande Communications, Waco
John Smith, Grande Communcations, Waco
John Underwood, AT&T, Waco
Peter Ungar, Spectrum Wireless, Blue Mound
Joseph Vogeli, Cabling & Wireless Solutions, Waco
Frank Walker, MCI Worldcom, Waco

Telecommunications Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
IEIR	1302	Direct Current (TP)	3
EECT	1300	Technical Customer Service	3
EECT	1303	Introduction to Telecommunications	3
EECT	1340	Telecommunications Transmission Media	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
IEIR	1304	Alternating Current (TP)	3
CETT	1325	Digital Principles and Devices	3
CPMT	1303	Introduction to Computer Technology	3
CSIR	1341	Transceiver Troubleshooting I	3
CSIR	2301	Communication Electronics Components	3
		Semester Total	**15**

Third Semester			Credits
CSIR	1344	General Communications Circuits	3
CSIR	1359	Digital Data Communication	3
CSIR	2359	Communication Antenna Systems	3
EECT	1302	Introduction to Videoconferencing	3
EECT	1342	Telecommunications Outside Plant	3
		Semester Total	**15**

Fourth Semester			Credits
MATH	1332	Contemporary Mathematics I	3
ENGL	1301	Composition I	3
CSIR	1355	Industry Certifications	3
CSIR	2343	Transceiver Troubleshooting II	3
EECT	2337	Wireless Telephony Systems	3
		Semester Total	**15**

Fifth Semester			Credits
EECT	1344	Telecommunications Broadband Systems	3
EECT❖	2330	Telecommunications Switching	3
ACGM	X3XX	Gen Ed Social Science Course	3
ACGM	X3XX	Gen Ed Elective	3
ACGM	X3XX	Gen Ed Humanities/Fine Art Course	3
		Semester Total	**15**

EECT Co-op classes maybe used for different courses, depending on the learning objectives of the position for cooperative education.

❖ This course has been designated as a capstone course (see index for explanation).



Global Communication Systems Installer

Specialization of Telecommunications Technology

New services are made possible through the use of digital technologies that provide more efficient use of the telecommunications networks. Global communications are the fuel for today's competitive market. Individuals, companies and organizations cannot exist without worldwide communication and need skilled technicians who can understand and implement the technology it requires.

Students will receive a variety of instruction and hands-on practice in areas such as alternating current, digital principles and devices, computer technology, transceiver troubleshooting, communication electronics components and more in the Global Communication Systems Installer specialty.

Certificate Program

In the one-year Global Communication Systems Installer Specialization, you can learn to install the complex systems used universally for telephone systems, trunking systems, data communication systems, global positioning systems and paging. The intense, hands-on curriculum culminates in a Certificate of Completion.

Global Communication Systems Installer

Certificate of Completion

Total Credits: 42

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
EECT	1300	Technical Customer Service	3
EECT	1303	Introduction to Telecommunications	3
EECT	1340	Telecommunications Transmission Media	3
IEIR	1302	Direct Current (TP)	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
IEIR	1304	Alternating Current (TP)	3
CETT	1325	Digital Principles and Devices	3
CPMT	1303	Introduction to Computer Technology	3
CSIR	1341	Transceiver Troubleshooting I	3
CSIR	2301	Communication Electronics Components	3
		Semester Total	**15**

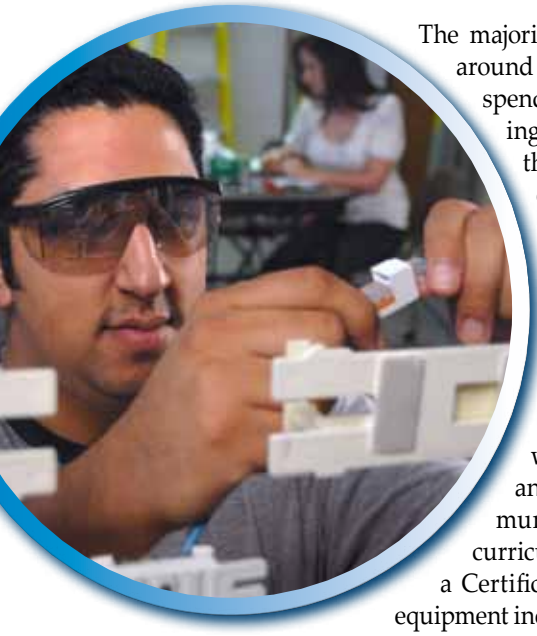
Third Semester			Credits
CSIR	1344	General Communications Circuits	3
CSIR	1359	Digital Data Communication	3
CSIR	2359	Communication Antenna Systems	3
EECT	1302	Introduction to Videoconferencing	3
EECT❖	1342	Telecommunications Outside Plant	3
		Semester Total	**15**

EECT Co-op classes maybe used for different courses, depending on the learning objectives of the position for cooperative education.

Radio Communication Electronics

Specialization of Telecommunications Technology

Wireless telephony systems, transceiver troubleshooting, direct current, digital principals and devices and much more are the basis for the specialization of Radio Communication Electronics. Students who specialize in this area have the opportunity to gain the skills necessary for a successful career in telecommunications.



The majority of class work designed around labs means students will spend more of their time learning the hands-on techniques that makes this the perfect career choice.

Certificate Program

The one-year Radio Communication Electronics Specialization offers focused, hands-on coursework in troubleshooting and repairing complex communication equipment. The curriculum, which culminates in a Certificate of Completion, covers equipment including cellular telephones, data communication equipment, trunked radio systems, broadcast transmitters, conventional radio systems and telemetry systems.

Radio Communication Electronics

Certificate of Completion

Total Credits: 42

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
IEIR	1302	Direct Current (TP)	3
EECT	1300	Technical Customer Service	3
EECT	1303	Introduction to Telecommunications	3
EECT	1340	Telecommunications Transmission Media	3
		Semester Total	**12**

^ Institutional Credit Only

Second Semester			Credits
IEIR	1304	Alternating Current (TP)	3
CETT	1325	Digital Principles and Devices	3
CSIR	1341	Transceiver Troubleshooting I	3
CSIR	2301	Communication Electronics Components	3
		Semester Total	**12**

Third Semester			Credits
CSIR	1344	General Communications Circuits	3
CSIR	1359	Digital Data Communication	3
CSIR	1355	Industry Certifications	3
CSIR	2359	Communication Antenna Systems	3
EECT	2337	Wireless Telephony Systems	3
CSIR❖	2343	Transceiver Troubleshooting II	3
		Semester Total	**18**

EECT Co-op classes maybe used for different courses, depending on the learning objectives of the position for cooperative education.

❖ This course has been designated as a capstone course (see index for explanation).

Teleconferencing Systems

Specialization of Telecommunications Technology

Video conferencing rooms have proliferated in Texas and America – and the technology is ever evolving. Because of these changes, telecommunication technicians who specialize in Teleconferencing Systems will learn highly focused skills that can give them an edge among job competitors.

Students in this specialization will learn general communication circuits, telecommunications transmission media, teleconferencing systems designs, teleconferencing applications and much more.

With this education, students can enjoy great career opportunities and exceptional wages.

Associate of Applied Science Degree Program

The two-year Teleconferencing Systems Specialization offers focused coursework in installation, maintenance and trouble-shooting of the complex equipment used in videoconferencing and teleconferencing systems. The curriculum culminates in an Associate of Applied Science degree.

Teleconferencing Systems

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
IEIR	1302	Direct Current (TP)	3
EECT	1300	Technical Customer Service	3
EECT	1303	Introduction to Telecommunications	3
EECT	1340	Telecommunications Transmission Media	3
		Semester Total	**12**

^Institutional Credit Only

Second Semester			Credits
IEIR	1304	Alternating Current (TP)	3
CETT	1325	Digital Principles and Devices	3
CPMT	1303	Introduction to Computer Technology	3
CSIR	1341	Transceiver Troubleshooting I	3
CSIR	2301	Communication Electronics Components	3
		Semester Total	**15**

Third Semester			Credits
CSIR	1344	General Communications Circuits	3
CSIR	1359	Digital Data Communication	3
CSIR	2359	Communication Antenna Systems	3
EECT	1302	Introduction to Videoconferencing	3
EECT	1342	Telecommunications Outside Plant	3
		Semester Total	**15**

Fourth Semester			Credits
MATH	1332	Contemporary Mathematics I	3
ENGL	1301	Composition I	3
CSIR	1355	Industry Certifications	3
EECT	1306	Introduction to Teleconferencing	3
EECT	2301	Teleconferencing Applications	3
		Semester Total	**15**

Fifth Semester			Credits
EECT	2303	Teleconferencing Systems Design	3
EECT❖	2350	Teleconferencing Technology	3
ACGM	X3XX	Gen Ed Elective	3
ACGM	X3XX	Gen Ed Humanities/Fine Art Course	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

EECT Co-op classes maybe used for different courses, depending on the learning objectives of the position for cooperative education.

❖ This course has been designated as a capstone course (see index for explanation).

Web Design & Development

There is virtually no entity out there today which doesn't have a Web presence. Schools, governments, hospitals, big conglomerates and even smaller organizations now conduct business on the Web.

Because of this, job opportunities for Web Design and Development professionals have exploded in the last decade. Students who are trained in this market could have a wide-open door when it comes to selecting careers.

At TSTC, the Web Design & Development (WEB) program can provide you with the technical training you need to become a designer and developer. Targeted coursework offers hands-on training in Web site production, programming, mobile Web applications and much more. Two specialty areas, Web Designer and Web Developer, will allow you to focus on the area that most interests you.

Faculty that offers training all have experience in the field, and industry advisors help ensure all students receive the most up-to-date education available on the market.

Associate of Applied Science Degree Program

The two-year Web Design & Development Technology includes 55 college credit hours specific to graphic and Web design, Web development, computer science and computer networking. The curriculum, which culminates in an Associate of Applied Science degree, covers languages and software including XHTML, HTML, JavaScript, PHP, CSS, ColdFusion, Adobe Flash, Fireworks and Dreamweaver.

WEB Advisory Committee

Brennon Arnold, Baylor University, Waco
Jeremy Ferguson, Redline Technology Inc., Waco
Garnett Gilchrest, Curves International, Waco
Jeremy Knue, Wardlow Claims Service, Waco
Alicia Ledezma, FG Squared, Austin
Rachel Lee, Clear Blue Web Design, Waco
Buddy Luedeker, Virtual This.Com, Waco
Marcus Manning, McLane Advance Technology, Temple
Chris Mills, Opera Softward, Oldham, Greater Manchester, UK
Kevin Minke, Industrial Info Resources, Sugarland
Carla Pendergraft, Waco
Walter Pierce, Blue Eyed Enterprises, Waco
Andy Rutledge, NETSUCEES, Lewisville
Gloria Sims, The University of Texas at Austin, Austin
Kyle Sloan, Itero, Carrollton
Brett Smith, World Wide Internet, Waco
Brandon Thomas, Arlington
Michah Williams, KWTX, Waco

Web Design

Job opportunities in the computer systems design and related services industry are experiencing rapid growth, according to the U.S. Department of Labor. Fully 489,000 jobs will be added through 2016, statistics indicate.

What that means for students is an opportunity to practically pick a career upon graduation. Once students learn the skills in the Web Designer specialization, there is no end to what they can achieve.

Students not only learn instruction in Web page design and composition, they develop a portfolio and participate in a real-world project that moves them to the top of the class when employers seek candidates.

Web Design

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
ARTC	1302	Digital Imaging I	3
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^ Institutional Credit Only

Second Semester			Credits
INDS	1301	Basic Elements of Design	3
ITSE	1301	Web Design Tools	3
ITSE	1311	Beginning Web Programming	3
ITSE	2302	Intermediate Web Programming	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
ARTC	2305	Digital Imaging II	3
IMED	1316	Web Design I	3
IMED	1341	Interface Design	3
ITSE	1306	PHP Programming	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fourth Semester			Credits
MED	2309	Internet Commerce	3
IMED	2315	Web Design II	3
INEW	2375	Advanced Web Technologies	3
ITSE	2321	Object-Oriented Programming	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fifth Semester			Credits
IMED ❖	2311	Portfolio Development	3
IMED	2359	Interactive Web Elements	3
IMED	2388	Internship - Digital Communication and Media/Multimedia	3
ENGL	2311	Technical Writing	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Web Development

Not everyone enjoys design; some like the development that's inherent in Web technology. That's why the Web Development specialization may be just the career choice for many students.

And there are plenty of jobs available. According to the federal government, the computer systems design and related services industry is expected to experience rapid growth, adding 489,000 jobs through 2016.

But it takes specialized skills and training, such as the training students receive at TSTC. Students in this specialization will learn basic and intermediate Web page programming, database theory and design, and even Internet commerce, among other subjects.

Students will also develop a portfolio and participate in an outside project that will give them the competitive edge come hiring time.

Web Development

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
ARTC	1302	Digital Imaging I	3
CPMT	1303	Introduction to Computer Technology	3
ITSE	1329	Programming Logic and Design	3
LAWT	1301	Copyright and Ethical Issues	3
ENGL	1301	Composition I	3
		Semester Total	**15**

^Institutional Credit Only

Second Semester			Credits
INDS	1301	Basic Elements of Design	3
ITSE	1301	Web Design Tools	3
ITSE	1311	Beginning Web Page Programming	3
ITSE	2302	Intermediate Web Programming	3
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
		Semester Total	**15**

Third Semester			Credits
MED	1316	Web Design I	3
IMED	2370	Intermediate Web Technology	3
ITNW	2354	Internet/Intranet Server	3
ITSE	1306	PHP Programming	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**15**

Fourth Semester			Credits
IMED	2309	Internet Commerce	3
INEW	2334	Advanced Web Page Programming	3
ITSE	2321	Object-Oriented Programming	3
ITSE	2357	Advanced Object-Oriented Programming	3
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fifth Semester			Credits
IMED ❖	2311	Portfolio Development	3
IMED	2388	Internship - Digital Communication and Media/Multimedia	3
ITSE	2313	Web Authoring	3
ENGL	2311	Technical Writing	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Certificate Program

The one-year Web Design Design and Development specialization offers focused, hands-on coursework in Web design, programming, digital imaging, Cyberspace laws and much more. The curriculum, which culminates in a Certificate of Completion, can help you hone in quickly on the some of the most important aspects of Web design and development.

Web Design & Development

Certificate of Completion

Total Credits: 30

First Semester			Credits
TECH^	1100	Tech Success	
CTEX^	10XX	Tech Success Seminars (3 as assigned)	1
ITSE	2302	Intermediate Web Programming	3
ARTC	1302	Digital Imaging I	3
ITSE	1311	Beginning Web Programming	3
INDS	1301	Basic Elements of Design	3
LAWT	1301	Copyright and Ethical Issues	3
		Semester Total	**15**

^ Institutional Credit Only

Second Semester			Credits
IMED	1316	Web Design I	3
ITSE	1306	PHP Programming	3
ARTC	2305	Digital Imaging II	3
INEW	2375	Advanced Web Technology	3
IMED	1341	Interface Design	3
		Semester Total	**15**

Welding Technology

Welding is a fixture of everyday society, as industry uses it in everything from bridges to automobiles. It's a high-paying occupation that demands workers who know what they're doing.

The Welding Technology (WLT) at TSTC has a strong history of providing top-notch instruction in welding, automation and robotics, non-destructive testing and other metallurgical processes. The WLT program at TSTC offers hands-on instruction in 180 ventilated arc welding stations and 20 oxy-acetylene stations. With extensive hands-on training on industry-standard machines and state-of-the-art equipment, graduates stand above the rest in the field.

In addition, the Welding Technology offers a specialization in Combination Welding, highly sought after by those in the industry.

Associate of Applied Science Degree Program

In addition to the opportunity to practice the skills and gain the knowledge necessary to pass various welder qualification tests, the two-year Welding Technology program provides extensive instruction in metals and welding processes for experience in analyzing and solving problems encountered in the welding industry. The curriculum, which culminates in an Associate of Applied Science degree, covers shielded metal arc, flux cored arc, gas metal arc, gas tungsten arc and submerged arc welding processes.

Tech Prep Associate of Applied Science Degree Program

WLT also offers a Tech Prep program. This competency-based, six-year program begins in the ninth grade of high school and results in an Associate of Applied Science degree.

Most career opportunities for welders can include strenuous activities, and many employers now require full back X-rays as part of pre-employment physicals. WLT requires students to demonstrate basic reading, writing and mathematical skills before enrolling.

WLT Advisory Committee

Russell Battles, Oak Grove LLC, Franklin
Tim Braun, Lincoln Electric, Grapevine
Michael Cameron, Cameron Consulting, Euless
Bill Cherry, Zachary, Deer Park
Steve Copeland, WISCO, Houston
Randy Ellington, ARC Specialities, Houston
Ryan Fokens, CRC Evans Automatic Welding, Houston
Warren Hankammer, Win Welding Supply, Ft. Worth
Matt Holt, CRC Evans Automatic Welding, Houston
J. Jones, Victor Equipment, Denton
Robert Klug, Trinity Industries, Dallas
Chris Krueger, Krueger's Welding Service, Bellville
Ernest Levert, Lockheed Martin, Highland Village
Randy Mariott, National Oilwell, Houston
Richard Marslender, Kiewit Offshore Services Ltd., Ingleside
Kara McDaniel, Lincoln Electric Co., Grapevine
Jim Minton, Trinity Rail, Longview
Walt Spier, Bechtel Corp., Houston
David Stephens, Dow Chemical, Freeport
David E. Villia, Mesquite
Doug Watkins, Texas Hydraulics, Temple
James White, Bodycote Metal Technology, Houston
Andy Wolksill, Acute Technologies Services, Houston
Chris Wright, Trinity, Dallas

Welding Technology

Associate of Applied Science Degree

Total Credits: 72

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
WLDG	1313	Introduction To Blueprint Reading	3
WLDG	1323	Welding Safety, Tools and Equipment	3
WLDG	1428	Introduction to Shielded Metal Arc Welding (SMAW)	4
WLDG	1430	Introduction to Gas Metal Arc Welding (GMAW)	4
ENGL	1301	Composition I	3
		Semester Total	**17**

Second Semester			Credits
WLDG	1312	Introduction to Flux Core Welding (FCAW)	3
WLDG	1417	Introduction to Layout and Fabrication	4
WLDG	1457	Intermediate Shielded Metal Arc Welding (SMAW)	4
ACGM	X3XX	Gen Ed Elective	3
		Semester Total	**14**

Third Semester			Credits
WLDG	1434	Introduction to Gas Tungsten Arc (GTAW) Welding	4
WLDG	1435	Introduction to Pipe Welding	4
WLDG	2443	Advanced Shielded Metal Arc Welding (SMAW)	4
ACGM	X3XX	Gen Ed Humanities/Fine Arts Course	3
		Semester Total	**15**

Fourth Semester			Credits
ACGM	X3XX	Gen Ed Math/Natural Sciences Course	3
WLDG	1337	Introduction to Metallurgy	3
WLDG	2451	Advanced Gas Tungsten Arc (GTAW) Welding	4
WLDG	2413	Intermediate Welding Using Multiple Processes	4
		Semester Total	**14**

Fifth Semester			Credits
NDTE	1310	Liquid Penetrant/Magnetic Particle Testing	3
WLDG❖	2350	Orbital Tube Welding	3
WLDG	2355	Advanced Welding Metallurgy	3
ACGM	X3XX	Gen Ed Social Science Course	3
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Combination Welding

Specialization of Welding Technology

The one-year Combination Welding specialty focuses on the skills and knowledge required for the welder qualification test for the American Welding Society, Section IX of the American Society of Mechanical Engineers Code and the American Petroleum Institute. Jobs in this area are plentiful.

This curriculum includes a wide array of subjects. Students gain extensive skills and knowledge through simulated industrial welder qualification tests with the following processes: SMAW, GMAW, FCAW (gas and self-shielded), GTAW and SAW.

As a graduate, the demand is extensive. You may work as a welder in general fabrication shops, on construction sites, in pressure vessel shops or shipyards.

Most career opportunities for welders can include strenuous activities, and many employers now require full back X-rays as part of pre-employment physicals. The Welding Technology programs require students to demonstrate basic reading, writing and mathematical skills before enrolling.

Certificate Programs

After successful completion of the Combination & Pipe Welding specialization students will be awarded a Certificate of Completion.

Combination & Pipe Welding

Certificate of Completion

Total Credits: 52

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
WLDG	1313	Introduction To Blueprint Reading	3
WLDG	1323	Welding Safety, Tools and Equipment	3
WLDG	1428	Introduction to Shielded Metal Arc Welding (TP)	4
WLDG	1430	Introduction to Gas Metal Arc (MIG) Welding (TP)	4
		Semester Total	**14**

^Institutional Credit Only



Second Semester			Credits
NDTE	1310	Liquid Penetrant/Magnetic Particle Testing	3
WLDG	1312	Introduction to Flux Cored Welding (FCAW)	3
WLDG	1417	Introduction to Layout And Fabrication	4
WLDG	1457	Intermediate Shielded Metal Arc Welding (SMAW)	4
		Semester Total	**14**

Third Semester			Credits
WLDG	1434	Introduction to Gas Tungsten Arc (TIG) Welding	4
WLDG	1435	Introduction to Pipe Welding	4
WLDG❖	2443	Advanced Shielded Metal Arc Welding (SMAW)	4
		Semester Total	**12**

Fourth Semester			Credits
WLDG	2406	Intermediate Pipe Welding	4
WLDG	2435	Advanced Layout And Fabrication	4
WLDG	2453	Advanced Pipe Welding	4
		Semester Total	**12**

❖ This course has been designated as a capstone course (see index for explanation).

Certificate Programs

After successful completion of the one-year Combination Welding program students will be awarded a Certificate of Completion.

Combination Welding

Certificate of Completion

Total Credits: 40

First Semester			Credits
TECH ^	1100	Tech Success	
CTEX ^	10XX	Tech Success Seminars (3 as assigned)	1
WLDG	1313	Introduction To Blueprint Reading	3
WLDG	1323	Welding Safety, Tools and Equipment	3
WLDG	1428	Introduction to Shielded Metal Arc Welding (TP)	4
WLDG	1430	Introduction to Gas Metal Arc (MIG) Welding (TP)	4
		Semester Total	**14**

^Institutional Credit Only

Second Semester			Credits
NDTE	1310	Liquid Penetrant/Magnetic Particle Testing	3
WLDG	1312	Introduction to Flux Cored Welding (FCAW)	3
WLDG	1417	Introduction to Layout and Fabrication	4
WLDG	1457	Intermediate Shielded Metal Arc Welding (SMAW)	4
		Semester Total	**14**

Third Semester			Credits
WLDG	1434	Introduction to Gas Tungsten Arc (TIG) Welding	4
WLDG	1435	Introduction to Pipe Welding	4
WLDG❖	2443	Advanced Shielded Metal Arc Welding (SMAW)	4
		Semester Total	**12**

COURSE DESCRIPTIONS

Please note: In the parenthesis following the course number and title of each course description are the lecture hours per week - lab hours per week - credit hours per course (ex: 2-4-3 is 2 lecture-4 lab-3 credit).

TSTC Texas State Technical College

Course Descriptions Index

Academic & Interdisciplinary Courses

Supplemental Education Courses

Technical Courses

Academic & Interdisciplinary Courses

ACNT

ACNT-1303 Intro to Accounting (2-2-3) A study of analyzing, classifying, and recording business transactions in a manual and computerized environment. Emphasis on understanding the complete accounting cycle and preparing financial statements; and apply accounting concepts related to cash and payroll. (Workforce Education Course)

ACNT-1329 Payroll and Business Tax Accounting (3-1-3) A study of payroll procedures, taxing entities, and reporting requirements of local, state, and federal taxing authorities in a manual and computerized environment. Course will cover bank reconciliations, discounts, payroll, and financial statements. (Workforce Education Course)

BIOL

BIOL-1406 Biology for Science Majors I (3-3-4) Fundamental principles of living organisms including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of reproduction, genetics, ecology, and the scientific method are included.

BIOL-1408 General Biology (3-3-4) Fundamental principles of living organisms including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of reproduction, genetics, ecology, and the scientific method are included.

BIOL-2406 Environmental Biology (3-3-4) Human interaction with and effect upon plant and animal communities. Conservation, pollution, energy, and other contemporary ecological problems. Prerequisites: BIOL-1408 or BIOL-1406

BMGT

BMGT-1301 Supervision (2-2-3) A study of the role of the supervisor. Managerial functions as applied to leadership, counseling, motivation, and human skills are examined.

BMGT-1309 Information and Project Management (2-4-3) Critical path methods for planning and controlling projects. Includes time/cost tradeoffs, resource utilization, stochastic considerations, task determination, time management, scheduling management, status reports, budget management, customer service, professional attitude, and project supervision.

BUSG

BUSG-2309 Small Business Management (3-0-3) Starting and operating a small business. Includes facts about a small business, essential management skills, how to prepare a business plan, financial needs, marketing strategies, and legal issues.

BUSI

BUSI-2301 Business Law I (3-0-3) An overview of the major areas of Business Law includes Contract Law, Tort Law, and Consumer Law. The course includes information on the court system in Texas, process of lawsuits, commercial transactions and other basic legal systems and how it operates, both Federal and State.

CHEM

CHEM-1105 Intro Chem I Lab (0-3-1) The laboratory portion of CHEM 1305. The experiments coincide with the lecture of CHEM 1305. Corequisite: CHEM 1305

CHEM-1111 General Chem I-Lab (0-3-1) The laboratory portion of CHEM 1311. The laboratory experiments will coincide with the topics taught in CHEM 1311. Corequisite: CHEM 1311

CHEM-1305 Intro Gen Chemistry I (3-0-3) A introductory chemistry course primarily for allied health science major or related science majors. Topics include standard for measurements, matter, nomenclature, quantitive computation, equations, atomic theory, bonding, gases, and solutions. Corequisite: CHEM 1105

CHEM-1311 General Chemistry I (3-0-3) A course designed for science majors. General principles, fundamental laws and theory, will be covered. Topics include structure of matter, the periodic classification relationships, bonding theory, properties of gases and solutions. Corequisite: CHEM 1111

CHEM-1405 Introductory Chemistry (3-3-4) A survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. Designed for non-science students.

CHEM-1411 General Chemistry I (3-3-4) General principles, problems, fundamental laws, and theories. Course content provides a foundation for work in advance chemistry and related sciences. Prerequisites: MATH-1314

CHEM-1412 General Chemistry II (3-3-4) A continuation of General Chemistry I. Ionic equilibria, oxidation-reduction, electrochemistry, gas laws, thermodynamics, introduction to carbon compounds, nuclear and radiochemistry. Prerequisite: CHEM 1411

CHEM-2101 Analytical Chemistry I-Lab (0-3-1) The laboratory portion of CHEM 2301. Corequisites: CHEM-2301

CHEM-2102 Analytical Chemistry II Lab (0-3-1) the laboratory portion of CHEM 2302. Prerequisites: CHEM-2301, CHEM-2101. Corequisites: CHEM-2302

CHEM-2123 Organic Chemistry I-Lab (0-3-1) The laboratory portion of CHEM 2323. Organic laboratory techniques will be emphasized. Corequisites: CHEM-2323

CHEM-2125 Organic Chemistry II Lab (0-3-1) Study of the properties and behavior of hydrocarbon compounds and their derivatives. Designed for students in science or pre-professional programs. Prerequisites: CHEM-2323, CHEM-2123. Corequisites: CHEM-2325

CHEM-2301 Analytical Chemistry I (3-0-3) Principles and methods of quantitative chemical analysis dealing primarily with volumetric and gravimetric analysis and containing a brief introduction to physical methods. Prerequisites: CHEM-1312, CHEM-1112 , Corequisites: CHEM-2101

CHEM-2302 Analytical Chemistry II (3-0-3) The principle and methods of quantitative chemical analysis dealing primarily with gravimetric analysis, oxidation-reduction electrochemical analysis, and an introduction to analytical instrumentation. Prerequisites: CHEM-2301, CHEM-2101. Corequisites: CHEM-2102

CHEM-2323 Organic Chemistry I (3-0-3) A study of the general principle of the chemistry of carbon. Topics include alkanes, alkene, alkyne, ethers, alcohols, sterochemistry, reactions, synthesis, and mechanisms. Prerequisites: CHEM-1305, CHEM-1105 or SCIT-1414. Corequisites: CHEM-2123

CHEM-2325 Organic Chemistry II (3-0-3) Study of the properties and behavior of hydrocarbon compounds and their derivatives. Designed for students in science or pre-professional programs. Prerequisites: CHEM-2323(9312) CHEM-2123. Corequisites: CHEM-2125

CJSA

CJSA-1327 Fundamentals of Criminal Law (3-0-3) A study of the nature of criminal law; philosophical and historical development; major definitions and concepts; classification of crime; elements of crimes and penalties using Texas statutes as illustrations; criminal responsibility.

CJSA-1342 Criminal Investigation (3-0-3) Investigative theory; collection and preservation of evidence; sources of information; interview and interrogation; uses of forensic sciences; case and trial preparation.

ECON

ECON-2301 Principles Economics I-Macroecomonics (3-0-3) History, development, and application of Macro Economic Theory underlying the production, distribution, and exchange of goods and services, utilization of resources; analysis of value and prices; national income analysis; monetary and banking theory and policy. Distribution of income; labor problems: international economic systems. Attention given to the application of economic principles to economic problems.

ECON-2302 Principles Economics II-Microecomonics (3-0-3) History, development, and application of micro economic theory underlying the production, distribution, and exchange of goods and services, utilization of resources; analysis of value and prices; national income analysis; monetary and banking theory and policy. Distribution of income; labor problems: international economic systems. Attention given to the application of economic principles to economic problems.

ENGL

ENGL-1301 Composition I (3-0-3) Principles and techniques of written composition, textual analysis, and critical thinking. Prerequisite: ENGL101 or equivalent as determined by English Placement Test. Prerequisites: WRIT-0200

ENGL-1302 Composition II (3-0-3) Further development in the principles and techniques of written composition, textual analysis, and critical thinking. Prerequisite: ENGL1301

ENGL-2311 Technical Writing (3-0-3) Principles, techniques, and skills needed for college-level scientific, technical, or business writing. Prerequisite: ENGL1301

ENGL-2321 British Literature (3-0-3) Selected significant works of British literature. May include study of movements, schools, or periods.

ENGL-2322 British Literature I (3-0-3) Selected significant works of British literature. May include study of movements, schools, or periods. Prerequisites: ENGL-1301

ENGL-2323 British Literature II (3-0-3) Selected significant works of British literature. May include study of movements, schools, or periods. Prerequisites: ENGL-1301,

ENGL-2326 American Literature (3-0-3) Selected significant works of American literature. May include study of movements, schools, or periods. Prerequisites: ENGL-1301

ENGL-2341 Forms of Literature (3-0-3) The study of one or more literary genres including ,but not limited to, poetry, fiction, drama, and film. Prerequisites: ENGL-1301,

GEOG

GEOG-1302 Cultural Geography (3-0-3) Introduction to the concepts which provide a foundation for continued study of geography. Includes the different elements of natural environment as related to human activities, modes of living, and map concepts. The first semester emphasizes physical geography and the second semester emphasizes cultural geography. Prerequisites: READ-0200

GEOL

GEOL-1403 Physical Geology (3-3-4) Introduces the basic physical processes of the earth and their effect on people and the environment emphasizes plate tectonics, earth materials, weathering and the agents of erosion, and the development of land forms. The lab provides hands-on experience in rock and mineral identification and an introduction to geologic and topographic map interpretation. One all-day field is required. Prerequisite: READ-0200

GOVT

GOVT-2305 Federal Government (3-0-3) Introduction to the theory and practice of politics and government in America at the national, state, and local levels, with special attention to Texas. Topics include political theory, the American and Texas constitutions, federalism, political participation and elections, the institutions of government, and domestic and foreign policies. Prerequisite: READ-0200

GOVT-2306 Texas Government (3-0-3) Introduction to the theory and practice of politics and government in America at the national, state, and local levels, with special attention to Texas. Topics include political theory, the American and Texas constitutions, federalism, political participation and elections, the institutions of government, and domestic and foreign policies. Prerequisite: READ-0200

HIST

HIST-1301 United States History I (3-0-3) Survey of the political, social, economic, military, cultural, and intellectual history of the United States from the discovery of America to the present. Prerequisite: READ-0200 or equivalent as determined by Placement Test.

HIST-1302 United States History II (3-0-3) Survey of the political, social, economic, military, cultural, and intellectual history of the United States from the discovery of America to the present. Prerequisite: READ-0200 or equivalent as determined by Placement Test.

HUMA

HUMA-1301 Introduction to Humanities (3-0-3) An interdisciplinary, multi-perspective assessment of cultural, political, philosophical, and aesthetic factors critical to the formulation of values and the historical development of the individual and of society. The course emphasizes both written and oral communication. Prerequisite: READ-0200 or equivalent as determined by Placement Test.

LAWT

LAWT-1270 Laws Cyberspace and Ethical Issues (2-0-2) A basic study of the Laws of Cyberspace, including Intellectual Property Law and related ethical issues. A practical application of law for Global Communication Systems, and the development and marketing of both products and services globally will be emphasized. This course also applies the framework established by traditional Intellectual Property Law to issues and problems raised by Cyberspace Communication including the Internet and Network related business and technologies.

LAWT-1301 Copyright & Ethical Issues (2-0-3) Introduction to basic copyright law and related ethical issues as they apply to creation and use of copyrighted material. Emphasis on practical application of copyright law through case studies.

MATH

MATH-1314 College Algebra (3-0-3) A study of quadratics; polynomial, rational, logarithmic and exponential functions; systems of equations, progressions; sequences and series; matrices and determinants. Prerequisite: DMTH-0200,

MATH-1316 Plane Trigonometry (3-0-3) Topics in trigonometric functions, right triangles, trigonometric identities, radian measure, graphs of periodic functions, and oblique triangles. Prerequisite: MATH-1314 or equivalent as determined by Placement Test.

MATH-1332 Contemporary Mathematics I (3-0-3) Topics may include introductory treatments of sets, logic, number systems, number theory, relations, functions, probability, and statistics. appropriate applications are included. prerequisite: DMTH-0200 or equivalent as determined by the placement examination. Prerequisites: DMTH-0200 or equivalent as determined by Placement Test.

MATH-1342 Elementary Statistical Methods (3-0-3) Presentation and interpretation of data, probability, sampling. correlation and regression, analysis of variance, and use of statistical software. Prerequisites: DMTH-0200 or equivalent as determined by Placement Test

MATH-2313 Calculus I (3-0-3) Limits, continuity, the derivative with applications and integration of polynomials. Prerequisites: MATH-1316, MATH-1314

PHYS

PHYS-1310 Elementary Physics (3-0-3) Conceptual topics and algebra-level problem solving in a survey course of basic physics principles intended for non-science majors. Will not include a laboratory. Prerequisites: DMTH-0200 or equivalent as determined by Placement Test

PHYS-1315 Physical Science (3-0-3) A course designed for non-science majors which surveys topics from physics, chemistry, geology, astronomy, or meteorology.

PHYS-1401 College Physics I (3-3-4) Principles and application of mechanics, wave motion, and heat with emphasis on fundamental concepts, problem solving, notation and units. Prerequisites: MATH-1314 or equivalent as determined by Placement Test.

PHYS-1410 Elementary Physics (3-3-4) Conceptual topics and algebra-level problem solving in a survey course of basic physics principles intended for non-science majors. This course includes a laboratory.Prerequisites: DMTH-0200 or equivalent as determined by Placement Test.

POFT

POFT-1301 Business English (2-2-3) Introduction to a practical application of basic language usage skills with emphasis on fundamentals of writing and editing for business including instruction and study of common business software applications used to produce effective business communications and documents.

POFT-1325 Business Math and Machine Applications (2-2-3) Skill development in the use of electronic calculators and business mathematical functions. Emphasis on business problem-solving skills using spreadsheet software and/or electronic calculator/keyboard.

PSYC

PSYC-2301 General Psychology (3-0-3) A survey of the major topics in psychology. Introduces the study of behavior and the factors that determine and affect behavior. Prerequisites: READ-0200 or equivalent as determined by Placement Test.

SOCI

SOCI-1301 Introduction to Sociology (3-0-3) Focuses on the concepts and principles used in the study of group life, social institutions, and social processes. Prerequisites: READ-0200 or equivalent as determined by Placement Test.

SPCH

SPCH-1311 Intro Speech Communication (3-0-3) Theories and practice of communication in interpersonal, small group, and public speech. Prerequisite: ENGL 1301

SPCH-1318 Interpersonal Communication (3-0-3) Theories and exercises in verbal and nonverbal communication with focus on interpersonal relationships. Prerequisite: ENGL1301

SPNL

SPNL-1342 Business Spanish (3-0-3) Development of Spanish oral and written communication skills related to the business environment including medical, business, commercial, and legal terminology, including a review of basic Spanish grammar.

TECH

TECH-1100 Foundations of Technical Career Success (0-2-1) Examines factors that underlie success in learning and work environments for the students' chosen career field. Topics covered include strategic learning, self-management, personal motivation, workplace diversity, and educational/career planning. Techniques such as time management, goal setting, communication strategies, research skills, report writing, and workplace safety practices are covered.

TECM

TECM-1341 Technical Algebra (3-0-3) Application of algebra to technical occupations. Topics include principles of linear equations, simultaneous equations, quadratic equations, and manipulation of powers and roots. Emphasis on stated word problems relevant to technical and vocational occupations. Prerequisites: DMTH-0100 or equivalent as determined by Placement Test.

TECM-1343 Technical Algebra & Trigonometry (3-0-3) Application of algebra and trigonometry to technical occupations. Topics include linear equations, simultaneous equations, quadratic equations, manipulation of powers, and roots, trigonometry ratios, solutions of right triangles, and oblique triangles and vector analysis. Emphasis on stated word problems relevant to technical and vocational occupations. Prerequisite: DMTH-0100, TECM-1341, or equivalent as determined by Placement Test.

TECM-1391 Special Topics - Applied Mathematics (3-0-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

Remediation

DMTH

DMTH-0010 Supplemental Math Activities (0-1-0) This is a non-transcripted phantom course used to track students in non-course based developmental activities.

DMTH-0050 Basic Mathematics and Geometry (3-1-3) This course will focus on topics which draw together arithmetic and algebra. Many arithmetic topics will be reinforced such as integer and fraction operations and percents. Other topics will introduce the concepts of variables, mathematical expressions, and equation solving. These concepts will be applied to problems related to science, consumer math, and geometry. Prerequisite: DMTH 0804 or equivalent as determined by MATH placement test. (Development/No College credit granted).

DMTH-0090 Math TASP Review (0-2-1) Intensive review of mathematics for students who have not passed the math portion of the TASP. Prerequisites: DMTH-0200, or MATH-104

DMTH-0100 Introductory Algebra II (3-1-3) This course is an introduction to algebra that covers real numbers, solving linear equations and inequalities, formulas and applications of Algebra, exponents, polynomials, and additional applications, factoring and rational expressions and equations. It is designed to prepare students for the next level of remediation in a setting in which they can focus on their basic algebra skills. Prerequisite: DMTH-0050 or equivalent as determined by Math Placement tests. Developmental/No college credit granted.

DMTH-0200 Intermediate Algebra (3-1-3) The purpose of this course is to expand the concepts of algebra. Topics include linear equations, exponents and radicals, nonlinear equations in one variable, systems of equations, the parabola and functions. The last two weeks of the term are spent in preparations for the exit level final exam and the next college level math course. Prerequisite: DMTH-0100 or equivalent as determined by MATH placement test. Developmental/No college credit granted. Prerequisites: DMTH-0100, TECM-1341

DMTH-0803 Math Lab (2-2-3) This course is designed for students to participate in remedial math studies on an individual basis. Course content is customized to each student's specific deficiencies in math. Semester credit hours vary depending on students' specific needs. Course may be repeated for credit. The last digit of the course number indicates the semester credit hours. When appropriate, and with developmental department approval, this course may substitute for a course on the student's TSI Plan. Prerequisite: Instructor approval.

DMTH-0804 Basic Arithmetic (3-1-3) The purpose of this course is to provide a review of the fundamentals of mathematics by stressing practical applications. It includes the concepts of whole numbers, number theory, fractions, decimals, percents, English measures, scientific notation and the metric system. The geometry includes angles, lines and geometric figures, plane geometric figures, area volume, the Pythagorea Theorem and similar and congruent triangles. Prerequisite: Placement determined by MATH placement test. (Developmental/No college credit granted).

DLVA

DVLA-0050 Developmental Language Arts (0-0-3) A foundation literacy course that develops reading skills with an emphasis on comprehension and vocabulary development. In addition, it is designed to instruct students in essential written

communication skills. It includes studies in the sentence and its parts, punctuation, capitalization, the parts of speech, spelling and language usage. Course will include writing and revision components on a regular basis throughout the semester. Prerequisites: Appropriate reading and writing placement scores from a state-approved test (ACCR/CPT, THEA, COMPASS, or ASSET), or referral of the counseling staff, (Developmental/No college credit granted.)

READ

READ-0010 Supplemental Reading Activities (0-1-0) This is a non-transcripted phantom course used to track students in non-course based developmental activities.

READ-0090 Reading TASP Review (0-2-1) Intensive review of reading for students who have not passed the reading portion of the TASP. Prerequisites: READ-0200

READ-0100 Reading Skills I (3-1-3) An introductory course that develops basic reading skills and the contextual application of those skills. Prerequisite: appropriate reading placement score from a state-approved test (ACCR/CPT, THEA, COMPASS, or ASSET), referral of the counseling staff, or successful completion of DVLA 0050. (Developmental/No college credit granted.) Prerequisites: DVLA-0050, READ-0050

READ-0200 Reading Skills II (3-1-3) A capstone course that reviews and expands basic reading skills with an emphasis on developing advanced reading skills with contextual application. Prerequisite: appropriate reading placement score from a state-approved test (ACCR/CPT, THEA, COMPASS, or ASSET) or referral of the counseling staff, or successful completion of READ 0100. (Developmental/No college credit granted.) Prerequisites: READ-0100

WRIT

WRIT-0010 Supplemental Writing Activities (0-1-0) This is a non-transcripted phantom course used to track students in non-course based developmental activities.

WRIT-0090 Writing TASP Review (0-2-1) Intensive review of english for students who have not passed the writing portion of the TASP. Prerequisites: WRIT-0200

WRIT-0100 Writing Skills I (3-1-3) An introductory course designed to instruct students in essential written communication skills. It reviews grammar and mechanical skills, with an emphasis on developing, organizing, and revising paragraphs. Prerequisite: Appropriate writing placement score from a state-approved test (ACCR/CPT, THEA, COMPASS, or ASSET), or referral of the counseling staff or successful completion of DVLA 0059 (Developmental/No college credit granted.) Prerequisites: DVLA-0050, WRIT-0050

WRIT-0200 WRITING SKILLS II (3-1-3) A capstone course that reviews grammar and mechanical skills, with an emphasis on developing, organizing, and revising essays. Prerequisite: appropriate writing placement score from a state-approved test (ACCR/CPT, THEA, Compass, or Asset), or referral of the counseling staff, or successful completion of WRIT 0100. (development/no college credit granted.) Prerequisites: WRIT-0100

Technical Courses

ABDR

ABDR-1203 Vehicle Design and Structural Analysis (1-2-2) An introduction to the collision repair industry with emphasis on safety, professionalism, and vehicle structural design. Corequisites: ABDR-1215, ABDR-1207, ABDR-1349, READ-0100, WRIT-0100, DMTH-0100

ABDR-1207 Auto Body Welding (1-4-2) A study of industry and standard welding and cutting procedures. Corequisites: READ-0100, WRIT-0100, DMTH-0100

ABDR-1215 Vehicle Trim and Hardware (1-3-2) An in-depth study of vehicle trim and glass service. Corequisites: ABDR-1203, ABDR-1207, ABDR-1349, ABDR-1371, READ-0100, WRIT-0100, DMTH-0100

ABDR-1323 Front and Rear Wheel Alignment (2-4-3) In-depth study of vehicle steering components including alignment, tire rotation, and balancing. Prerequisites: DVLA-0050, READ-0050, ABDR-1203, ABDR-1215, ABDR-1349. Corequisites: ABDR-1419, ABDR-1371, ABDR-2435, ABDR-1207

ABDR-1331 Basic Refinishing (2-4-3) An introduction to current refinishing products, shop safety, and equipment used in the automotive refinishing industry. Emphasis on surface preparation, masking techniques, and refinishing of trim and replacement parts. Prerequisites: DVLA-0050, DMTH-0050, ABDR-1203, ABDR-1215, ABDR-1349, ABDR-1371. Corequisites: ABDR-1458, ABDR-2371

ABDR-1349 Automotive Plastic and Sheet Molded Compound Repair (2-3-3) A comprehensive course in repair of interior and exterior plastic including the use of various types of adhesives and plastic welding. Corequisites: ABDR-1203, ABDR-1215, ABDR-1207

ABDR-1371 Basic Paint Techniques, Equipment and Environmental Practices (1-6-3) An introduction to basic paint spray gun adjustments and application techniques. Substrate preparation with emphasis on featheredging, blocking, and metal treatment will be stressed. Emphasis will be placed on safety equipment and environmental practices.

ABDR-1380 Cooperative Education (1-14-3) Career-related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experiences. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience.

ABDR-1381 Cooperative Training (1-15-3) Career-related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience.

ABDR-1419 Basic Metal Repair (2-6-4) In-depth coverage of basic metal principles and working techniques including proper tool usage and product application. Prerequisites: DVLA-0050, READ-0050, DMTH-0050, ABDR-1203, ABDR-1215, ABDR-1349. Corequisites: ABDR-1371, ABDR-1323, ABDR-2435, ABDR-1207

ABDR-1442 Structural Analysis and Damage Repair II (3-4-4) Continuation of general repair and replacement procedures for damaged structural parts and collision damage. Prerequisites: ABDR-1207, ABDR-1323, ABDR-1419, ABDR-2435 DMTH-0100, WRIT-0100, READ-0100.

ABDR-1458 Intermediate Refinishing (2-4-4) Expanded training in mixing and spraying of automotive topcoats. Emphasis on formula ingredient, reducing, thinning, and special spraying techniques. Introduction to partial panel refinishing and current industry paint removal techniques. Prerequisites: DVLA-0050 READ-0050, DMTH-0050, ABDR-1203, ABDR-1215, ABDR-1349, ABDR-1371. Corequisites: ABDR-1331, ABDR-2371

ABDR-1580 Cooperative Education-Auto/Automotive Body Repair (1-39-5) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance skills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

ABDR-2255 Collision Repair Estimating (3-0-2) An advanced course in collision estimating and development of an accurate damage report. Prerequisites: ABDR-1203, ABDR-1215, READ-0100, WRIT-0100, DMTH-0100. Corequisites: ABDR-2402, ABDR-2277, ABDR-1442

ABDR-2277 Structural Sectioning and Welded Panel epair (1-4-2) Theory and practical application of welded panel replacement and structural sectioning procedures as well as practical equipment applications in structural vehicle straightening, alignment, welding and corrosion protection. Prerequisites: ABDR-1207, ABDR-1323, ABDR-2435 ABDR-1419, READ-0100, WRIT-0100, DMTH-0100. Corequisites: ABDR-2402, ABDR-1442

ABDR-2353 Color Analysis and Paint Matching (2-2-3) Advance course in color theory, color analysis, tinting, and advanced blending techniques for acceptable paint matching. Prerequisites: ABDR-1371 ABDR-1458, ABDR-1331, ABDR-2371, READ-0100, WRIT-0100, DMTH-0100. Corequisites: ABDR-2449, ABDR-2551

ABDR-2371 Refinishing Process I (1-8-3) The theory and practical application of spray booth and vehicle pre-spray preparation; remove and perform final finishing; apply decals and stripes with emphasis on paint problems and remedies. Prerequisites: DVLA-0050, READ-0050, DMTH-0050; ABDR-1203, ABDR-1215, ABDR-1349, ABDR-1371

ABDR-2380 Cooperative Education (1-15-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience.

ABDR-2381 Cooperative Education (1-15-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience.

ABDR-2402 Auto Body Mechanical and Electrical Service (2-6-4) A course in the repair, replacement, and/or service of collision damaged mechanical or electrical systems. Topics include drive train removal, reinstallation and service; cooling system service and repair; exhaust system service; and emission control systems. Additional topics include wire and connector repair, reading wiring diagrams and troubleshooting. Prerequisites: ABDR-1207, ABDR-1323, ABDR-1419, ABDR-2435, DMTH-0100, READ-0100, WRIT-0100. Corequisites: ABDR-1442, ABDR-2277, ABDR-2255

ABDR-2435 Structural Analysis and Damage Repair IV (2-6-4) Extension of Structural Analysis and Damage Repair III providing skill development in the auto body application of theories to the repair and replacement of complete body units. Prerequisites: DVLA-0050 READ-0050, DMTH-0050, ABDR-1203, ABDR-1349, ABDR-1215. Corequisites: ABDR-1419, ABDR-1323, ABDR-1371, ABDR-1207

ABDR-2449 Advanced Refinishing (2-4-4) Skill development in multi-stage refinishing techniques. Further development in identification of problems and solutions in color matching and partial panel refinishing. Prerequisites: ABDR-1331, ABDR-1458, ABDR-2371, READ-0100, DMTH-0100 , WRIT-0100. Corequisites: ABDR-2551, ABDR-2353

ABDR-2551 Specialized Refinishing Techniques (3-6-5) Advanced topics in specialty automotive refinishing. Emphasis on refinishing interior plastics, fiberglass, and aluminum and galvanized panels as well as custom graphics and current industry innovations. Prerequisites: ABDR-1331, ABDR-1371 ABDR-1458, ABDR-2371, READ-0100, WRIT-0100, DMTH-0100. Corequisites: ABDR-2449, ABDR-2551

ABDR-2580 Industrial Cooperative Training (1-39-5) Career related activities encountered in the student's area of special-

ization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

AERM

AERM-1203 Shop Practices (1-4-2) An introduction to the correct use of hand tools and equipment and precision measurement; identification of aircraft hardware; and the fabrication of fluid lines and tubing. Emphasis on procedures for testing, heat testing, and inspection of aircraft structures. Prerequisites: DMTH-0100, READ-0200 or WRIT-0200

AERM-1205 Weight and Balance (1-2-2) An introduction to Federal Aviation Administration (FAA) Required subjects relating to the weighing of aircraft, the performance of weight and balance calculations, and appropriate maintenance record entries. Prerequisites: DMTH-0100, READ-0200, WRIT-0200.

AERM-1208 Federal Aviation Regulations (1-4-2) A course in the use and understanding of the Federal Aviation Administration and aircraft manufacturers publications, forms, and records; and the exercise of mechanic privileges within prescribed limitations. Prerequisites: READ-0200, WRIT-0200.

AERM-1210 Ground Operations (1-3-2) An introductory course in fuels, servicing methods and procedures aircraft movement, securing and operations of aircraft, external power equipment, aircraft cleaning, and corrosion control. Prerequisites: READ-0200, WRIT-0200

AERM-1241 Wood, Fabric, and Finishes (1-3-2) A course in the use and care of various covering materials, finishes, and wood structures including approved methods and procedures. Prerequisites: AERM-1203, AERM-1208

AERM-1243 Instruments and Navigation/Communication (1-2-2) A study of aircraft instruments and electronic flight instrument systems including testing and installing instruments; inspecting, checking, and troubleshooting navigation and communication systems; and inspecting and repairing antennas and electronic equipment installations. Prerequisites: AERM-1314, AERM-1203, AERM-1208

AERM-1253 Aircraft Welding (1-3-2) Topics address repair procedures for steel, magnesium, brass, and aluminum materials used in aircraft assembly and selection and application of appropriate methods of welding, brazing, and soldering steel, magnesium, brass, and aluminum. Prerequisites: AERM-1203, AERM-1208

AERM-1254 Aircraft Composites (1-4-2) A study of the inspection and repair of composite, fiberglass, honeycomb, and laminated structural materials including doors, windows, bonded structures, and interior furnishings. Prerequisites: AERM-1203, AERM-1208.

AERM-1314 Basic Electricity (1-6-3) A study of aircraft electrical systems and their requirements including the use of ammeter, voltmeter, and ohmmeter; series and parallel circuits; inductance and capacitance; magnetism; converting alternating current (AC) to direct current (DC); controlling devices; maintenance and servicing of aircraft batteries; and interpreting aircraft electrical diagrams to include solid state devices and logic functions. Prerequisites: DMTH-0100, READ-0200, WRIT-0200

AERM-1315 Aviation Science (2-3-3) Fundamentals of mathematics, physics, and drawing as they apply to aircraft principles and operations as required by the federal aviation administration for airframe and powerplant mechanics. Prerequisites: DMTH-0100, READ-0200, WRIT-0200

AERM-1340 Aircraft Propellers (2-4-3) Fundamentals of construction of propellers. Skills development in inspection, servicing, and repair of fixed-pitch, constant-speed, and feathering propellers and governing systems. Instruction in removal, balancing, and installation of propellers. Prerequisites: AERM-1203, AERM-1315, AERM-1208

AERM-1345 Airframe Electrical Systems (1-6-3) A Study of airframe electrical systems including installation, removal, disassembly, and repair of electrical components and related wiring. Prerequisites: AERM-1314, AERM-1315, AERM-1208

AERM-1347 Airframe Auxiliary Systems (2-3-3) A comprehensive study of airframe auxiliary systems including the operation and repair of position and warning systems, cabin atmospheric control systems, ice and rain control systems for aircraft and engines, and fire detection and protection systems. Fundamentals of safety procedures also addressed.

AERM-1349 Hydraulic, Pneumatic, and Fluid Systems (1-6-3) Skill development in inspecting, servicing, and maintaining aircraft fluid systems including hydraulics, pneumatics, and fuel. Application of basic concepts through detailed maintenance procedures. Prerequisites: AERM-1203, AERM-1315, AERM-1208

AERM-1350 Landing Gear Systems (2-3-3) Inspection, servicing, overhaul, and repair of fixed and retractable landing gear systems. In-depth coverage of systems, components, and operation. Prerequisites: AERM-1203, AERM-1208, AERM-1315

AERM-1351 Aircraft Turbine Engine Theory (2-4-3) Theory, History, and Servicing of Turbine Engines to Include Lubrication,instrumentation, Auxiliary Power Units, and Exhaust Systems.

AERM-1352 Aircraft Sheet Metal (1-8-3) A course in inspection and repair of sheet metal structures including forming lay out, and bending of sheet metal and identification, selection, and installation of rivets and fasteners. Prerequisites: AERM-1203, AERM-1315, AERM-1208

AERM-1357 Fuel Metering and Induction System (1-6-3) A study of fuel metering and induction systems used on reciprocating and turbine engines including fuel metering systems, carburetors, induction systems, heat exchangers, and cooling systems. Prerequisites: AERM-1203, AERM-1208, AERM-1315

AERM-1444 Aircraft Reciprocating Engines (2-5-4) A study of reciprocating engines and their development, operating principles, and theory. Instruction in engine instruments, lubricating and exhaust systems. Fundamentals of safety will also be addressed. Prerequisites: AERM-1203, AERM-131, AERM-1208

AERM-1456 Aircraft Powerplant Electrical (2-6-4) General principles of theory, operation, and maintenance of powerplant electrical systems including ignition, starting, and fire protection systems. Fundamentals of safety procedures will also be addressed. Prerequisites: AERM-1314, AERM-1315, AERM-1208

AERM-2231 Airframe Inspection (1-3-2) A study of the materials and procedures for completing a one hundred hour inspection as per Federal Aviation Regulations and manufacturers service information. Prerequisites: AERM-1241, AERM-1243, AERM-1247, AERM-1345, AERM-1352

AERM-2233 Assembly and Rigging (1-4-2) A comprehensive study of the assembly and rigging of fixed and rotary-wing aircraft including structural alignment, balancing and rigging of control systems and assembly of aircraft components. Fundamentals of safety procedures are also addressed. Prerequisites: AERM-1208, AERM-1203, AERM-1315

AERM-2252 Aircraft Powerplant Inspection (1-3-2) In-depth coverage of methods and procedures for completing airworthiness and conformity inspections on aircraft powerplants. Prerequisites: AERM-1344 or AERM-1444, AERM-1356 or AERM-1456, AERM-2351 or AERM-1351, AERM-1357

AERM-2351 Aircraft Turbine Engine Overhaul (2-4-3) Topics address inspection, disassembly, reassembly, and replacement of gas turbine engines, sections, and components and operational troubleshooting and analysis. Prerequisites: AERM-1315, AERM-1208

AERM-2447 Aircraft Reciprocating Engine Overhaul (2-8-4) A comprehensive study of reciprocating engine overhaul including measurement and inspection procedures. Instruction in removal and installation, inspections, checks, servicing, and repair of engines. Safety procedures will be addressed.

AGME

AGME-1440 Agricultural Powertrain Applications (2-8-4) Instruction in operation and maintenance of powertrain systems on agricultural equipment. Prerequisites: DEMR-1317, DEMR-1416, DEMR-1421, DEMR-1301, DEMR-1405, DEMR-1410, DEMR-1323, DEMR-1411 or DEMR-2412

AGME-1453 Harvesting Equipment (2-8-4) Theory of operation and servicing of and adjustment techniques for harvesting equipment. Prerequisites: DEMR-1410, DEMR-1301, DEMR-1405, DEMR-1323, DEMR-1317, DEMR-1416, DEMR-1421, DEMR-1411 or DEMR-2412

AIRP

AIRP-1215 Private Flight (0-8-2) Flight training to prepare the student for the completion of the federal aviation administration private pilot certification process, including dual and solo flight in the areas of maneuvers and cross-country navigation. Prerequisites: DMTH-0200, READ-0200 , WRIT-0200. Corequisites: AIRP-1417

AIRP-1255 Intermediate Flight (0-8-2) provides students with flight hours and skills necessary to fulfill solo cross-country hours required for the Federal Aviation Administration Commercial Pilot, Single Engine Land, and Airplane Rating. Prerequisites: AIRP-1215 or AIRP-2250, APT-1020, APT-110

AIRP-1272 Flight Simulator 1 (0-0-2) The course will introduce the student to the flight simulator, control and performance instruments, two-way radio communication, Air Traffic Control procedures and simulated instrument flight. The course will also develop and hone the student's skills for instrument flight, basic instrument maneuvers, navigation and emergencies in simulated instrument meteorological conditions. It will provide the student with appropriate knowledge of flight deck operations used in commercial air carriers.

AIRP-1301 Air Navigation (2-2-3) Instruction in Visual Flight rules navigation in the National Airspace System. Topics include sectional charts, flight computers, plotters, and navigation logs and publications. Qualifies as part of a program leading to Federal Aviation Administration Private Pilot certification. Prerequisites: DMTH-0200, READ-0200, WRIT-0200

AIRP-1307 Aviation Meteorology (3-0-3) In-depth coverage of meteorological phenomena affecting aircraft flight. Topics include basic concepts of aviation meteorology in the study of temperature, pressure, moisture, stability, clouds, air masses, fronts, thunderstorms, icing, and fog. Also includes analysis and use of weather data for flight planning. Prerequisites: DMTH-0200, READ-0200, WRIT-0200

AIRP-1313 Introduction to Aviation (3-0-3) A study of the historical development of the aviation industry, including key events in civil, military, and space exploration and an overview of legislation relating to aviation. Prerequisites: READ-0200, WRIT-0200, DMTH-0100

AIRP-1341 Advanced Air Navigation (3-0-3) Skill development in advanced airplane systems and performance including radio navigation and cross-country flight planning. Includes an introduction to instrument flight operations and navigation. This course may be used as part of a program leading to Federal Aviation Administration certification. Prerequisites: AIRP-1301

AIRP-1343 Aerodynamics (2-2-3) Study of the general principles of the physical laws of flight. Topics include physical terms and the four forces of flight, lift, weight, thrust, and drag; aircraft design, stability control; and high-speed flight characteristics. Prerequisites: AIRP-1317, or AIRP-1417; APT-104 APT-113

AIRP-1345 Aviation Safety (3-0-3) A study of the fundamentals essential to the safety of flight. A survey of the aviation industry including decision-making factors accident reporting, accident investigation, air traffic systems, and aircraft technologies. Prerequisites: AIRP-1417

AIRP-1417 Private Pilot Ground School (2-4-4) Basic ground school for the Federal Aviation Administration Private Pilot Certificate, providing the student with the necessary aeronautical knowledge that can be used for private pilot certification. Topics include principles of flight, radio procedures, weather, navigation, aerodynamics, and Federal Aviation Administration regulations. Prerequisites: DMTH-0200, MATH-1314, READ-0200, WRIT-0200, ENGL-1301

AIRP-1451 Instrument Ground School (2-4-4) A study of basic instrument radio and navigation fundamentals used in instrument flight. Topics include a description and practical use of navigation systems and instruments, charts used for instrument flight, and Federal Aviation Administration regulations. Qualifies as part of a program leading to Federal Aviation Administration certification. Prerequisites: AIRP-1417

AIRP-2236 Certified Flight Instruction-Airplane (0-8-2) Flight instruction necessary to qualify for the Federal Aviation Administration Certified Flight Instructor-Airplane Certificate. Topics include ground and flight instruction. Prerequisites: AIRP-2239

AIRP-2239 Commercial Flight (0-8-2) Flight instruction necessary to qualify for the Federal Aviation Administration Commercial Pilot Certificate. Instruction includes both dual and solo flight training to prepare the student for mastery of all commercial pilot maneuvers. Prerequisites: AIRP-2250 or AIRP-1255

AIRP-2242 Flight Instrument-Instruction Airplane (0-8-2) Skill development for flight instructors necessary to qualify for the federal aviation administration certified flight instructor instrument rating, airplane single-engine land. Prerequisites: AIRP-2236, AIRP-2250

AIRP-2243 Flight Instruction-Multiengine Airplane (0-8-2) Instruction in flight training to prepare the student for the Federal Aviation Administration Flight Instructor-Multiengine Airplane Rating. Includes combines ground and flight instruction and analysis of flight maneuvers. Prerequisites: AIRP-2236, AIRP-2242, AIRP-2251, APT-3110, APT-3220, APT-3230

AIRP-2250 Instrument Flight (0-8-2) Preparation for completion of the Federal Aviation Administration Instrument Pilot rating with mastery of all instrument procedures. Prerequisites: AIRP-1255 or AIRP-1215

AIRP-2251 Multiengine Flight (0-8-2) Preparation for the Multiengine Class Rating which will be added to a current pilot certificate. Includes explanation and demonstration of all required federal aviation administration normal and emergency operations and procedures. Prerequisites: AIRP-2239 or AIRP-1215

AIRP-2331 Advanced Meteorology (3-0-3) Preparation for advanced aviation students to apply knowledge of varying meteorlogical factors including weather hazards to flight, techniques for minimizing weather hazards, and aviation weather services. Prerequisites: AIRP-1307

AIRP-2333 Aircraft Systems (2-3-3) Study of the general principles, operation, and application of pneumatic, hydraulic, electrical, fuel, environmental, protection and warning systems. Emphasis on types of aircraft structures and their control systems. Prerequisites: AIRP-1317 or AIRP-1417

AIRP-2337 Commercial Ground School (2-3-3) A study of advanced aviation topics that can be used for federal aviation administration certification at the commercial pilot level. Includes preparation for the commercial airplane written test. Prerequisites: AIRP-1270, AIRP-1271 or AIRP-1451

AIRP-2349 Instructor Ground School (2-3-3) Skill development in the fundamentals of teaching and learning in an aviation-oriented environment. Introduction to the techniques of instruction and analysis of flight maneuvers. Topics include flight instructor responsibilities and Federal Aviation Regulations relating to the Instructor Rating. Prerequisites: AIRP-2337

AIRP 2352 Practical Dispatching I (2-3-3) Study of advanced concepts in weight and balance, performance calculations, avionics, and engine and airplane specifications including Federal Aviation regulations. Preparation for the Federal Aviation Administration Aircraft Dispatcher written examination.

AIRP 2353 Practical Dispatching II (2-3-3) A study of the duties and responsibilities required of an aircraft dispatcher. Topics include instruction in Federal Aviation Administration regulations, flight planning, and company operations for both domestic and international operations. Preparation for the Federal Aviation Administration Practical Examination.

AIRP-2355 Propulsion Systems (2-3-3) In-depth coverage of aircraft engine theory and principles of operation of various types of aircraft engines including reciprocating, turboprop, turbojet, and turbo fan. Topics include propellers, superchargers, engine accessories, controls, and instrumentation. Prerequisites: AIRP-2333

AIRP-2357 Turbine Aircraft Systems Ground School (3-0-3) instruction in the systems of specific turbine aircraft. Emphasis on the glass cockpit, auxiliary power, aircraft systems, and the first officer's operational role. Prerequisites: AIRP-2355

ARCE

ARCE-1303 Architectural Materials and Methods of Construction (2-2-3) Properties, specifications, vendor references, and uses of materials as related to architectural systems of structures. Prerequisites: READ-0200

ARCE-1342 Codes, Specifications and Contract Documents (2-3-3) Study of ordinances, codes, and legal documents as they relate to specifications and drawing. Discussion of owner-architect-contractor responsibilities, duties, legal relationships, and mutual protection. Prerequisites: READ-0200

ARCE-1352 Structural Drafting (2-4-3) A study of structural systems including concrete foundations and frames, wood framing and trusses, and structural steel framing systems. Includes detailing of concrete, wood, and steel to meet industry standards including the American Institute of Steel Construction and The American Concrete Institute. Prerequisites: ARCE-1303

ARCE-2352 Mechanical and Electrical Systems (2-4-3) The properties of building materials (assemblies), specifications, codes, vendor references, and uses of mechanical, plumbing, conveying, and electrical systems as they relate to architecture for residential and commercial construction. Prerequisites: ARCE-1303

ARTC

ARTC-1302 Digital Imaging I (2-4-3) Digital imaging using raster image editing and/or image creation software: scanning, resolution, file formats, output devices, color systems, and image-acquisitions.

ARTC-1305 Basic Graphic Design (2-4-3) A Study of Two-Dimensional (2-D) Design with emphasis on the visual communication design process. Topics include basic terminology and graphic design principles.

ARTC-1309 Basic Illustration (2-3-3) introduction to drawing techniques, skills, and concepts using various black and white media. Emphasis on perspective construction of the human figure and principles of shading as they pertain to the commercial illustration industry.

ARTC-1313 Digital Publishing I (2-4-3) The fundamentals of using digital layout as a primary publishing tool and the basic concepts and terminology associated with typography and page layout. Corequisites: ARTC-1325

ARTC-1317 Design Communication I (2-4-3) Study of design development relating to graphic design terminology, tools and media, and layout and design concepts. Topics include integration of type, images and other design elements, and developing computer skills in industry standard computer programs.

ARTC-1321 Illustration Techniques I (2-4-3) A study of illustration techniques in various media. Emphasis on creative interpretation and disciplined draftsmanship for visual communication of ideas.

ARTC-1325 Introduction to Computer Graphics (2-4-3) A survey of computer design concepts, terminology, processes, and procedures. Topics include computer graphics hardware, electronic images, electronic publishing, vector-based graphics, and interactive multimedia.

ARTC-1349 Art Direction I (2-4-3) Creation of projects in art direction for advertising graphic campaigns encompassing products, services, or ideas. Topics include all campaign procedures from initial research and creative strategy to final execution of a comprehensive project. Corequisites: ARTC-1313

ARTC-1393 Spec Topics in Graphic Design: Character Design Animation (1-4-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency. The design, development, and delivery of characters to be used in animated productions. Includes the business and history of character design, showing emotion in posture and facial expression, line weight, achieving stylistic diversity, costumes and props, environments, traits of successful design, scene composition, effective character poses, and rendering exercises using analog and digital mediums.

ARTC-1427 Typography (2-4-4) A Study of Letterforms and Typographic Concepts As Elements of Graphic Communication. Emphasis on developing a current, practical typographic knowledge based on industry standards.

ARTC-1491 Special Topics in Graphic Design, Commercial Art and Illustration(2-4-4) Qualified advertising design or art instructor will be assigned course. Special topics may be undertaken in a variety of areas in graphic design, including packaging graphics, 3-D graphics, graphic design illustration techniques including image, stylized, simplified, and symbolic images, or a combination of images, to produce visual graphics for communication pieces. All these variations or applications of graphic design fall into the commercial art and communication field.

ARTC-2305 Digital and Imaging II (2-2-3) General Principles of Digital Image Processing and Electronic Painting. Emphasis on bitmapped-or-raster-based image marking and the creative aspects of electronic illustration for commercial and fine art applications. Prerequisites: ARTC-1302 or IMED-2315

ARTC-2311 History of Communication Graphics (2-3-3) Survey of the evolution of graphic arts as it relates to the history of art. Topics include formal, stylistic, social, political, economic, and historical aspects. Emphasis on the art movement, schools of thought ,individuals, and technology as they interrelate with graphic Arts.

ARTC-2313 Digital Publishing II (2-4-3) Layout procedures from thumbnails and roughs to final comprehensive and printing; emphasis on design principles for the creation of advertising and publishing materials, and techniques for efficient planning and documenting projects. Prerequisites: GRPH-1322 or ARTC-1313

ARTC-2317 Typographic Design (2-4-3) Exploration of problems in typographic design including computer generated letterforms as elements of design. Topics include theory and techniques of traditional, contemporary, and experimental typography for advertising and editorial usage.

ARTC-2335 Portfolio Development for Graphic Design (2-4-3) Preparation of a portfolio comprised of completed graphic design class projects. Evaluation and demonstration of portfolio presentation methods based on the student's specific area of study.

ARTC-2347 Design Communication II (2-2-3) An advanced study of design, development, and art direction. Emphasis on form and content through the selection, creation, and integration of typographic, photographic, illustrative, and design elements. Prerequisites: GRPH-1322or ARTC-1313

ARTC-2349 Art Direction II (2-4-3) Mastery of advanced art direction problems with emphasis on selected topics in advertising campaigns. Topics include written, oral, and visual skills.

ARTC-2380 Cooperative Education -Commercial Art and Advertising (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

ARTC-2381 Cooperative Education -Commercial Art and Advertising (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

ARTC-2388 Internship-Commercial Art and Advertising (0-11-3) A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

ARTC-2448 Digital Publishing II (2-4-4) A project based page layout course from concept to completion addressing design problems, preflight of files, color separations, and trapping techniques.

ARTC-2488 Internship-Commercial Art and Advertising (0-12-4) A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

ARTC-2580 Coop-Commercial Art and Advertising (1-29-5) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

ARTT

ARTT-1149 Drawing Techniques (0-3-1) Instruction in production of creative illustrations with techniques using special surfaces and tools for black and white artwork for reproduction. Projects in ink drawings using coquille board, India ink, technical drawing pens, pen and ink, drybrush, bristol board, scratch board, and litho pencil.

ARTT-1201 Conceptual Figure Drawing (1-3-2) Introduction to the techniques of drawing the human figure with emphasis on gesture and contour technique. Topics include structure of the human form in relation to drawing body proportions; bone and muscle structure of the human form and the bone and muscle components of human hands and other appendages.

ARTT-1241 Creative Drawing (1-3-2) Introduction to original and creative drawing using graphite and carbon pencils to draw a variety of still-life displays creating form, shape, and three dimensional views using shading, value range, depth, proportion, and various art materials. Development of layout skills; hand/eye coordination; and accurate observation of shape, texture, and tone.

ARTT-1251 Interpretive Figure Drawing (1-3-2) Study of the correct proportions of the human figure and its graphic interpretation. Includes basic human figure and head construction using standard division and proportion techniques. Topics include profile view, three-quarter view, and frontal view of the human head, male or female; head division and proportion techniques for eye, nose, mouth, and ear placement; and the eight head standing figures drawing technique.

ARTV

ARTV-1211 Storyboard (1-3-2) Techniques of storyboarding including organizing a project's content and arranging it in a visual format.

ARTV-1302 Introduction to Technical Animation and Rendering (2-4-3) Basic study of technical computer models and animation.

ARTV-1303 Basic Animation (2-4-3) Examination of concepts, characters, and storyboard for basic animation production. Emphasizes creating movement and expression utilizing traditionally or digitally generated image sequences.

ARTV-1340 Intermediate Technical Animation and Rendering (2-4-3) 3-D modeling and rendering techniques including lighting, staging, camera, and special effects. Emphasizes 3-D modeling building blocks using primitives to create simple and complex architectural/mechanical models.

ARTV-1341 3-D Animation I (1-4-3) Three-dimensional (3-D) modeling and rendering techniques including lighting, staging, camera, and special effects. Emphasizes 3-D modeling building blocks using primitives to create simple and complex objects. Prerequisites: ARTV-1345 or ARTC-1345

ARTV-1343 Digital Sound (2-3-3) Digitizing sound and incorporating it into multimedia or web titles for various delivery systems. Emphasizes compression issues, sampling, synchronizing, and resource management.

ARTV-1345 3-D Modeling & Rendering I (2-4-3) Techniques of three-dimensional (3-D) modeling utilizing industry standard software. Includes the creation and modification of 3-D geometric shapes, use of a variety of rendering techniques, camera light sources, texture, and surface mapping. Prerequisites: ARTC-1302. Corequisites: GRPH-1359, ARTC-1302

ARTV-1351 Digital Video (2-4-3) Producing and editing video and sound for multimedia or web productions. Emphasizes capture, editing, and outputting of video using a desktop digital video workstation. Prerequisites: RTVB-1329

ARTV-1370 Character Design for Animation (2-4-3) The design, development, and delivery of characters to be used in animated productions. Includes the business and history of character design, showing emotion in posture and facial expression, line weight, achieving stylistic diversity, costumes and props, environments, lights and shadows, traits of successful design, scene composition, effective character poses, and rendering exercises using analog and digital mediums.

ARTV-2301 2-D Animation I (2-4-3) Skill development in the use of software to develop storyboards and two-dimensional animation including creating, importing, and sequencing media elements to create multimedia presentation. Emphasis on conceptualization, creativity, and visual aesthetics. Prerequisites: ARTC-1302

ARTV-2341 Advanced Digital Video (2-4-3) Advanced digital video techniques for post-production. Emphasizes generation and integration of special effects, 2-D animation and 3-D animation for film, video, CD-ROM, and the Internet. Exploration of new and emerging compression and video streaming technologies. Prerequisites: RTVB-2337

ARTV-2345 3-D Modeling and Rendering II (2-4-3) A studio course focused on advanced 3-D modeling and rendering techniques using industry standard software: spline modeling, patch modeling, and other organic modeling techniques; learn advanced use of camera settings, lighting, and surfacing to create detailed environments; cover advanced topics such as particle and volumetric effects, and setting up a model with weight maps, hierarchies, bones, and constraints. Prerequisites: ARTV-1341 or ARTC-1341

ARTV-2351 3-D Animation II (2-4-3) Skill development in three-dimensional modeling and rendering techniques using lighting, staging, and special effects for digital output. Emphasis on the production of three-dimensional (3-D) animation as final digital outputting using modeling, rendering and animation software. Prerequisites: GAME-2332

ARTV-2355 Character Rigging and Animation (2-4-3) Advanced work in 3-D animation. Emphasis on character modeling, rigging and animation. Prerequisites: GAME-2332

AUMT

AUMT-1266 Automobile/Automotive Mechanic (0-14-2) Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

AUMT-1280 Cooperative Education- Automobile/ Automotive Mechanics Technology/Tech (1-9-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Prerequisite: Cumulative GPA of 2.0 or higher.

AUMT-1281 Cooperative Education- Automobile/ Automotive Mechanics Technology/Tech (1-10-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Prerequisite: Cumulative GPA of 2.0 or higher.

AUMT-1305 Introduction to Automotive Technology (2-4-3) An introduction to the automotive industry including automotive history, safety practices, shop equipment and tools, vehicle subsystems, service publications, fasteners, professional responsibilities, and automotive maintenance. May be taught manufacturer specific.

AUMT-1307 Automotive Electrical Systems (1-7-3) An overview of automotive electrical systems including topics in operational theory, testing, diagnosis, and repair of batteries, charging and starting systems, and electrical accessories. Emphasis on electrical schematic diagrams and service manuals. May be taught manufacturer specific. Prerequisites: DMTH-0804, DVLA-0050 READ-0050

AUMT-1310 Automotive Brake Systems (1-7-3) Operation and repair of drum/disc type brake systems. Emphasis on safe use of modern equipment. Topics include brake theory, diagnosis, and repair of power, manual, anti-lock brake systems, and parking brakes. May be taught with manufacturer specific instructions. Prerequisites: DVLA-0050, READ-0050, READ-0100, or READ-0200

AUMT-1316 Automotive Suspension & Steering Systems (1-7-3) A study of automotive suspension and steering systems including tire and wheel problem diagnosis, component repair, and alignment procedures. May be taught manufacturer specific Prerequisites: DVLA-0050, READ-0050, READ-0100, or READ-0200

AUMT-1319 Automotive Engine Repair (1-7-3) Fundamentals of engine operation, diagnosis and repair including lubrication systems and cooling systems. Emphasis on overhaul of selected engines, identification and inspection, measurements, and disassembly, repair, and reassembly of the engine. May be taught manufacturer specific. Prerequisites: DVLA-0050; READ-0050, READ-0100, or READ-0200

AUMT-1345 Automotive Heating and Air Conditioning (2-6-3) Theory of automotive air conditioning and heating systems. Emphasis on the basic refrigeration cycle and diagnosis and repair of system malfunctions. Covers EPA guidelines for refrigerant handling and new refrigerant replacements. May be taught manufacturer specific. Prerequisites: DVLA-0050, READ-0050, READ-0100, or READ-0200

AUMT-1380 Cooperative Education -Auto Mechanics Tech (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisite: cumulative GPA of 2.0 or higher.

AUMT-1381 Cooperative Education -Auto Mechanics Tech (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisite: Cumulative GPA of 2.0 or higher.

AUMT-1407 Automotive Electrical Systems (2-6-4) An overview of automotive electrical systems including topics in operational theory, testing, diagnosis, and repair of batteries, charging and starting systems, and electrical accessories. Emphasis on electrical schematic diagrams and service manuals. May be taught manufacturer specific. Prerequisites: DMTH-0804, DVLA-0050 READ-0050,

AUMT-1410 Automotive Brake Systems (2-6-4) Operation and repair of drum/disk type brake systems. Emphasis on safe use of modern equipment. Topics include brake theory, diagnosis, and repair of power, manual, anti-lock brake systems, and parking brakes. May be taught manufacturer-specific Prerequisites: DVLA-0050, READ-0050

AUMT-1416 Suspension and Steering (2-8-4) Theory and operation of automotive suspension and steering systems including tire and wheel problem diagnosis, component repair, and alignment procedures. May be taught manufacturer specific. Prerequisites: DVLA-0050, READ-0050

AUMT-1419 Automotive Engine Repair (2-8-4) Fundamentals of engine operation, diagnosis and repair including lubrication systems and cooling systems. Emphasis on overhaul of selected and engines, identification and inspection, measurements, and disassembly, repair, and reassembly of the engine. May be taught manufacturer specific. Prerequisites: DVLA-0050 READ-0050

AUMT-1445 Automotive Heating and Air Conditioning (2-6-4) Theory of automotive air conditioning and heating systems. Emphasis on the basic refrigeration cycle and diagnosis and repair of system malfunctions. Covers EPA guidelines for refrigerant handling and new refrigerant replacements. May be taught manufacturer specific. Prerequisites: DVLA-0050 READ-0050, AUMT-1305, AUMT-1407

AUMT-1480 Cooperative Education-Auto/Automotive Mechanic/Technician (1-30-4) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

AUMT-1580 Cooperative Education -Auto Mechanics Tech (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

AUMT-1680 Cooperative Education -Auto/Automotive Mechanic/Technician (1-39-6) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance shills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

AUMT-2280 Cooperative Education- Automobile/ Automotive Mechanics Technology/Tech (1-10-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

AUMT-2281 Cooperative Education- Automobile/ Automotive Mechanics Technology/Tech (1-10-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

AUMT-2301 Automotive Management (3-0-3) Instruction in human relations, customer relations, and customer satisfaction. Emphasis on management techniques and building relationships between the service department and the customer. Prerequisites: DVLA-0050, READ-0050

AUMT-2311 Automotive Electronic Controls (1-7-3) A study of electrical principles, semiconductor and integrated circuits, digital fundamentals, microcomputer systems, and electrical test equipment as applied to automotive technology. May be taught manufacturer specific. Prerequisites: READ-0200, DMTH-0200, AUMT-2317, AUMT-2321, AUMT-1310;

AUMT-2313 Automotive Drive Train and Axles (1-7-3) A study of automotive clutches, clutch operation devices, manual transmissions/ transaxles, and differentials with emphasis on the diagnosis and repair of transmissions/transaxles and drive lines. May be taught with manufacturer specific instructions. Prerequisites: READ-0100, DMTH-0100, AUMT-1305

AUMT-2317 Automotive Engine Performance Analysis I (1-7-3) Theory, operation, diagnosis, and repair of basic engine dynamics, ignition systems, and fuel delivery systems. Use of basic engine performance diagnostic equipment. May be taught with manufacturer specific instructions. Prerequisites: READ-0100, DMTH-0100, AUMT-1305, AUMT-1307 AUMT-1319;

AUMT-2321 Automotive Electrical Lighting and Accessories (1-7-3) Repair of automotive electrical subsystems, lighting, instrumentation, and accessories. Emphasis on accurate diagnosis and proper repair methods using various troubleshooting skills and techniques. May be taught manufacturer specific. Prerequisites: READ-0100, DMTH-0100, AUMT-1305, AUMT-1307

AUMT-2325 Auto Automatic Transmission and Transaxle (1-7-3) A study of the operation, hydraulic principles, and related circuits of modern automatic transmissions and automatic transaxles. Diagnosis, disassembly, and assembly procedures with emphasis on the use of special tools and proper repair techniques. May be taught manufacturer specific. Prerequisites: READ-0200, DMTH-0200, AUMT-2313, AUMT-2317, AUMT-2321

AUMT-2328 Automotive Service (2-4-3) Mastery of automotive vehicle service and component systems repair. Emphasis on mastering current automotive competencies covered in related courses. May be taught manufacturer specific.

AUMT-2334 Automotive Engine Performance Analysis II (1-7-3) A study of diagnosis and repair of emission systems, computerized engine performance systems, and advanced ignition and fuel systems; and proper use of advanced engine performance diagnostic equipment. May be taught manufacturer specific. Prerequisites: AUMT-2317, AUMT-2321, READ-0200, DMTH-0200

AUMT-2380 Cooperative Education -Auto Mechanics Tech (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

AUMT-2413 Manual Drive Train and Axles (2-6-4) A study of automotive clutches, clutch operation devices, standard transmissions, transaxles, and differentials with emphasis on the diagnosis and repair of transmissions and drive lines. May be taught manufacturer specific. Prerequisites: READ-0100, DMTH-0100, AUMT-1305

AUMT-2417 Engine Performance Analysis I (2-8-4) Theory of operation and diagnosis of basic engine dynamics including the study of the ignition system, fuel delivery systems, and the use of engine performance diagnostic equipment. Prerequisites: READ-0100, DMTH-0100, AUMT-1305, AUMT-1407, AUMT-1419

AUMT-2421 Auto Electrical Lighting and Accessories (2-6-4) Repair of automotive electrical subsystems, lighting, instrumentation, and accessories. Emphasis on accurate diagnosis and proper repair methods using various troubleshooting skills and techniques. May be taught manufacturer specific. Prerequisites: READ-0100, AUMT-1305, AUMT-1407

AUMT-2425 Automatic Transmissions and Transaxle (2-8-4) A study of the operation, hydraulic principles, and related circuits of modern automatic transmissions and automatic transaxles. Diagnosis, disassembly, and assembly procedures with emphasis on the use of special tools and proper repair techniques. May be taught manufacturer specific. Prerequisites: READ-0200, DMTH-0200, AUMT-2413, AUMT-2417, AUMT-2421

AUMT-2428 Automotive Service (2-6-4) Mastery of automotive vehicle service and component systems repair. Emphasis on mastering current automotive competencies covered in related theory courses. May be taught manufacturer specific. Prerequisites: AUMT-1405, AUMT-1407, AUMT-1410, AUMT-1416, AUMT-1419, AUMT-1445

AUMT-2434 Engine Performance Analysis II (2-8-4) Diagnosis and repair of emission systems, computerized engine performance systems, and advanced ignition and fuel systems; and proper use of advanced engine performance diagnostic equipment. Prerequisites: AUMT-2417, AUMT-2421, READ-0200, DMTH-0200

AUMT-2437 Automotive Electronics (2-6-4) Topics address electrical principles, semiconductor and integrated circuits, digital fundamentals, microcomputer systems, and electrical test equipment as applied to automotive technology. May be taught manufacturer specific. Prerequisites: READ-0200, DMTH-0200, AUMT-2417, AUMT-2421, AUMT-1410, AUMT-1445

AUMT-2457 Automotive Alternative Fuels (3-3-4) A study of the composition and use of various alternative automobile fuels including retrofit procedures and applications, emission standards, availability, and cost effectiveness. Overview of federal and state legislation concerning fuels. Prerequisites: AUMT-2434

AUMT-2480 Cooperative Education-Auto/Automotive Mechanic/Technician (1-30-4) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

AVIM

AVIM-1371 Air Traffic Control 1 (0-0-3) The course will introduce the student to radar and non-radar air traffic control,flight data processing and information handling, pilot-controller communications, Federal Aviation Administration separation standards, controller techniques, and airspace management. Includes radar and non-radar simulation of Air Traffic Control problems.

AVIM-1372 Aviation Planning (3-0-3) An introduction to the requirements, issues and processes involved in aviation planning. Includes in-depth study of the sources of aviation data, forecasting methods, and the airport master planning process and environmental issues and requirements.

AVIM-1373 Airport Design (2-3-3) Topics address analysis and application of FAA standards for airport design. Emphasizes the airside components, including: airport capacity calculations; movement area geometry; pavement, runway, and taxiway design; approach and departure gradients; and terminal building and heliport design considerations.

AVIM-2337 Aviation Law (3-0-3) A study of the historical development of aviation law including in-depth coverage of constitutional, criminal, civil, common, and international law as it relates to aviation activities. Prerequisites: AIRP-1317, APT-104, APT-113

AVNC

AVNC-1303 Introduction to Aircraft Electronic Systems (3-0-3) A study of the relationship between aircraft electronic systems and aircraft flight and navigation. Emphasis on the operation and function of the electronic systems and the operation of the systems and ramp.

AVNC-1306 FAA Regulations for Avionics Certified Repair Station (3-0-3) This course provides practical experience in the day-to-day operations of an Federal Aviation Administration Certified Repair Station. Students will perform tasks which will include completion of FAA forms and records, maintenance of technical data and servicing equipment.

AVNC-1325 Emerging Technologies in Aviation Electronic Systems (3-0-3) Introduction to the emerging technologies and systems recently developed for enhanced safety as well as improved navigational system in which field repairs are generally not performed.

AVNC-1343 Aircraft Electronic Systems Installation (2-4-3) A study of and practical experience in the installation of avionic systems in aircraft, mounting electronic equipment, construction and installation of electrical wiring and cables, proper use of tools, and selection of materials.

AVNC-1353 Operational Testing-Aircraft Electronic Systems (2-4-3) Integration of technical drawing interpretation, wiring interface checkout, and the application of ramp test equipment in common usage. Emphasis on performance of functional checks of aircraft electrical and electronic systems.

AVNC-1380 Cooperative Education-Avionics Maintenance Technology/Technician (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

AVNC-1391 Special Topics in Aviation Systems and Avionics Maintenance Technologist/Tech (2-4-3) This course is designed for students to work on and complete an avionics manufacturer's training program on various avionics systems. This training will cover basic system architecture, detailed circuit theory and troubleshooting techniques. Students will test, align, and troubleshoot avionics systems in support of the training program.

AVNC-2304 Foundations in Avionics Equipment Component Level Repairs (2-4-3) In-depth study of common circuit designs found in modern avionics equipment as well as a study of the electronics theory needed to troubleshoot these circuits. Prerequisites: IEIR-1304

AVNC-2308 Aviation Electrical and Electronics Systems Installation II (1-7-3) A continuation of AVNC 1343. This course is designed as a study of practical experience in the installation of avionics systems in aircraft, mounting electronic equipment, construction and installation of electrical wiring and cables, proper use of tools, and selection of materials. Corequisites: AVNC-1343

AVNC-2330 Aviation Electronics Printed Wire Assemblies Repair and Rework (1-6-3) An in-depth coverage of the IPC-A-610C and J-STD-001C soldering proficiency standards currently required for the repair and rework by avionics system manufacturers. Other related standards and guidelines will also be covered.

AVNC-2345 Aviation Navigational Equipment Component Level Repair (1-8-3) Skills development in component level repair of modern aviation navigational systems including Very High Frequency Omni Range (VOR), Instrument Landing Systems (ILS), and Automatic Direction Finding (ADF) systems. Emphasis on equipment block diagram and specialized test equipment will be covered in detail. Prerequisites: CETT-1325

AVNC-2350 Aviation Pulsed RF Equipment Component Level Repair (1-8-3) Skills development in component level repair of modern aviation pulsed Radio Frequency (RF) systems. Emphasis on equipment block diagram and specialized test equipment will be covered. Prerequisites: CETT-1325

AVNC-2355 Advanced Aviation Electronics Troubleshooting (1-8-3) A capstone course designed for students to demonstrate acquired knowledge of avionics systems as well as display techniques required to troubleshoot those systems. The student will face component level repair scenarios. Prerequisites: CETT-1325

AVNC-2357 Aviation Communications Component Level Repair (1-8-3) Skills development in component level repair of modern aviation communications and audio equipment. Emphasis on equipment block diagram and specialized test equipment will be covered. Prerequisites: CETT-1325

BIOM

BIOM-1101 Biomedical Equipment Technician (1-0-1) Introduction to current job responsibilities, salaries, and compensations in the medical industry and health care organizations.

BIOM-1205 Soldering Skills and Shop Safety (0-6-2) Preparation for selection of soldering equipment and application of safety practices at work. Laboratory development of proficiency in soldering and desoldering electronic components.

BIOM-1309 Applied Biomedical Equipment Technology (2-4-3) Introduction to biomedical instrumentation as related to anatomy and physiology. Detailed coverage of anatomical systems that use medical equipment for monitoring, diagnosis, and treatment.

BIOM-1315 Medical Equipment Networks (2-4-3) Identification of basic principles of medical equipment networking. Hardware, software, and connectivity issues of medical equipment in healthcare facilities will be covered.

BIOM-1341 Medical Circuits/Troubleshooting (2-4-3) Development of skills in logical isolation of troubles in malfunctioning medical electronic circuits and utilization of appropriate test equipment. Prerequisites: IEIR-1371

BIOM-1350 Diagnostic Ultrasound Imaging System (2-4-3) A course in diagnostic ultrasound imaging systems. Basic systems troubleshooting and problem solving are covered. Prerequisites: IEIR-1371

BIOM-2301 Safety in Health Care Facilities (2-4-3) Study of codes, standards, and management principles related to biomedical instrumentation. Emphasis is on the proper use and application of safety test equipment, preventive maintenance procedures, and documentation of work performed. Corequisites: IEIR-1371

BIOM-2311 General Medical Equipment I (2-4-3) Analysis of selected current paths from a larger schematic. Discussion of equipment and disassembly and reassembly of equipment.

BIOM-2315 Physiological Instruments I (2-4-3) Theory of operation, circuit analysis, and troubleshooting physiological instruments. Prerequisites: BIOM-2341 or IEIR-1371

BIOM-2319 Fundamentals of X-Ray & Medical Imaging Systems (1-4-3) Radiation theory and safety hazards, fundamental circuits, and application of X-ray systems including circuit analysis and troubleshooting.

BIOM-2331 Biomedical Clinical Instrumentation (2-4-3) A study of theory, application and principles of operation of instruments commonly used in a medical laboratory. Prerequisites: BIOM-2301

BIOM-2333 Digital Radiography (2-4-3) General principles of digital imaging systems. Fundamentals of problem solving, troubleshooting, and analysis of image quality are emphasized. Prerequisites: BIOM-2349

BIOM-2339 Physiological Instruments II (2-4-3) Continuation of physiological instruments i, emphasizing graphic display recording devices. A study of defibrillators and multi- purpose diagnostic equipment. Prerequisites: BIOM-2301

BIOM-2343 General Medical Equipment II (2-4-3) Study of the theory and principles of operation of a variety of basic electro-mechanical equipment with emphasis on repair and service of actual medical equipment. Prerequisites: BIOM-2341 or IEIR-1371

BIOM-2345 Advanced Imaging Systems (2-4-3) General principles of computerized tomography (CT) operation, magnetic resonance imaging, single photon emission computerized tomography, and other advanced imaging modalities.

BIOM-2347 RF/X-Ray System (2-4-3) An overview of basic principles of radiographic and flouroscopic systems. Prerequisites: BIOM-2349

BIOM-2349 Basic X-Ray and Medical Imaging Systems (1-4-3) A study of the radiation theory and safety hazards, fundamental circuits and application of X-ray systems including circuit analysis, troubleshooting, and isolation of system malfunctions. Prerequisites: IEIR-1371

BIOM-2357 Biomedical Equipment Technician (BMET) Proficiency Review (2-4-3) An overview of the certification examination topics for biomedical equipment technicians. Prerequisites: BIOM-2301

BIOM-2377 Medical Imaging Communication & Storage (2-4-3) A course in medical imaging communication and storage systems, including Digital Imaging Communication (DICOM) standards and Picture Archiving and Communication Systems (PACS). Image transfer via DICOM standard to PACS and printers, including modality (X-ray, Computerized Tomograpy, and Ultrasound) and PACS function, configuration, and troubleshooting, is covered.

BIOM-2380 Cooperative Education-Biomedical Engineering Technician (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: BIOM-2301

BIOM-2381 Cooperative Education-Biomedical Engineering Technician (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience.

Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: BIOM-2301

BIOM-2388 Internship-Biomedical Engineering Technician (0-10-3) An experience external to the college for an advanced student in a specialized field involving a written agreement between the educational institution and a business or industry. Mentored and supervised by a workplace employee, the student achieves objectives that are developed and documented by the college and that are directly related to specific occupational outcomes. This may be paid or unpaid experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: BIOM-2301

BIOM-2389 Internship-Biomedical Engineering Technician (0-10-3) An experience external to the college for an advanced student in a specialized field involving a written agreement between the educational institution and a business or industry. Mentored and supervised by a workplace employee, the student achieves objectives that are developed and documented by the college and that are directly related to specific occupational outcomes. This may be a paid or unpaid experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: BIOM-2301

BIOM-2580 Cooperative Education-Biomedical Engineering Technician (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

BIOM-2680 Cooperative Education-Biomedical Engineering Technician (1-39-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Prerequisites: BIOM-2301

CBFM

CBFM-1303 Boiler Maintenance (2-4-3) An introduction to boiler maintenance procedures with emphasis on the various components associated with boilers. Prerequisites: HART-1407

CBFM-1324 Interior Maintenance (1-6-3) Application of building repair principles with emphasis on minor repair of walls, floors, and ceilings.

CBFM-1329 Maintenance Coordination and Scheduling (2-4-3) An introduction to scheduling of repairs and preventive maintenance. Topics include ordering supplies, inventory maintenance of supplies and equipment, work orders, and personnel scheduling.

CBFM-2213 Building Maintenance Management (1-4-2) Study of the management and controls required to direct the operation of the engineering and maintenance department. Topics include planning and scheduling, delegating responsibilities, purchasing, problem-solving, management by objectives, supervisory training, in-service training, and budget preparation.

CETT

CETT-1325 Digital Fundamentals (1-8-3) An entry level course in digital electronics covering number systems, binary mathematics, digital codes, logic gates, Boolean Algebra, Karnaugh Maps, and combinational logic. Emphasis on circuit logic analysis and troubleshooting digital circuits. Prerequisite: CETT-1402, CETT-1409, CETT-1303, CETT-1305, IEIR-1302, IEIR-1304 , CETT-1303, IEIR-1302, IEIR-1371. Corequisites: IEIR-1304

CETT-1345 Microprocessor (1-8-3) An introductory course in microprocessor software and hardware; its architecture, timing sequence, operation, and programming; and discussion of appropriate software diagnostic language and tools Prerequisites: CETT-1325 or CETT-1375

CETT-1357 Linear Integrated Circuits (2-4-3) In depth coverage of the characteristics, operations, stabilization, testing, and feedback techniques of linear integrated circuits. Application in computation, measurements, instrumentation, and active filtering. Prerequisites: CSIR-2301,

CETT-1379 Solid State Components & Applications (1-8-3) A survey course of semiconductor devices and their related electronic concepts and applications, with basic troubleshooting. Course will include Bipolar Junction Transistors (BJT), UniJunction Transistors (UJT), Programmable UniJunctions Transistors (PUT), Field Effect Transistors (FET), Silicon Controlled Rectifiers (SCR), triacs, Operational Amplifiers, and basic digital gates. Prerequisites: IEIR 1371 or IEIR 1304

CETT-1409 DC-AC Circuits (2-8-4) Fundamentals of DC circuits and AC circuits operation including Ohm's law, Kirchhoff's laws, networks, transformers, resonance, phasors, capacitive and inductive and circuit analysis techniques. Corequisites: MATH-1316

CETT-1479 Solid State Components and Applications (2-8-4) A survey course of semiconductor devices, and their related electronic concepts and applications, with basic troubleshooting. Course will include BJT (Bipolar Junction Transistors), UJT (Unijunction Transistors), PUT (Programmable Unijunction Transistors), FET (Field Effect Transistors), SCR (Silicon Controlled Rectifiers), TRIAC, and OpAmps (Operational Amplifiers). Prerequisites: CETT-1402, CETT-1409, CETT-1305, IEIR-1304, or IEIR-1371

CETT-2335 Advanced Microprocessors (2-4-3) An advanced course utilizing the microprocessor in control systems and interfacing. Emphasis on microprocessor hardware and implementation of peripheral interfacing.

CETT-2337 Microcomputer Control (2-4-3) A study of microprocessors and microcomputers with an emphasis on embedded controllers for industrial and commercial applications. Topics include RAM, ROM and input/output (I/O) interfacing. Introduction to programming. Prerequisites: CETT-2335

CETT-2339 Amplifier Analysis (2-4-3) Advanced study of electronic amplifier applications including op-amps, audio amps, video amps, and other high frequency amplifiers. Prerequisites: CSIR-2301

CETT-2449 Research and Project Design (2-8-4) Principles of electrical/electronic design encompassing schematics wiring diagrams, materials lists, operating characteristics, completion schedules, and cost estimates. Prerequisites: CETT-2339;

CHEF

CHEF-1205 Sanitation and Safety (2-0-2) A study of personal cleanliness; sanitary practices in food preparation; causes, investigation, control of illness caused by food contamination (Hazard Analysis Critical Control Points); and work place standards.

CHEF-1305 Sanitation & Safety (2-2-3) A study of personal cleanliness; sanitary practices in food preparation; causes, investigation, control of illness caused by food contamination (Hazard Analysis Critical Control Points); and work place safety standards.

CHEF-1345 International Cuisine (1-7-3) The study of classical cooking skills associated with the preparation and service of international and ethnic cuisines. Topics include similarities between food production systems used in the United States and other regions of the world.

CHEF-1401 Basic Food Preparation (2-8-4) A study of the fundamental principles of food preparation and cookery to include Brigade System, cooking techniques, material handling, heat transfer, sanitation, safety, nutrition, and professionalism.

CHEF-2301 Intermediate Food Preparation (1-8-3) Continuation of previous food preparation course. Topics include the concept of pre-cooked food items, as well as scratch preparation. Covers full range of food preparation techniques. Prerequisites: CHEF-1401

CNBT

CNBT-1302 Mechanical, Plumbing & Electrical System (2-4-3) A presentation of the basic mechanical, plumbing, and electrical components in construction and their relationship to residential and light commercial buildings.

CNBT-1315 Field Engineeing I (2-4-3) Surveying equipment, sketches, proper field note taking, methods of staking, layout of building site, and horizontal and vertical controls.

CNBT-1342 Building Codes and Inspections (2-4-3) An examination of the building codes and standards applicable to building construction and inspection processes.

CNBT-1346 Construction Estimating I (2-4-3) Fundamentals of estimating materials and labor costs in construction.

CNBT-1350 Construction Technology II (2-4-3) Framing in residential and light commercial construction. Includes safety, tools, and equipment used in floor, wall, ceiling, and roof framing methods and systems.

CNBT-1416 Construction Technology I (2-7-4) Site preparation, foundation, form work, and framing. Includes safety; tools and equipment; basic site preparation; basic foundations and form work; and basic floor, wall, and framing methods and systems.

CNBT-1449 Concrete - Commercial and Industrial (2-7-4) Various techniques for concrete utilization in commercial and industrial construction.

CNBT-2310 Commercial/Industrial Blueprint Reading (2-4-3) Introductory blueprint reading for commercial/industrial construction.

CNBT-2317 Green Building (2-4-3) Methods and materials used for buildings that conserve energy, water, and human resources.

CNBT-2342 Construction Management I (2-4-3) Human relations management skills in motivation on the job site. Topics include written and oral communications, leadership and motivation, problem solving, and decision making.

CNSE

CNSE-1391 Special Topics in Construction Equipment Operation (2-4-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

COMM

COMM-2330 Introduction to Public Relations (3-0-3) Exploration of the history and development of public relations. Presentation of the theory behind and process of public relations, including the planning, implementation, and evaluation of PR campaigns.

CPMT

CPMT-1303 Introduction to Computer Tech (1-4-3) A fundamental computer course that provides in-depth explanation of the procedures to utilize hardware and software. Emphasis on terminology, acronyms, and hands-on activities.

CPMT-1304 Microcomputer System Software (1-6-3) Skill development in the installation, configuration, maintenance and troubleshooting of system software in microcomputers. Topics may include operating systems, utility software and other software affecting the basic operation of a microcomputer system.

CPMT-1307 Electronic Computer Skills (1-6-3) The study of modern electronic construction techniques including the application of the most common hand tools used in disassembly re-

pair, and re-assembly of electronics and computer components. Prerequisites: CETT-1402 or IEIR-1371.

CPMT-1309 IT Essentials II: Network Operation Systems (2-4-3) Overview of network operating systems and specifically covers the Linux Red Hat Network operating system. Students will learn how to use the Linux operating system, the K Desktop Environment (KDE) and GNU Network Object Model (GNOME).

CPMT-1311 Introduction to Computer Maintenance (1-6-3) A study of the information for the assembly of a microcomputer system. Emphasis on the evolution of microprocessors and microprocessor bus structures.

CPMT-1343 Microcomputer Architecture (1-6-3) An intermediate level course in computer characteristics and subsystem operations, timing, control circuits, and internal input/output controls. Prerequisites: CPMT-1307, CETT-1325, CPMT-1345.

CPMT-1345 Computer System Maintenance (1-6-3) Examination of the functions of the components within a computer system. Development of skills in the use of test equipment and maintenance aids. Prerequisites: CPMT-1311 or ITSC-1325. Corequisites: CPMT-1303, CPMT-1304, IEIR-1371

CPMT-1347 Computer System Peripherals (1-6-3) Principles and practices involved in computer system troubleshooting techniques, programs, and the use of specialized test equipment. Prerequisites: CPMT-1345

CPMT-1349 Computer Network Technology (1-6-3) A beginning course in computer networks with focus on networking fundamentals, terminology, hardware, software, and network architecture. A study of local/wide area networking concepts and networking installations and operations. Corequisites: CPMT-1345

CPMT-1411 Introduction to Computer Maintenance (3-2-4) A study of the information for the assembly of a microprocessor system. Emphasis on the evolution of microprocessors and microprocessor bus structures.

CPMT-2302 Home Technology Integration (2-4-3) Integration and maintenance of various home technology subsystems. Includes home automation, security and surveillance, home networks, video and audio networks, and structured wiring.

CPMT-2333 Computer Integration (1-6-3) An advanced course in integration of hardware, software, and applications. Customization of computer systems for specific applications in engineering, multi-media, or data acquisition. Prerequisites: CPMT-1349, CPMT-1345

CPMT-2337 Microcomputer Interface (1-6-3) An interfacing Ccurse exploring the concepts and terminology involved in interfacing the internal architecture of the Microcomputer with commonly used external devices. Prerequisites: CPMT-1345. Corequisites: CETT-1325

CPMT-2341 Advanced Microcomputer Interface (2-4-3) Data acquisition circuits primarily used in microcomputer systems including computer controls, interfacing between mechanical, electrical, electronic and/or computer equipment. Prerequisites: CPMT-1307. Corequisites: CPMT-2337, CPMT-1343

CPMT-2345 Computer System Troubleshooting (1-6-3) Principles and practices involved in computer system troubleshooting techniques and repair procedures including advanced diagnostic test programs and the use of specialized equipment. Corequisites: CPMT-1345

CPMT-2349 Advanced Computer Networking (1-6-3) An in-depth study of network technology with emphasis on network operating systems, network connectivity, hardware, and software. Mastery of implementation, troubleshooting, and maintenance of LAN and/or WAN network environments. Prerequisites: CPMT-1349

CPMT-2350 Industry Certification Preparation (2-4-3) An overview of the objectives for industry specific certification exam(s). Topics may include information on A+ certification, Network+ certification, and Home Technology Integration (HTI) certification. Prerequisites: CPMT-1345, CPMT-2345

CPMT-2370 Home Automation (2-4-3) This course is designed to provide skills and knowledge necessary for the design, installation, and maintenance of home automation equipment. Emphasis is placed on lighting, appliance, and heating, ventilation and air conditioning (HVAC) controls.

CPMT-2371 Audio/Video Networks (2-4-3) This course is designed to provide the skills necessary to design, install, and maintain audio and video networks. Emphasis will be placed on residential audio systems, video networks, and other related home entertainment equipment.

CPMT-2380 Cooperative Education Computer Maintenance Tech (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, the employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

CPMT-2381 Cooperative Education Computer Maintenance Tech (1-19-3)Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, the employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

CPMT-2680 Cooperative Education Computer Maintenance Tech (0-39-6) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance skills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

CRPT

CRPT-1315 Conventional Wall Systems (2-4-3) Conventional wall systems with emphasis on wood frame construction. Includes identification of components; construction of wall systems; safe work practices; and the selection, use, and maintenance of tools and equipment.

CRPT-1323 Floor Systems (2-4-3) An introduction to common floor systems. Includes component identification; construction of a floor system; safe work practices; and the selection, use, and maintenance of tools and equipment.

CRPT-1341 Conventional Exterior Finish Systems (2-4-3) Installation of exterior finish systems and components including the placement and installation of cornice, windows, doors, siding, and flashing. Emphasis on safe work practices and the selection, use, and maintenance of tools and equipment.

CRPT-1345 Conventional Interior Finish Systems (2-4-3) Installation of interior finish systems and components including the placement and installation of doors, trim, floor, wall, and ceiling finishes. Emphasis on safe work practices and the selection, use, and maintenance of tools and equipment.

CRPT-1411 Conventional Roof Systems (2-6-4) Principles of design and construction of a conventional roof system incorporating gable, hip, and intersections. Emphasis given to safe work practices and the selection, use, and maintenance of tools and equipment.

CSIR

CSIR-1341 Transceiver Troubleshooting I (2-4-3) Practice in Performing Testing Procedures and Troubleshooting Radio Communications Systems. Prerequisites: IEIR-1302, CETT-1303, CETT-1409, CSIR-2301. Corequisites: CSIR-2301

CSIR-1344 General Comm Circuits I (2-4-3) The basic theory of operation and troubleshooting of communication circuits used in Radio Communication Electronic Systems. Prerequisites: CSIR-2301, IEIR-1304, CETT-1305, CETT-1409, CSIR-2301

CSIR-1355 Industry Certification (2-4-3) Preparation for the certifications required by industry. Prerequisites: IEIR-1304, CSIR-2301, CETT-1305, CETT-1409. Corequisites: CSIR-2359

CSIR-1359 Digital Data Communications (2-4-3) Introduction to the theory and troubleshooting skills needed in the digital data communication field. Prerequisites: CSIR-2301 or CPMT-1349

CSIR-2301 Communication Electronics Components (2-4-3) Introduction to the theory of vacuum tubes and solid-state devices. Prerequisites: IEIR-1302, CETT-1303, CETT-1409. Corequisites: IEIR-1304

CSIR-2343 Transceiver Troubleshooting II (2-4-3) A continuation to Transceiver Troubleshooting I. Includes advanced troubleshooting skills and alignment procedures. Prerequisites: CSIR-1341

CSIR-2359 Communication Antenna Systems (2-4-3) A course in the testing and troubleshooting procedures for communication antennas systems including combiners, multi couplers, and duplexers. Topics include lightning and grounding requirements as well as troubleshooting radio frequency interference. Prerequisites: IEIR-1304, CETT-1305, CETT-1409

CTEC

CTEC-1113 Introduction to Chemical Tech (0-2-1) introduction to the educational and professional requirements of the chemical technician. Topics include safety, industrial site visits, chemical literature, and computer applications.

CTEC-1205 Chemical Calculations I (0-6-2) Parallels and supports college-level applied general chemistry. Emphasis on solving problems in exercises and lab experiments.

CTEC-1206 Chemical Calculations II (0-6-2) Parallels and supports college-level applied general chemistry. Emphasis on solving problems in exercises and lab experiments.

CTEC-1345 Chemical Laboratory Safety (2-4-3) Study of the safety problems encountered in the operation of a chemical laboratory. Topics include chemical and safety regulations, chemical hygiene plans, the lab standard, and safe laboratory procedures. Prerequisites: CHEM-1305, CHEM-1105 or SCIT-1414

CTEC-1349 Environmental Chemical (1-6-3) Instruction in laboratory operations for the analysis of environmental contaminants according to current federal, state, and local standards. Prerequisites: CHEM-1305, CHEM-1105 or SCIT-1414

CTEC-1441 Applied Instrumental Analysis (2-8-4) Overview of instrumental chemical analysis. Topics include chromatography, spectroscopy, and/or electroanalytical chemistry. Prerequisites: CHEM-1305, CHEM-1105 or SCIT-1414

CTEC-2333 Comprehensive Studies in Chemical Technology (1-6-3) Capstone course requiring a special lab research project.

CTEC-2380 Cooperative Education Chemical Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

CTEC-2381 Cooperative Education Chemical Tech (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

CTEC-2386 Internship-Chemical Technology (0-18-3) An experience external to the college for an advanced student in a specialized field involving a written agreement between the educational institution and a business or industry. Mentored and supervised by a workplace employee, the student achieves objectives that are developed and documented by the college and that are directly related to specific occupational outcomes. This may be a paid or unpaid experience. This course may be repeated if topics and learning outcomes vary.

CTEC-2431 Applied Instrumental Analysis II (2-8-4) study of advanced topics in instrumental analysis. Topics include atomic absorption, inductively coupled plasma, nuclear magnetic resonance, gas chromatography/mass spectrometry, liquid chromatography, and infrared spectroscopy. Corequisites: CHEM-2325, CHEM-2125, SCIT-2402

CTEC-2441 Polymers I (2-7-4) Study of the concepts of polymer science. Topics include classification, structure, properties, synthesis, characterization, and industrial applications. Prerequisites: CHEM-2325, CHEM-2125 or SCIT-2402

CTEC-2443 Polymers II (2-7-4) Continuation of Polymers I with emphasis on polymeric materials. Prerequisites: CTEC-2441

CTEC-2445 Unit Operations (2-6-4) Instruction in the principles of chemical engineering and process equipment. Emphasis on scale-up from laboratory bench to pilot plant. Prerequisites: CTEC-1441

CTEC-2580 Cooperative Chemical Technology (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

CVOP

CVOP 1201 Commerial Drivers Liense Driving Skills (2 cr.) Overview of the State of Texas Class A Commercial Drivers License driving test. In-depth coverage of in-cab air brake test, proper shifting, right and left-hand turns, movement in traffic, parking of a tractor trailer, highway and city driving, and backward movement and control.

DEMR

DEMR-1166 Practicum (or Field Experience)-Diesel Engine Mechanic and Repairer (0-7-1) Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

DEMR-1225 Small Air Cooled Engine (1-3-2) fundamentals of air cooled engines including repair and testing.

DEMR-1229 Preventative Maintenance (1-3-2) An introductory course designed to provide the student with basic knowledge of proper servicing practices. Content includes record keeping and condition of major systems. Prerequisites: DEMR-1301, DEMR-1317, DEMR-1323, DEMR-1405, DEMR-1410, DEMR-1416, DEMR-1421, DEMR-1411 or DEMR-2412

DEMR-1270 Diesel Equipment Service Writing (1-2-2) This diesel equipment course involves the development of a clear, concise, technical style of writing, local organization of material and the use of drawings, illustrations, and tables in supporting and clarifying report content. Types and forms of reports and correct format of business letters are studied. Written projects include reports and letters of varying lengths and degree of complexity.

DEMR-1280 Cooperative Education-Diesel Mechanics Technology (1-9-2) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-1281 Cooperative Education Diesel Mechanics Technology (1-9-2) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-1281 Diesel Cooperative Education -Caterpillar (1-10-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

DEMR-1291 Special Topics-John Deere Construction Business and Equipment (1-4-2) The course topics include addressing construction information and concerns; updates on new equipment projected construction changes; business communication needs; use of John Deere Service Advisor; as well as handling technology changes.

DEMR-1301 Shop Safety and Processes (2-4-3) A study of shop safety, rules, basic shop tools, and test equipment.

DEMR-1317 Basic Brake Systems (1-7-3) An introduction to the basic principles of brake systems of diesel powered equipment. Emphasis on maintenance, repairs, and troubleshooting.

DEMR-1323 HVAC Troubleshooting and Repair (1-7-3) introduction to heating, ventilation, and air conditioning theory, testing, and repair. Emphasis on refrigerant reclamation, safety procedures, specialized tools, and repairs.

DEMR-1327 Tractor Trailer Service and Repair (1-7-3) An introduction to and familiarization with components and systems related to tractor trailer service. Emphasis on records required by the department of transportation. Prerequisites: DEMR-1410, DEMR-1301, DEMR-1405, DEMR-1323, DEMR-1317, DEMR-1416, DEMR-1421, DEMR-1411 or DEMR-2412

DEMR-1330 Steering and Suspension I (2-4-3) A study of design, function, maintenance, and repair of steering and suspension systems. Emphasis on troubleshooting and repair of failed components. Prerequisites: DEMR-1411 or DEMR-2412, DEMR-1301, DEMR-1405, DEMR-1317, DEMR-1416, DEMR-1421, DEMR-1410, DEMR-1323

DEMR-1380 Cooperative Education Diesel Mechanics Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-1381 Cooperative Education Diesel Mechanics Technology (1-19) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-1401 Shop Safety and Procedures (2-5-4)

DEMR-1405 Basic Electrical Systems (2-7-4) An introduction to the basic principles of electrical systems of diesel powered equipment with emphasis on starters, alternators, batteries and regulators.

DEMR-1405 Basic Electrical Systems-Caterpillar (2-5-4) An introduction to the basic principles of electrical systems of diesel powered equipment with emphasis on starters, alternators, batteries, and regulators. Prerequisites: DMTH-0050, READ-0100

DEMR-1406 Diesel Engine I (2-6-4) An Introduction to the Basic Principles of Diesel Engines and Systems.

DEMR-1410 Basic Diesel Engine Testing and Repair (2-7-4) An Introduction to Testing and Repairing Diesel Engines Including Related Systems Specialized Tools. Prerequisites: DMTH-0050, READ-0100

DEMR-1416 Basic Hydraulics (2-7-4) Fundamentals of hydraulics including components and related systems.

DEMR-1421 Power Train I (2-7-4) Introduction to fundamentals, repair, and theory of power trains including clutches, transmissions, drive shafts, and differentials. Emphasis on inspection and repair. Prerequisites: DMTH-0200, READ-0200

DEMR-1447 Power Train II (2-7-4) Continuation of fundamentals and theory of power train systems. Emphasis on disassembly, inspection, and repair of power train components. Prerequisites: DEMR-1301, DEMR-1317, DEMR-1323, DEMR-1405, DEMR-1410, DEMR-1416, DEMR-1421, DEMR-1411, DEMR-2412

DEMR-1480 Cooperative Education Diesel Mechanics Technology (1-29-4) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-1481 Cooperative Education Diesel Mechanics Technology (1-29-4) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-1580 Cooperative Education Diesel Mechanics Technology (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-1680 Cooperative Education-Diesel Engine Mechanic and Repairer (1-39-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

DEMR-2166 Practicum (or Field Experience)-Diesel Engine Mechanic and Repairer (0-7-1) Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

DEMR-2270 Diagnostic Testing (1-3-2) This is an advanced course that studies the practical use of caterpillar diagnostic equipment for analyzing and repairing caterpillar machine and engine systems. Emphasis is placed on knowledge and skills necessary to assure product reliability and performance.

DEMR-2280 Cooperative Education Diesel Mechanics Technology(1-9-2) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-2281 Cooperative Education Diesel Mechanics Technology (1-9-2) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-2331 Advanced Brake Systems (2-4-3) An advanced brake system course for diesel powered equipment. Advanced concepts and schematics including anti-lock, air, pneumatic, and hydraulic brake systems and related components. Prerequisites: DEMR-1301, DEMR-1405, DEMR-1317, DEMR-1416(1348) DEMR-1421, DEMR-1410, DEMR-1323, DEMR-1411, DEMR-2412

DEMR-2334 Advanced Diesel Tuneup and Troubleshooting (1-7-3) advanced concepts and skills required for tune-up and troubleshooting procedures of diesel engines. Emphasis on the science of diagnostics with a common sense approach. Prerequisites: DEMR-1410, DEMR-1301, DEMR-1317, DEMR-1323, DEMR-1405, DEMR-1416, DEMR-1421, DEMR-1411, DEMR-2412

DEMR-2335 Advanced Hydraulics (1-7-3) Advanced study of hydraulic systems and components including diagnostics and testing of hydraulic systems. Prerequisites: DEMR-1410, DEMR-1301, DEMR-1317, DEMR-1323, DEMR-1405, DEMR-1416, DEMR-1421, DEMR-1411, DEMR-2412

DEMR-2346 Advanced HVAC (1-7-3) Advanced concepts in heating, ventilation, and air conditioning. Emphasis on systematic troubleshooting. Prerequisite: DEMR-1301, DEMR-1405, DEMR-1323, DEMR-1421, DEMR-1410, DEMR-1416, DEMR-1317, DEMR-1411, DEMR-2412

DEMR-2348 Failure Analysis (2-3-3) An advanced course designed for analysis of typical part failures on equipment. Prerequisites: DEMR-1410, DEMR-1323, DEMR-1405, DEMR-1301, DEMR-1317, DEMR-1416, DEMR-1421, DEMR-1411, DEMR-2412

DEMR-2370 Machine Specific Systems (1-7-3) This advanced course is designed to develop knowledge and skills used to test and adjust specific caterpillar machine systems. Emphasis will be placed on the knowledge and skills necessary to assure product reliability and performance.

DEMR-2371 Marine Auxiliary Equipment and Controls (2-4-3) This is a course designed to give the student knowledge and skill in the operation, repair, and maintenance of auxiliary equipment and controls in marine applications. Prerequisites: DEMR-1301, DEMR-1410, DEMR-1411, DEMR-1416, DEMR-1405

DEMR-2381 Cooperative Education Diesel Mechanics Technology(1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-2412 Diesel Engine Testing and Repair II (2-7-4) Coverage of testing and repairing diesel engines including related systems specialized tools. Prerequisites: DMTH-0200, READ-0200

DEMR-2432 Electronic Controls (2-7-4) Advanced Skill in Diagnostic and Programming Techniques of Electronic Control Systems. Prerequisites: DEMR-1410, DEMR-1301, DEMR-1405, DEMR-1323, DEMR-1317, DEMR-1416, DEMR-1421, DEMR-1411, DEMR-2412

DEMR-2432 Electronic Controls-Caterpillar (2-5-4) Advanced skills in diagnostic and programming techniques of electronic control systems.

DEMR-2434 Advanced Diesel Tune-Up and Troubleshooting (2-4-4) Advanced concepts and skills required for tune-up and troubleshooting procedures of diesel engines. Emphasis on the science of diagnostics with a common sense approach.

DEMR-2444 Automatic Power Shift and Hydrostatic Transmissions II (2-7-4) Extended study of the operation, maintenance, and repair of automatic power shift hydrostatic transmissions. Prerequisites: DEMR-1410, DEMR-1301, DEMR-1323, DEMR-1317, DEMR-1416, DEMR-1421, DEMR-1411, DEMR-2412, DEMR-1405

DEMR-2470 Marine Propulsion Application (2-7-4) This intermediate course includes the study, troubleshooting, disassembly, inspection, repair, operation and maintenance of marine transmissions, power take-off, and various drives used on marine equipment. Prerequisites: DEMR-1301, DEMR-1410, DEMR-1411, DEMR-1416, DEMR-1421, DEMR-1405

DEMR-2471 Marine System and Installation (2-7-4) This is a course designed to give the student knowledge and skill in basic troubleshooting procedures, servicing, and the removal and installation of marine engines, marine transmissions, and related equipment. Prerequisites: DEMR-1301, DEMR-1410, DEMR-1411, DEMR-1416, DEMR-1405

DEMR-2480 Cooperative Education Diesel Mechanics Technology (1-29-4) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-2481 Cooperative Education Diesel Mechanics Technology (1-29-4) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DEMR-2580 Cooperative Education Diesel Mechanics Technology (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

DFTG

DFTG-1305 Technical Drafting (2-4-3) Introduction to the principles of drafting to include terminology and fundamentals, including size and shape descriptions, projection methods, geometric construction, sections, auxiliary views, and reproduction processes.

DFTG-1309 Basic Computer-Aided Drafting (1-6-3) An introduction to computer-aided drafting. Emphasis is placed on setup, creating and modifying geometry, storing and retrieving predefined shapes, placing, rotating, and scaling objects, adding text and dimensions, using layers, coordinating systems, and plot/print to scale.

DFTG-1313 Drafting for Specific Occupation (2-4-3) Discussion of theory and practice with drafting methods and the terminology to prepare working drawings in various occupational fields.

DFTG-1315 Architectural Blueprint Reading (1-4-3) A study of the fundamentals of blueprint reading for the construction industry.

DFTG-1317 Architectural Drafting-Residential (2-4-3) architectural drafting procedures, practices, and symbols. Including preparation of detailed working drawings for residential structure. Emphasis on light frame construction methods. Prerequisites: DFTG-1309 or DFTG-1305

DFTG-1325 Blueprint Reading and Sketching (3-1-3) An introduction to reading and interpreting working drawings for fabrication processes and associated trades. Use of sketching techniques to create pictorial and multiple-view drawings. For WLT majors: The use and knowledge of welding symbols is stressed and mandatory. Welding processes are described as may be applied to the various structural and piping fixtures used in the welding trades.

DFTG-1329 Electro-Mechanical Drafting (2-4-3) A basic course including layout and design of electro-mechanical equipment from engineering notes and sketches. Emphasis on drawing of electronic enclosures, interior hardware, exterior enclosures, detailed and assembly drawings with a parts list, and flat pattern layouts. Prerequisites: DFTG-1309, DFTG-1305

DFTG-1358 Electro-Mechanical Drafting (2-4-3) Electrical and electronic drawings, stressing modern representation used for block diagrams schematic diagrams, logic diagrams, wiring/assembly drawings, printed circuit board layouts, motor control diagrams, power distribution diagrams, and electrical one-line diagrams. Prerequisites: DFTG-1329, DFTG-2319

DFTG-1380 Cooperative Education Drafting (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: DFTG-1305, DFTG-1309, DFTG-2319, ARCE-1342, ARCE-1303, DFTG-1317, DFTG-1473, DFTG-2331, DFTG-2372, DFTG-2328, DFTG-1305, ARCE-1342 DFTG-1309, DFTG-2319, DFTG-1329, DFTG-1358, DFTG-2302, DFTG-2323, DFTG-2350, DFTG-2335

DFTG-1473 Civil Engineering Drafting (3-4-4) A course in commercial site drafting with emphasis in location of buildings, parking, sidewalks, and landscaping. The student will use an existing site and modify existing contours to meet building codes, zoning ordinances and accessibility requirements. standard site details will be developed. Prerequisites: DFTG-2319, DFTG-1317

DFTG-2302 Machine Drafting (2-4-3) Production of detail and assembly drawings of machines, threads, gears, cams, tolerances and limit dimensioning, surface finishes, and precision drawings. Prerequisites: DFTG-2319, DFTG-235

DFTG-2305 Printed Circuit Board Design (2-4-3) Course includes single-sided and double-sided printed circuit board design, emphasizing the drawings, standards, and processes required to layout printed circuit board and manufacturing documentation. Prerequisites: DFTG-1329, DFTG-2319, TECM-1343, DFTG-2350

DFTG-2306 Machine Design (1-6-3) Theory and practice of design. Projects in problem solving, including press fit, bolted and welded joints, and transmission components. Prerequisites: DFTG-2302, DFTG-2319, TECM-1343

DFTG-2319 Intermediate Computer-Aided Drafting (1-8-3) A continuation of practices and techniques used in basic computer-aided drafting emphasizing advanced dimensioning techniques, the development and use of prototype drawings, construction of pictorial drawings, interfacing 2D and/or 3D environments and extracting data. Prerequisites: DFTG-1309

DFTG-2323 Pipe Drafting (1-6-3) A study of Pipe Fittings, Symbols, Specifications and their applications to a Piping Process Systems. Creation of symbols and their usage in flow diagrams, plans, elevations, and isometrics. Prerequisites: DFTG-2319

DFTG-2328 Architectural Drafting-Commercial (1-6-3) Architectural drafting procedures, practices, and symbols including the preparation of detailed working drawings for a commercial building, with emphasis on commercial construction methods. Prerequisites: ARCE-1303, DFTG-1317, DFTG-2319

DFTG-2331 Advanced Technologies in Architectural Design & Drafting (2-4-3) Use of architectural specific software to execute the elements required in designing standard architectural exhibits utilizing custom features to create walls, windows, and specific design requirements for construction in residential/ commercial and industrial architecture. Prerequisites: DFTG-2319, DFTG-1317

DFTG-2335 Advanced Technologies in Mechanical Design and Drafting (2-4-3) Use parametric based mechanical design software for design for advanced modeling and analysis. Prerequisites: DFTG-2319,

DFTG-2338 Final Project-Advanced Drafting (1-8-3) A drafting course in which students participate in a comprehensive project from conception to conclusion. Prerequisites: ARCE-1342, DFTG-1473, DFTG-2428, DFTG-2321, DFTG-2372, DFTG-1358, DFTG-2302, DFTG-2335, TECM-1343

DFTG-2350 Geometric Dimensioning and Tolerancing (2-4-3) Geometric dimensioning and tolerancing, according to standards. Application of various geometric dimensions and tolerances to production drawings. Prerequisites: DFTG-1309, DFTG-1305

DFTG-2372 Architectural Detailing (2-4-3) An advanced study in detailing the relationship and connections between the various finish materials, framing systems and structure systems used in commercial and industrial buildings. Prerequisites: ARCE-1303 DFTG-1317, DFTG-2319

DFTG-2380 Cooperative Education Drafting and Design Technology/Technician (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, the employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: DFTG-1305, DFTG-1309, DFTG-2319, ARCE-1342 ARCT-1302, DFTG-1317, DFTG-1473, DFTG-2321, DFTG-2428, DFTG-1305, DFTG-1329, DFTG-1358, DFTG-2302, DFTG-2323, DFTG-2350, DFTG-2335

DFTG-2381 Cooperative Education Drafting and Design Technology/Tech. (1-19-3) Career related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Prerequisites: DFTG-1305, DFTG-1309, DFTG-2319, ARCT-1302, DFTG-1317, ARCE-1342, DFTG-1473, DFTG-2321, DFTG-2372 DFTG-2428, DFTG-1305, DFTG-1309, DFTG-2319, DFTG-1329, DFTG-1358, DFTG-2302, DFTG-2323, DFTG-2340, DFTG-2335

DFTG-2680 Cooperative Education (1-39-6) Drafting and design technology/technician, general career related activities encountered in the student's area of specialization offered through individualized agreement among the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Prerequisites: DFTG-1305, DFTG-1309, DFTG-2319, ARCE-1342 ARCT-1302 , DFTG-1317, DFTG-1473 DFTG-2321, DFTG-2372, DFTG-2428, DFTG-1305, DFTG-1309 , DFTG-2319, DFTG-1329, DFTG-1358, DFTG-2302, DFTG-2323, DFTG-2340, DFTG-2335

DNTA

DNTA-1205 Dental Radiology I (0-5-2) Introduction to radiation physics, protection, the operation of radiographic equipment, exposure, processing and mounting of dental radiographs. Prerequisites: DNTA-1311. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1241 Dental Lab Procedures (0-5-2) The study of dental laboratory procedures including skills associated with chairside assisting; pouring, trimming, and polishing study casts; preliminary impressions; and fabricating provisional restorations. Prerequisites: DNTA-1311. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1245 Preventive Dental (1-2-2) The study and prevention of dental diseases, community dental health research and projects, fluoridation, nutrition and nutritional counseling, visual aids, and oral hygiene instruction for dental patients. Prerequisites: DNTA-1311, DNTA-1241. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1251 Dental Office Management (1-4-2) An introduction to business office procedures, including telephone management, appointment control, receipt of payment for dental services, completion of third-party reimbursement forms, supply inventory maintenance, data entry for charges and payments, managing recall systems, and operating basic business equipment. Prerequisites: DNTA-1311, DNTA-1315, DNTA-1453. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1301 Dental Materials (2-4-3) The theory of the structure, properties, and procedures related to dental materials. Safety and universal precautions will be employed. Prerequisites: DNTA-1311, DNTA-1241. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1311 Dental Science (2-4-3) Anatomical systems with emphasis placed on head and neck anatomy. Topics include the physiology and morphology of the deciduous and the permanent teeth along with basic dental terminology. Policies of the Dental Assistant program along with the philosophy of the dental professions are covered. An introduction to anatomical systems with emphasis placed on head and neck anatomy. Topics include the physiology and morphology of the deciduous and the permanent teeth along with basic dental terminology. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1315 Chairside Assisting (2-4-3) An introduction to chairside assisting procedures, instrumentation, infection control, equipment safety and maintenance. Prerequisites: DNTA-1311. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1347 Advanced Dental Science (2-3-3) A Study of Anatomical Systems With Emphasis on Pharmacology, Oral Pathology and Developmental Abnormalities. Office emergencies are covered. Prerequisites: DNTA-1311. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1349 Dental Radiology in the Clinic (2-4-3) The practical application of exposing, processing and mounting of dental radiographs obtained by utilizing various radiographic techniques. This course will encompass critical evaluation of all procedures. Preparing solutions, cleaning and maintaining darkroom equipment is covered. Prerequisites: DNTA-1205 DNTA-1311(1620) DNTA-1315(1632); Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1453 Dental Assistant Applications (2-6-4) The Procedures and Applications for the Specialties of Dentistry. Prerequisites: DNTA-1311, DNTA-1315. Corequisites: DMTH-0050, WRIT-0200, READ-0200

DNTA-1466 Practicum-Dental Assistant (0-40-4) Practical general training and experiences in the workplace. the college with the employer develops and documents an individualized plan for the student. the plan relates the workplace training and experiences to the student's general and technical course of study. This course may be repeated if topics and learning outcomes vary. This capstone course requires 320 hours of training. Prerequisites: All Dental Assistant courses and interdisciplinary requirements. Pregnant students may not enroll in this course.

EECT

EECT-1200 Technical Customer Service (2-0-2) General principles of customer service within a technical environment. Topics include internal/external customer relationships, time-management, best practices, and verbal and non-verbal communications skills.

EECT-1204 Electronic Soldering (1-4-2) The theory of tools and equipment for electronic soldering techniques.

EECT-1280 Cooperative Education I (1-9-2) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

EECT-1291 Introduction to Electronics (0-6-2) An introductory course designed to introduce the technical skills used in electronic technology and the different electronic careers. Technical skills include using soldering, simple prototype construction, electronic design software and technical documentation.

EECT-1300 Technical Customer Service (2-2-3) General principles of customer service within a technical environment. Topics include internal/external customer relationships, time-management, best practices, and verbal and non-verbal communication skills.

EECT-1302 Intro to Videoconferencing (2-4-3) An introduction to the videoconferencing protocol. Topics include imaging, display and control equipment.

EECT-1303 Intro to Telecommunications (2-4-3) An overview of the telecommunications industry. topics include the history of the telecommunications industry, terminology, rules and regulations, and industry standards and protocols.

EECT-1306 Intro to Teleconferencing (2-4-3) A study of definitions of teleconferencing technology and some of its uses. Topics include methods of teleconferencing, advantages and disadvantages, and identification of hardware, software, and protocols.

EECT-1340 Telecommunications Transmission Media (2-4-3) Fundamentals of telecommunications media, including installation, maintenance, and troubleshooting. Topics address media characteristics and connectorization.

EECT-1342 Telecommunications Outside Plant (2-4-3) A study of outside plant facilities with emphasis on cabling layout design, splicing, bonding, grounding and facility protection systems. Safety practices and procedures are included. Prerequisites: EECT-1340, IEIR-1304, EECT-1340, CETT-1305, EECT-1340, CETT-1409

EECT-1344 Telecommunications Broadband Systems (2-4-3) A survey of telecommunications broadband transmissions systems including protocols, testing, applications and safety practices. Prerequisites: CPMT-1303

EECT-1371 Power Source Design (1-8-3) An intermediate, in-depth course covering operation and design techniques of electronic power sources with emphasis on component ratings, calculations and operational parameters of rectifiers, filters and regulators both discrete and integrated variety. Prerequisites: CSIR-2301. Corequisites: CSIR-2301

EECT-1372 Advanced AC/DC (1-8-3) An advanced course in dc and ac circuit analysis emphasizing mesh and nodal analysis; determinant solution of multi-loop networks; substitution, reciprocity, and Millman's theorems; and two port networks. Prerequisites: IEIR-1304, CETT-1305, CETT-1409

EECT-1380 Cooperative Education 2 (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

EECT-1480 Cooperative Education 4 (1-29-4) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

EECT-1481 Cooperative Education 5 (1-29-4)) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

EECT-1581 Cooperative Education 7 (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary

EECT-1680 Cooperative Education 8 (1-39-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

EECT-2271 Automatic Testing (0-8-2) An advanced course in the study of automatic testing and acquisition of data, as well as an introduction to virtual instruments, including applications, benefits, and limitations. Prerequisites: IEIR-1304, CETT-1305, CETT-1409 or CSIR-2301

EECT-2280 Cooperative Education 9 (1-9-2) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary

EECT-2303 Teleconferencing Systems Design (2-4-3) An intermediate study of teleconferencing formats and criteria for optimum application for applicable presentation materials; performance assessment of site surveys; physical layout design; determination of teleconferencing needs and platform requirements, costs, and hardware options.

EECT-2330 Telecommunications Switching (1-6-3) The operation of telecommunications switching equipment and related software. Topics include installation, testing, maintenance, and troubleshooting. Prerequisites: EECT-1342

EECT-2337 Wireless Telephony Systems (2-4-3) principles of wireless/cellular telephony systems to include call processing, hand-off, site analysis, antenna radiation patterns, commonly used test/maintenance equipment and access protocol. Prerequisites: IEIR-1304, CETT-1305, CETT-1409 or CSIR-1341

EECT-2375 AC/DC Motor Circuit Design (1-8-3) A comprehensive treatment on the theory and fundamentals of magnetic circuits, transformers, ac/dc electrical motors, electronic timer circuits. Thristor power controls, voltage to frequency converters, proportional integral control circuits, automatic control circuits and safety techniques for motor control circuits are emphasized. Prerequisites: IEIR-1304, CETT-1305, CETT-1409 or CSIR-2301

EECT-2380 Cooperative Education 10 (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

EECT-2580 Cooperative Education 11 (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

EECT-2680 Cooperative Education 12 (1-39-6) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance skills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

EEIR

EEIR-1307 Introductory Security Systems (2-4-3) A study of the security system components, maintenance, troubleshooting, and repair procedures. Emphasis on the installation of security systems as directed.

EEIR-1309 National Electrical Code (1-7-3) Interpretation of the National Electrical Code for residential, commercial and industrial wiring. Emphasis on designing, constructing, and troubleshooting electrical systems. Prerequisites: IEIR-1302 or CETT-1303

EGRT

EGRT-1305 Engineering Materials (2-3-3) Instruction in the making and forming of steel and the classification of steel, cast iron, and aluminum. Topics include mechanical and physical properties, non-destructive testing principles of alloying, selection of metals, iron carbon diagrams, principles of hardening and tempering steel, and the metallurgical aspects of machining.

ELPT

ELPT-1215 Electrical Calculations I (1-3-2) introduction to mathematical applications utilized to solve problems in the electrical field. Topics include fractions, decimals, percentages, simple equations, ratio and proportion unit conversions, and applied geometry. Prerequisites: DMTH-0050, DMTH-0100, DMTH-0200

ELPT-1221 Introduction to Electrical Safety and Tools (1-4-2) A comprehensive overview of safety rules and regulations and the selection, inspection, use, and maintenance of common tools for electricians.

ELPT-1225 National Electrical Code I (0-4-2) An introductory study of the national electric code (NEC) for those employed in fields requiring knowledge of the code. Emphasis on wiring design, protection, methods, and materials; equipment for general use; and basic calculations. Corequisites: ELPT-1311

ELPT-1280 Cooperative Education - Electrical and Power Transmission Installation/ Installer, General (1-9-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

ELPT-1311 Basic Electrical Theory (1-8-3) An Overview of the Theory and Practice of Electrical Circuits Including Calculations As Applied to Alternating and Direct Current. Prerequisites: ELPT-1215, DMTH-0050, DMTH-0100, DMTH-0200

ELPT-1319 Fundamentals of Electricity I (1-8-3) An introduction to basic direct current (DC) theory including electron theory and direct current applications.

ELPT-1329 Residential Wiring (1-6-3) Wiring methods for single family and multi-family dwellings. Includes load calculations, service entrance sizing, proper grounding techniques, and associated safety procedures.

ELPT-1340 Master Electrician Exam Review (2-4-3) An introductory study of electrical theory, code calculations and interpretations applicable to become a master electrician. Emphasis on residential, commercial, and industrial installations using the current edition of the National Electrical Code (NEC) and local ordinances. Prerequisites: ELPT-1225 or ELPT-1331

ELPT-1341 Motor Control (1-6-3) A study of the operating principles of solid-state controls along with their practical applications. Topics Include braking, jogging, plugging, and safety interlocks. Prerequisites: ELPT-1311, CETT-1303, CETT-1409, ELPT-1311, IEIR-1302 or IEIR-1371

ELPT-1345 Commercial Wiring (1-6-3) Instruction in commercial wiring methods. Prerequisites: ELPT-1221, ELPT-1311, INMT-1305 or IEIR-1371, ELPT-1329

ELPT-1351 Electrical Machines (2-4-3) General principles and fundamentals of direct current (DC) motors, single-phase and polyphase alternating current (AC) motors, generators, and alternators. Emphasis on their construction, characteristics, efficiencies, starting, and speed control. Prerequisites: CETT-1305, ELPT-1341 or IEIR-1304, CETT-1409, ELPT-1341

ELPT-1380 Cooperative Education- Electrical & Power Installation/Installer (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

ELPT-1580 Cooperative Education - Electrical and (1-39-5) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

ELPT-1680 Cooperative Education - Electrical and Power Transmission Installation/ Installer, General (1-39-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

ELPT-2215 Electrical Calculations II (1-3-2) Further study of mathematical applications utilized to solve problems in the electrical field. Topics include fractions, decimals, ratio and proportion, applied geometry, and utilization of right triangles to calculate electrical values. Corequisites: CETT-1409, IEIR-1302

ELPT-2231 AC/DC Drives (0-6-2) A course in the installation and maintenance of alternating current (AC) and direct current (DC) variable speed drives with emphasis on application, operating characteristics, and troubleshooting techniques. Prerequisites: ELPT-1351, ELPT-1341

ELPT-2305 Motors and Transformers (2-4-3) A study of the principles of operation of single- and three-phase motors and transformers. Topics include transformer banking, power factor correction, and protective devices. Prerequisites: ELPT-1311, or IEIR-1371

ELPT-2319 Programmable Logic Controllers I (1-7-3) Fundamental concepts of programmable logic controllers, principles of operation, numbering systems, logic gates, and Boolean expressions as applied to electrical controls. Prerequisites: ELPT-1341

ELPT-2323 Transformers (2-3-3) A Study of transformer types, construction, connections, protection, and grounding. Prerequisites: ELPT-2335

ELPT-2337 Electrical Planning & Estimating (2-4-3) Instruction in preparation of estimates for residential, commercial, and industrial wiring systems. Skill development in a variety of electrical techniques. Prerequisites: ELPT-1225, ELPT-1329

ELPT-2343 Electrical Systems Design (1-5-3) Skill development in the electrical design of a commercial or industrial project including building layout, types of equipment, placement, sizing of electrical equipment, and all electrical calculations according to the requirements of the National Electrical Code (NEC). Prerequisites: ELPT-1331 ELPT-1351, ELPT-2335, DFTG-1309, or DFTG-1313

ELPT-2347 Electrical Testing & Maintenance (1-4-3) Skill development in the proper and safe use of electrical power equipment test devices and the interpretation of test results. Topics include protective relay testing and calibration, direct current (DC) testing, insulation power factor testing, and medium voltage switchgear. Prerequisites: ELPT-2335

ELPT-2355 Programmable Logic Controllers II (2-3-3) Advanced concepts in programmable logic controllers and their applications and interfacing to industrial controls. Prerequisites: ELPT-2319

ELPT-2375 Electrical Theory and Devices (1-8-3) Electrical and electronic measuring devices and their applications to the use of electrical power. Includes calculating and balancing single-phrase and three-phrase systems.

ENTC

ENTC-1291 Introduction to Engineering and Technical Careers (1-4-2) Topics include the introduction and overview to a variety of engineering and technical career paths available to students. Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student.

ENTC-1349 Reliability and Maintainability (2-4-3) A study of equipment reliability & maintainability. Prerequisites: INMT-2303

ENTC-1371 Engineering Computer Graphics I (2-4-3) This course teaches fundamental concepts associated with engineering computer graphics (CAD). Emphasis will be placed on both dimensional analysis and design for manufacturability of 3D solid models. Solid edge software will be utilized.

ENTC-1380 Cooperative Education-Industrial/Manufacturing Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ENTC-1381 Cooperative Education-Industrial/Manufacturing Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ENTC-1391 Special Topics in Engineering Technology (2-4-3) Topics address the full spectrum of a mechanical engineering technician's role within industry. Problem solving strategies within a team concept will be emphasized. Different industry related projects will be assigned for student analysis, design and prototype manufacture.

ENTC-1410 Fluid Mechanics With Applications (3-2-4) This course covers the principles of fluid mechanics and the application of these principles to practical, applied problems. Emphasis of course will be on fluid properties, measurement of pressure, viscosity and density, and flow. Fluid power components and applications will also be introduced. Prerequisites: MATH-1316, or equivalent as determined by Placement Test.

ENTC-1423 Strength of Materials (3-2-4) Study of the Relationship Between Externally Applied Forces and Internally Induced Stresses and the Resulting Deformations in Structural Members. Prerequisites: ENTC-1443, MATH-1316 or equivalent as determined by Placement Test.

ENTC-1443 Statics (3-2-4) A study of the composition and resolution of forces and the equilibrium of forces acting on structures. Including the concepts of friction, moments, couples, centroids, and moment of inertia. Prerequisites: MATH-1316, or equivalent as determined by Placement Test.

ENTC-1580 Cooperative Education -Industrial/Manufacturing Technology (1-39-5) Career Related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ENTC-2310 Machine Design (2-3-3) This course looks at the design considerations for the many machine elements used in mechanisms and machines. Students will learn the applications and selection processes for various mechanical elements/components within basic power transmission units. Prerequisites: ENTC-1371, MATH-1314, MATH-1316

EPCT

EPCT-1213 Contingency Planning (1-3-2) An introduction to the development of an emergency response contingency plan for a facility or community. Emphasis on analyzing the hazards, writing and implementing the contingency plans, and evaluating the effectiveness of the contingency plan.

EPCT-1217 Environmental Geology (1-4-2) A study of the relationships between earth science and the environment. Emphasizes crustal geological influences on air, water, and soil focusing on the effects on human habitation.

EPCT-1243 Treat, Remediation, and Disposal Techniques (1-4-2) A study of the skills required in treatment, remediation, and disposal processes of solid waste, hazardous materials, and hazardous waste. Emphasizes the technologies applicable in the field.

EPCT-1248 Operation and Maintenance of Water and Wastewater Systems (1-3-2) Operation and maintenance of water and wastewater systems. Emphasis on the operation of chlorinators, pumps and motors, and other utility-related equipment needed for installation and maintenance. Includes hands-on laboratory sessions for the student in equipment installation and testing.

EPCT-1249 Environmental Regulations Interpretation and Applications (1-4-2) An in-depth study of the major federal and state environmental regulations.

EPCT-1291 Special Topics in Environmental and Pollution Control Technology/Technician (1-4-2) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student.

EPCT-1301 HAZWOPER Training and Related Topics (2-4-3) Minimum Certification Requirements of a Hazardous Waste Site Worker As Found in 29CFR-1910.120 and 40CFR.264 and 265.16.

EPCT-1305 Environmental Regulations Overview (2-3-3) An introduction to the history of the environmental movement, including basic requirements for compliance with the environmental regulations. Prerequisites: READ-0100 or READ-0200

EPCT-1307 Intro to Environmental Health and Safety (2-3-3) An historic overview of environmental safety and health. Emphasis is on the use of Occupational Safety and Health codes. Prerequisites: READ-0100 or READ-0200

EPCT-1341 Principals of Industrial Hygiene (2-3-3) Basic concepts in threshold limits, dose response, and general recognition of occupational hazards, including sampling statistics, calibration, and equipment use. A study of the control of occupational hazards and sample collection and evaluation methods.

EPCT-1344 Environmental Sampling/Field Analysis (2-3-3) Sampling protocol, procedures, quality control, preservation technology, and field analysis. Emphasis on analysis commonly performed by the field technician. Prerequisites: BIOL-1408 or BIOL-1406,

EPCT-1347 Waste Minimization and Pollution Prevention (2-3-3) Exploration of the options available for source reduction, waste minimization, and pollution prevention including regulatory standards applicable to these activities. Prerequisites: BIOL-1408, CHEM-1406

EPCT-1349 Environmental Regulation Interpretation & Applications (2-3-3) An in-depth study of the major federal and state environmental regulations.

EPCT-1380 Cooperative Education Environmental and Polcon Tech (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

EPCT-1442 Introduction to Organic and Biochemical (3-3-4) A Study of organic and biochemical molecules and reactions including nomenclature, industrial uses, physical and chemical properties, and environmental significance. Prerequisites: CHEM-1406

EPCT-2212 Water Rules and Regulations (2-1-2) Discussion of local, state, and national rules and regulations relevant to water.

EPCT-2314 Wastewater Chemistry (2-4-3) Basic techniques for sampling and chemical and microbiological analysis of wastewater.

EPCT-2331 Industrial Hygiene Applications (2-4-3) A study of the industrial environment and its relation to worker's health. This course provides training in anticipation recognition, evaluation, and controlling health hazards- particularly chemical, physical, biological, and ergonomic factors existing in the workplace and having injurious effects on workers.

The course also introduces training in instrumentation used in monitoring and measuring health hazards in the workplace and covers current issues in industrial hygiene. Prerequisites: EPCT-1341,

EPCT-2333 Environmental Toxicology (2-3-3) A review of the research determining the systematic health effects of exposures to chemicals. Discussion of risk factors, routes of entry, control measures, and acute and chronic effects.

EPCT-2335 Adv. Environ. Analysis (2-3-3) Regulations and standards in the analysis of samples using specific analytical instruments and their procedures. Emphasis on instrument calibrator sample preparation, evaluation, and reporting of analytical results. Prerequisites: CTEC-1441, CTEC-1349, SCIT-1543

EPCT-2341 Wastewater Treatment (2-3-3) Advanced study of the theory of operations and maintenance of wastewater treatment.

EPCT-2342 Advanced Wastewater and Wastewater Chemical (2-4-3) Advanced chemical and microbiological analysis for nonstandard water and wastewater samples.

EPCT-2359 Risk Analysis and Site Survey (2-4-3) Required techniques to perform risk analysis and site survey activities. Includes research of required documentation for site document presentation. Also covers Phase I and II site survey guidelines as defined by ASTM-E1527/E1528 and the Environmental Protection Agency (EPA). Comprehensive Environmental Response Compensation and Liability Act (CERCLA/Superfund) guidelines will be used. Prerequisites: EPCT-1243, EPCT-1344,

EPCT-2389 Internship-Environmental Engineering Technology/Environmental Technology (0-10-3) A work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. A learning plan is developed by the college and the employer.

ETWR

ETWR-1391 Special Topics in English Technical and Business Writing (2-4-3) This course is subtitled, Technical Writing Products. Students will work in a collaborative setting to produce products such as manuals, proposals, requests for quotes, brochures, print publications, and online publications. Students will learn about the content and layout of typical products as well as their production cycles and project management.

ETWR-2464 Practicum-Technical and Business Writing (0-28-4) Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

FCEL

FCEL-1304 Mechanical Aspects of Fuel Cell Systems (2-4-3) Hydraulics, pneumatics, pumps, compressors, and rigging and their applications as contained within any fuel cell system. Prerequisites: DMTH-0050, DMTH-0100, or DMTH-0200

FCEL-1305 Introduction to Fuel Cell and Alternative/Renewable Energy (2-4-3) Types and applications of alternative/renewable energy sources. Includes photovoltaic, wind generation, solar, geothermal, and fuel cell types. Emphasizes fuel cell applications and processes, reformation of fossil fuels, heat transfer, chemical reaction, power conditioning, combined heat and power, and distributed generation systems. Prerequisites: FCEL-1304 or INMT-2303,

FCEL-2301 Fuel Cell Principles, Components, And Controls (2-4-3) Fuel cell system components and principles for reformation of hydrogen-rich fuels. Emphasizes cooling systems, control circuits, fuel circuits, DC power circuits, AC power circuits, and balance of plant and water treatment concepts. Includes electrical distribution interface with the powerplant, personal protection equipment, and use and maintenance of site log, technical manuals, material safety data sheets (MSDS), and disposal log. Prerequisites: FCEL-1305,

FCEL-2330 Fuel Cell Installation, Commissioning, Troubleshooting, and Repair (1-6-3) Fuel cell system pre-start check, functional test, customer acceptance test, commissioning and start-up procedures; and proper shut-down procedures. Prerequisites: FCEL-2301

FDNS

FDNS-1301 Introduction to Foods (2-2-3) A study of the composition of food and the chemical and biological changes that occur in storage and processing. Includes preparation techniques and selection principles.

GAME

GAME-1301 Computer Ethics (3-0-3) Computer ethics and related ethical issues that apply to computers in the workplace, intellectual property, privacy and anonymity, professional responsibility, and the effects of globalization. Emphasizes the practical application of computer ethics through case studies and current events in the game and simulation industry.

GAME-1302 Storyboarding (2-4-3) In-depth coverage of storyboarding for the development of interactive media. Addresses target audience analysis, purpose, goals and objectives, content outline, flow chart, and interactive storyboarding.

GAME-1303 Intro to Game Design and Development (2-4-3) Introduction to electronic game development and game development careers. Includes examination of history and philosophy of games, the game production process, employee factors for success in the field, and current issues and practices in the game development industry. Prerequisites: READ-0200

GAME-1304 Level Design (2-4-3) Introduction to the tools and concepts used to create levels for games and simulations. Incorporates level design, architecture theory, concepts of critical path and flow, balancing, play testing, and storytelling. Includes utilization of toolsets from industry titles. Prerequisites: ARTV-1303

GAME-1306 Design and Creation of Games (2-4-3) Introduction to game and simulation development. Includes analysis of existing applications and creation of a game using an existing game engine. In-depth coverage of the essential elements of game design. Also covers an overview of cultural history of electronic games, survey of the major innovators, and examination of the trends and taboos that motivate game design. Prerequisites: GAME-1309,

GAME-1309 Intro to Animation Programming (2-4-3) Mathematical elements and algorithms involved in basic animation. Includes generating graphics, viewing 3D environments such as visible line detection and 3D surfaces, image processing techniques, and special effects Prerequisites: READ-0200

GAME-1314 Character Sculpting (2-4-3) Creation of original characters from the drawing stage to sculpting clay status. Explores a variety of poses using clay and aluminum armatures. Prerequisites: GAME-2332

GAME-1334 Video Game Art I (2-4-3) Explores the role of the artist in the gaming industry. Introduces tools and techniques used in the creation of assets for a game engine. Covers art pipeline, team integration and communication. Prerequisites: GAME-1309,

GAME-1335 Interactive Writing (2-4-3) Instruction in writing plot, story, setting, and description for every game element and verbal communication based on game concept. Includes the study of traditional narrative practices and interactive fiction requiring creative writing. Prerequisites: GAME-1302

GAME-1336 Intro to 3D Game Modeling (2-4-3) Architectural spaces and modeling in a real-time game editor. Includes techniques for building, texturing, and lighting a game level to function in realtime.

GAME-1343 Graphics & Simulation Programming I (2-4-3) Game and simulation programming using the C++ language. Topics will include advanced pointer manipulation techniques and pointer applications, points and vectors, sound and graphics. Prerequisites: GAME-2342 ITSE-2331,

GAME-1349 Open GL Programming I (2-4-3) Computer graphics with focus on the basic principles and techniques of graphics applications. Emphasizes 3D computer graphics and translating a task from design to suitable algorithms and program code. Combines principles and major techniques in computer graphics with third-party game and simulation technologies. Prerequisites: ITSE-1307,

GAME-1353 Multi-User Game Programming I (2-4-3) Network topologies, architecture and protocols, and communication in game and simulation programming. Introduces sockets programming utilizing TCP and UDP protocols in a high-level language. Focuses on blocking and asynchronous modes. Prerequisites: GAME-1343,

GAME-1359 Graphics and Simulation Programming II (2-4-3) Design and development of 2D game and simulation programs including user interface design, mathematical elements, image and file structure, and software development techniques. Introduces the basics of 3D graphics related to game and simulation programming. Prerequisites: GAME-1343

GAME-2302 Math Applications for Game Development (2-4-3) Presents applications of mathematics and science in game and simulation programming. Includes the utilization of matrix and vector operations, kinematics, and Newtonian principles in games and simulations. Also covers code optimization. Prerequisites: MATH-1314, GAME-2342 or ITSE-2331

GAME-2303 Artificial Intelligence Programming I (2-4-3) Basic techniques in artificial intelligence related to game and simulation programming. Includes knowledge representation and interference techniques, expert systems, pathfinding algorithms, and search techniques for problem solving. Prerequisites: GAME-1343

GAME-2308 Portfolio for Game Development (2-4-3) Design and management of an industry standard portfolio. Includes techniques in self-promotion, resume writing, portfolio distribution systems, and interviewing. Prerequisites: GAME-2359

GAME-2309 Video Game Art II (1-4-3) A study of industry-used, game-art techniques and its applications of game art assets. Utilizes tools and advanced techniques in the creation of assets for a game engine. Prerequisites: GAME-1334

GAME-2332 Project Development I (2-4-3) Skill development in an original modification based on a current game engine. Includes management of version control; development of project timeliness; integration of sound, models, and animation; production of demos; and creation of original levels, characters, and content for a real-time multiplayer game. Applies skills learned in previous classes in a simulated real-world design team experience. Prerequisites: ITSE-2343 or ARTV-1303

GAME-2333 Graphics and Simulation Programming III (2-4-3) Advanced applications of game and simulaton programming techniques. Includes advanced rendering techniques and BSP trees. Incorporates shadowing, lighting, collision detection, and 3D animation and motion. Prerequisites: GAME-1359,

GAME-2334 Project Development II (2-4-3) Continuation of an original modification based on a current game engine with an emphasis on new content and radical changes in game play over the base game experience. Includes creation of original levels, characters, and content for a real-time multiplayer game applying skills learned in pervious classes. Prerequisites: GAME-2332

GAME-2336 Lighting, Shading, and Texture (2-4-3) Lighting, shading, and texture painting for 3D models using digital painting techniques. Emphasizes lighting, shading, and texture creation of limited resolution to increase system performance for digital games and simulation training models. Prerequisites: GAME-1314

GAME-2341 Actionscript and Python (2-4-3) Design, navigation, and graphics with an emphasis on game concepts and simulations using ActionScript and Python scripting languages. Prerequisites: GAME-1306

GAME-2342 Game Development Using C++ (2-4-3) Skill development in C++ programming for games and simulations. Examines real-world C++ development issues. Prerequisites: ITSE-1307,

GAME-2343 Multi-User Game Programming II (2-4-3) Creation of network game and simulation programs using DirectX and/or sockets. Emphasizes on online game and simulation programming technologies, multithreading, player management, peer-to-peer and client/server development. Prerequisites: GAME-1353

GAME-2349 Artificial Intelligence Programming II (2-4-3) (2-4-3) Advanced topics in artificial intelligence programming as applied to game and simulation programming. Includes application of the principles of inductive learning, concept formation, decision tree learning, and neural networks. Prerequisites: GAME-2303

GAME-2353 Open GL Programming II (2-4-3) Vector tools for graphics, transformation of objects, modeling shapes with polygon meshes, 3D viewing, rendering faces for realism, and color theory for game and simulation programming.

GAME-2359 Game and Simulation Group Project (2-4-3) Creation of a game and/or simulation project utilizing a team approach. Includes the integration of design, art, audio, programming, and quality assurance. Prerequisites: GAME-2333, GAME-2343.

GAME-2386 Internship - Animation, Intergration (0-16-3) A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

GISC

GISC-1301 Cartography & Geography in GIS & Global Positioning Systems (2-4-3) Introduction to the principles of cartography and geography. Emphasis on global reference systems and the use of satellites for measurements and navigation.

GISC-1311 Introduction to Geographic Information Systems (GIS) (2-4-3) Introduction to Basic Concepts of Vector GIS using several industry specific software programs including nomenclature of Cartography & Geography.

GISC-1401 Cartography and Geography in GIS and GPS (3-2-4) Introduction to the principles of cartography and geography. Emphasis on global reference systems and the use of satellites for measurements and navigation.

GISC-1421 Introduction to Raster-Based GIS (3-4-4) Instruction in gis data sets including raster-based information such as images or photographs, acquisition of such data, and processing and merging with vector data. Prerequisites: GISC-2320,

GISC-2301 Data Acquisition and Analysis in Geographic Information Systems (GIS) (2-4-3) Study of the management of geographic information, system life cycles, and costs and benefits. Includes institutional issues such as data providers, data management, combination of attribute and graphical data, information storage and access, Texas and national standards for spatial data; and applications of GIS for data modeling and analysis. Prerequisites: GISC-2320,

GISC-2320 Intermediate GIS (2-4-3) This course focuses on the study of spatial data structures and the display, manipulation, and analysis of geographic information. Students will study the technical aspects involved in spatial data handling, analysis and modeling. Instruction will include theories and procedures associated with the implementation and management of GIS projects. A variety of GIS software packages will be used in the laboratory. Prerequisites: GISC-1311,

GISC-2335 Programming for Geographic Information Systems (GIS) (2-4-3) Focuses on the use of programming languages to customize and expand the capability of GIS applications. Instruction will include object-oriented and component programming. Students will also design their own Graphical User Interface (GUI). Prerequisites: GISC-2320, ITSE-2305

GISC-2359 Web-Served Geographic Information System (2-4-3) Delivery of geographic data via the Internet. Includes composition of the map features distributed and introduction on the use of markup languages to customize web-based Geographic Information Systems (GIS). Prerequisites: ITSE-2317, GISC-2301,

GISC-2380 Cooperative Education-Cartography (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: GISC-2320

GISC-2381 Cooperative Education - Cartography (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Prerequisites: GISC-2320

GISC-2411 GIS Applications (2-5-4) Application of GIS technology to real workplace applications from public and private sectors. Completion of Global Positioning Systems (GPS) fieldwork required for lab exercises.

GRPH

GRPH-1305 Intro Graphic Arts & Printing (2-4-3) History of printing and techniques involved in the production and distribution of printed materials. Includes methods of printing, printing terminology, and identification of career opportunities in the graphics and printing industry.

GRPH-1309 Press Operations I (2-4-3) Introduction to offset printing. Includes knowledge and skills for operating a small offset press. Emphasizes parts of the press and operation procedures, printing terminology, paper and ink type uses, make ready, and cleanup.

GRPH-1319 Bindery and Finishing Operations (2-4-3) An overview of bindery and finishing equipment and techniques. Emphasis on parts and operation. Demonstration of sorting, folding, cutting, labeling, wrapping, packaging, and binding methods.

GRPH-1359 Vector Graphics for Productions (2-4-3) A study and use of vector graphics for production. Corequisites: ARTC-1325

GRPH-1366 Practicum-Graphic & Printing (0-21-3) Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

GRPH-1380 Cooperative Education-Prepress/Desktop Publishing & Digital Imaging Design (1-18-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

GRPH-1391 Special Topics Graphics and Printing Equipment (2-4-3) A course of study under the supervision of a qualified instructor special topic will be undertaken in printing equipment such as imagesetter, plate maker, output systems, computer production, computer pre-press files, and bindery.

GRPH-1394 Special Topics in Printing Press Oprerations (2-4-3) A course of study under the supervision of a qualified instructor special topic will be undertaken in operation, maintenance, mechanical, and review of printing press.

GRPH-1429 Word Procs Dsk Toppub (2-4-4) Skills development in word processing software for desktop publishing applications and incorporation of graphics into documents and format text using style sheets. Emphasis is on editing and layout techniques.

GRPH-1432 Electronic Imaging System (2-4-4) An introduction to electronic publishing systems, including advantages, disadvantages, and characteristics of these systems. An overview of hardware and software platforms, as well as disk and file formats. Emphasis on procedures for transferring information between different hardware and software platforms. Exploration of characteristics of printers and scanners used in electronic publishing and communication with service bureaus. Prerequisites: GRPH-1305 ARTC-1302, ARTC-1313, or GRPH-1322

GRPH-2309 Digital Pre-Press (2-4-3) Theory and techniques for pre-press preparation using standard software for final file output. Topics include the procedures and problems involved in computer file preparation ranging from trapping, color separations, and resolutions to printing basics and service bureaus. Prerequisites: ARTC-1313,

GRPH-2380 Cooperative Education Desktop Publication Equipment(1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

GRPH-2381 Cooperative Desktop Publication Equipment (1-19-3 Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

GRPH-2388 Internship-Graphics and Printing Equipment Operator/General Production (0-12-3) A work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. A learning plan is developed by the college and the employer.

GRPH-2436 Prepress Techniques (3-4-4) Hands-on experience in both electronic file imaging and traditional graphics camera use. Electronic file output and troubleshooting, graphics camera knowledge, traditional film assembly, and proofing process. High-speed color scanning. Prerequisites: ARTC-1313, ARTC-1302,

GRPH-2466 Practicum-Graphic Printing Equipment Operator (0-40-4) Practical general training and experiences in the workplace. The college with the employer develops and documents an individualized plan for the student. The plan relates the workplace training and experiences to the student's general and technical course of study. the guided external experiences may be for pay or no pay. This course may be repeated if topics and learning outcomes vary.

GRPH-2480 Cooperative Education-Prepress/Desktop (1-22-4) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

GRPH-2481 Cooperative Education-Prepress/Desktop Publication (1-22-4) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

GRPH-2488 Internship-Graphic Printing (0-24-4) An experience external to the college for an advanced student in a specialized field involving a written agreement between the educational institution and a business or industry. Mentored and

supervised by a workplace employee, the student achieves objectives that are developed and documented by the college and that are directly related to specific occupational outcomes. This may be a paid or unpaid experience. This course may be repeated if topics and learning outcomes vary.

HALT

HALT-1205 Horticultural Soils (2-0-2) A study of the physical properties of soil including structure and texture. Topics include the origin and development of soils, the composition of a soil horizon, and the interrelationship between soil fertility and plants.

HALT-1301 Principles of Horticulture (2-3-3) An overview of the horticulture industry, plant science, terminology, classification, propagation, environmental responses, and careers and opportunities in the field of horticulture. Prerequisites: READ-0200, DMTH-0200

HALT-1303 Herbaceous Plants (2-4-3) An in-depth study of herbaceous plant material. topics include practices and procedures used in the identification, growth, propagation, maintenance, and utilization of herbaceous plants in the horticulture industry. Prerequisites: READ-0200, WRIT-0200, DMTH-0200

HALT-1307 Plant Diseases (2-3-3) An overview of the factors causing plant diseases topics include physiological disorders, fungi, bacteria, viruses, mollicutes, nematodes, parasitic plants, non-pathogenic factors, and control methods.

HALT-1313 Economic Entomology (2-2-3) An overview of insects and related organisms with an emphasis on destructive, predaceous, parasitic, and beneficial species. Topics include insect taxonomy, anatomy, morphology, and physiology and the application of proper biological and chemical control measures.

HALT-1319 Landscape Construction (2-4-3) Exploration of landscape construction materials and the methods used for installation. topics on soil preparation, including wood concrete, and masonry construction; and landscape lighting, including pools, spas, and general construction details.

HALT-1320 Horticultural Calculations (2-3-3) Skill development in and reinforcement of the formulas and calculations commonly used in the horticulture industry. Emphasis on business calculations and problem-solving skills.

HALT-1322 Landscape Design (2-4-3) A study of the principles and elements of landscape design. Topics include client interview, site analysis, plan view, scale, plant selection, basic drawing and drafting skills, and plan preparation.

HALT-1324 Turfgrass Science & Management (2-4-3) In-depth coverage of various species of warm and cool season grasses including their uses, application, adaptability, environmental tolerances, anatomy, and physiological responses. Prerequisites: READ-0200, WRIT-0200, DMTH-0200

HALT-1327 Horticulture Equipment Management (2-4-3) Instruction in identification and application of various types of powered equipment used in the horticulture industry. Presentation of functions, operations, troubleshooting techniques, and repair of equipment.

HALT-1331 Woody Plant Materials (2-4-3) An in-depth study of the woody plant materials used in the horticulture industry. topics include identification, characteristics, adaption, cultural requirements, pest and disease problems, and use in the landscape.

HALT-1338 Irrigation Water Management and Conservation (2-4-3) Application of the science of soil-water plant relations and climatic conditions to develop effective scheduling and management of irrigation water systems for residential, commercial, industrial, park, and golf courses. Water conservation issues, water policies and codes and other related matters will be discussed.

HALT-1345 Golf/Sports Field/Park Management (2-4-3) Instruction in the management of golf courses, sports fields, and municipal parks departments. Topics include record keeping, budgeting, labor management, maintenance programs, financial reports, personnel management, and business functions.

HALT-1346 Specialized Turfgrass Management (2-4-3) An overview of the construction and management of specialized turf features such as putting greens, tee boxes, bunkers, and sand based ball field. Topics include the equipment and cultural practices utilized for intensively managed turf areas.

HALT-1351 Landscape Business Operations (2-4-3) Instruction in the structure of the landscape including cost estimation; organization; equipment needs; interpretation of financial reports; and material, labor, and equipment management. Emphasis on the types of landscape operations, marketing, legal forms, construction law, and safety.

HALT-1353 Landscape Computer Design (2-4-3) A course in computer-aided landscape design. Emphasis on the application of design concepts and techniques using software.

HALT-1380 Cooperative Education/Horticulture Operations/Management (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

HALT-1381 Cooperative Education/Horticulture Operations/Management (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

HALT-1580 Cooperative Education/Horticulture Operations/ Management (1-39-5) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

HALT-2312 Turfgrass Maintenance (2-4-3) Instruction in common turfgrass cultural practices. topics include calculation and application of materials and the operation and maintenance of equipment.

HALT-2318 Soil Fertility & Fertilizers (2-3-3) An in-depth study of the chemistry, soil interaction, plant uptake, and utilization of essential plant nutrients. Topics include deficiency and toxicity symptoms, and the selection, application, and characteristics of fertilizer materials.

HALT-2323 Hort Pest Control (2-4-3) Examination of federal, state, and local laws and regulations governing the control of horticultural pests. Topics include procedures; methods; safety requirements; integrated pest management (IPM); and chemical, natural, and biological controls.

HALT-2431 Advanced Landscape Design (2-8-4) In-depth coverage of advanced practices in landscape planning for commercial and residential landscapes. Topics include advanced design analysis, architectural elements. space articulation, and land engineering concepts.

HAMG

HAMG-1321 Introduction to Hospitality Industry (3-0-3) Introduction to the elements of the hospitality industry.

HAMG-2305 Hospitality Management and Leadership (3-0-3) An overview of management and leadership in the hospitality industry with an emphasis on management philosophy, policy formulation, communications, motivation, and team building.

HAMG-2307 Hospitality Marketing and Sales (3-0-3) Identification of the core principles of marketing and their impact on the hospitality industry.

HART

HART-1256 EPA Recovery Certification Preparation (2-0-2) Certification training for HVAC refrigerant recovery and recycling. Instruction will provide a review of EPA guidelines for refrigerant recovery and recycling during the installation, service, and repair of all HVAC and refrigerant systems.

HART-1301 Basic Electricity for HVAC (2-4-3) Principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.

HART-1303 Air Conditioning Control Principles (2-4-3) A basic study of HVAC and refrigerant controls; troubleshooting of control components; emphasis on use of wiring diagrams to analyze high and low voltage circuits; a review of Ohm's Law as applied to air conditioning controls and circuits. Prerequisites: HART-2331,

HART-1307 Refrigeration Principles (2-4-3) An introduction to the refrigeration cycle, heat transfer theory, temperature/ pressure relationship, refrigerant handling, refrigeration components, and safety.

HART-1341 Residential Air Conditioning (2-4-3) A study of components, applications, and installation of mechanical air conditioning systems including operating conditions, troubleshooting, repair, and charging of air conditioning systems. Prerequisites: HART-1307, HART-1401

HART-1345 Gas and Electric Heating (2-4-3) Study of the procedures and principles used in servicing heating systems including gas fired furnaces and electric heating systems. Prerequisites: HART-1401

HART-1351 Energy Management (2-4-3) Study of basic heat transfer theory; sensible and latent heat loads; building envelope construction; insulation, lighting, and fenestration types; and conducting energy audit procedures. The course also develops energy audit recommendations based on local utility rates, building use, and construction. Laboratory activities include developing energy audit reports, installing energy saving devices, and measuring energy consumption.

HART-1380 Cooperative Education-Heating, Air Conditioning and Refrigeration Technology/Technician (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

HART-1401 Basic Electricity for HVAC (3-4-4) Principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.

HART-1451 Energy Management (2-6-4) Study of basic heat transfer theory; sensible and latent heat loads; building envelope construction; insulation, lighting, and fenestration types; and conducting energy audit procedures. The course also develops energy audit recommendations based on local utility rates, building use, and construction. Laboratory activities include developing energy audit reports, installing energy saving devices, and measuring energy consumption.

HART-1680 Cooperative Education-Heating, Air Conditioning and Refrigeration Technology/Technician (1-39-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

HART-2301 Air Conditioning & Refrigeration Codes (3-0-3) HVAC standards and concepts with emphasis on the understanding, and documentation of the codes and regulations required for the state mechanical contractors license and local codes. Prerequisites: HART-1307, HART-1401,=

HART-2331 Advanced Electricity (2-4-3) Advanced electrical instruction and skill building in installation and servicing of air conditioning and refrigeration equipment including detailed instruction in motors and power distribution, motors, motor controls, and application of solid state devices. Prerequisites: HART-1401

HART-2334 Advanced A/C Controls (2-4-3) Theory and application of electrical control devices, electromechanical controls, and/or pneumatic controls. Prerequisites: HART-1303

HART-2336 Air Conditioning Troubleshooting (2-4-3) An advanced course in application of troubleshooting principles and use of test instruments to diagnose air conditioning and refrigeration components and system problems including conducting performance tests. Prerequisites: HART-1341, HART-1345, HART-2331

HART-2338 Air Conditioning Installation & Startup (2-4-3) A study of air conditioning system installation, refrigerant piping, condensate disposal, and air cleaning equipment with emphasis on startup and performance testing.

HART-2341 Commercial Air Conditioning (2-4-3) A study of components, applications, and installation of air conditioning systems with capacities of 25 tons or less. Particular emphasis is placed on the field of testing & balancing.

HART-2342 Commercial Refrigeration (2-4-3) Theory and practical application in the maintenance of commercial refrigeration; medium and low temperature applications and ice machines. Prerequisites: HART-1307, HART-1401

HART-2343 Industrial Air Conditioning (2-4-3) A study of components, accessories, applications, and installation of air conditioning systems above 25 tons capacity. Prerequisites: HART-1307

HART-2349 Heat Pumps (2-3-3) A study of heat pumps, heat pump control circuits, defrost controls, auxiliary heat, air flow, and other topics related to heat pump systems. Prerequisites: HART-1341

HART-2402 Commercial A/C System Design (2-8-4) Advanced study in essential elements of commercial air conditioning contracting including duct systems design and/or material takeoff; weight estimating; equipment selection using manufacturers catalog data; job cost estimating, scheduling, preparation of shop drawings and submittals. Prerequisites: HART-2343

HART-2445 AC Systems Design (2-8-4) A study of the properties of air and results of cooling, heating, humidifying or dehumidifying; heat gain and loss calculations including equipment selection and balancing the air system. Prerequisites: HART-1341

HEMR

HEMR-1401 Track and Undercarriages (2-5-4) Concepts in operation and maintenance of final drive systems and undercarriages used on track and wheel type equipment. Prerequisites: DEMR-1410, DEMR-1301, DEMR-1317, DEMR-1323, DEMR-1405, DEMR-1416, DEMR-1421, DEMR-1411, or DEMR-2412

HEMR-1401 Tracks and Undercarriages-Caterpillar (2-5-4) Concepts in operation and maintenance of final drive track systems and undercarriages used on track and wheel type equipment.

HEMR-1501 Track and Undercarriages (3-6-5) Concepts in operation and maintenance of final drive track systems and undercarriages used on track and wheel type equipment. Prerequisites: DEMR-1301(1248) DEMR-1317, DEMR-1410, DEMR-1416, DEMR-1421, DEMR-1323, DEMR-1411, or DEMR-2412, DEMR-1405

HYDR

HYDR-1201 Rigging and Conveying Systems (1-4-2) Preparation to safety direction and move heavy objects selecting the appropriate media, such as fiber rope, and wire rope, or chain, in conjunction with the correct hardware and lifting devices, such as hoists and cranks. Emphasis on inspection, care and maintenance of rigging equipment used in maintenance or production systems.

HYDR-1305 Basic Hydraulics (2-4-3) Fundamentals of hydraulics including types of hydraulic pumps, cylinders, valves, motors, and related systems. Introduction to hydraulic schematic symbols as related to components. Prerequisites: DMTH-0050, DMTH-0100, or DMTH-0200

HYDR-1345 Hydraulics and Pneumatics (2-4-3) A study of the fundamentals of hydraulic pumps, cylinders, valves, motors, and related systems including operations, maintenance, and system analysis for troubleshooting diesel powered and industrial hydraulics.

IEIR

IEIR-1302 Introduction to Direct Current Circuits (1-8-3) Fundamentals of direct current including ohm=s law. Emphasis on methods of analyzing series, parallel, and combination circuits including measurement devices. Prerequisites: DMTH-0050

IEIR-1304 Alternating Current Circuits for Industrial Applications (1-8-3) Fundamentals of alternating current including series and parallel circuits, phasors, and capacitive and inductive networks. Discussion of circuit analysis and measurement. Prerequisites: IEIR-1302, or CETT-1303,

IEIR-1371 Electrical Principles & Applications (1-7-3) Major topics include safety; the engineering subset of metric prefixes; engineering notation; electronic abbreviations; schematic symbols; resistor color codes; wire size and composition; Ohm's Law, Watt's Law, and Kirchhoff's Laws; analysis of simple direct current and alternating current circuitry; and basic electrical devices including direct current motors, transformers, and passive filters. Laboratory sessions will stress use of test equipment including the digital multimeter and oscilloscope, construction of simple circuits, and troubleshooting techniques to determine faults in simple circuits. Prerequisites: DMTH-0050 or ELPT-1215

IFWA

IFWA-1205 Food Service Equipment and Planning (1-3-2) A study of various types of food service equipment and the planning of equipment layout for product flow and efficient operation.

IFWA-1217 Food Prod & Planning (2-0-2) Skill development in basic mathematical operations and study of their applications in the food service industry. Topics include percentages, weights and measures, ratio and proportion, weights and measures conversions, determination of portion costs for menu items and complete menus, portion control, and the increase and decrease of standard recipes. Prerequisites: DMTH-0100

IFWA-1318 Nutrition for the Food Service Professional (3-0-3) An introduction to nutrition including nutrients, digestion and metabolism, menu planning, recipe modification, dietary guidelines and restrictions, diet and disease, and healthy cooking techniques.

IMED

IMED-1305 Multimedia Courseware Development I (2-4-3) Instruction in courseware development. Topics include interactivity, branching, navigation, evaluation techniques and interface/information design using industry standard authoring software.

IMED-1316 Web Page Design I (2-4-3) Instruction in internet Web page design and related graphic design issues including mark-up languages, Web sites, internet access software, and interactive topics.

IMED-1341 2-D Interface Design (2-4-3) Skill development in the interface design process including selecting interfaces that are meaningful to users and relative to a projects content and delivery system. Emphasis on aesthetic issues such as iconography, screen composition, colors, and typography. Prerequisites: ARTC-2305, IMED-2315, ARTV-2301, ARTV-1301 or ITSC-1313

IMED-1380 Cooperative Education/Instruction Media (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

IMED-1381 Cooperative Education/Instructional Media (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

IMED-1491 Special Topics-Education/Instructional Media (1-4-4) A course of study under the supervision of a qualified instructor special topics may be undertaken in photography, video production audio production, multimedia, desktop publishing, or web design; however, objectives will be arranged which will be commensurate with credits to be earned and required contact Hours.

IMED-1580 Cooperative Education/Instructional Media (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

IMED-2301 Instructional Design (2-4-3) An in-depth study of the instructional design process based on learning theories including evaluation of models and design examples. Prerequisites: ENGL-1301

IMED-2305 Multimedia Courseware Development II (2-4-3) In-depth coverage of programming/scripting using an authoring system with emphasis on advanced development of courseware products. Prerequisites: ARTV-1351 or IMED-1351

IMED-2309 Internet Commerce (2-4-3) An overview of the internet as a marketing and sales tool with emphasis on developing a prototype for electronic commerce. Topics include database technology, creating Web sites in order to collect information, performing on-line transactions, and generating dynamic content. Prerequisites: IMED-2315

IMED-2311 Portfolio Development (2-4-3) Emphasis on preparation and enhancement of portfolio to meet professional standards, professional organizations, presentation skills, and job-seeking techniques. Prerequisites: ARTC-2305, IMED-2351, ITSE-2321 or RTVB-1329

IMED-2313 Project Analysis and Design (2-4-3) Introduction to the planning process for multi- media or web including costing, preparation, production legal issues, and guidelines for pre- production preparation and creation of a comprehensive design document including target audience analysis, purpose and goals, objectives, content outline, flow chart, and storyboard. Emphasis on copyright and other issues, content design and production management. Prerequisites: RTVB-1329

IMED-2315 Web Page Design II (2-4-3) A study of hypertext mark-up language (html) and interesting layout techniques for creating and engaging well designed web pages. Emphasis on identifying the target audience, and producing a web site according to physical and technical limitations, cultyu[d[dural appearance, and legal issues. Prerequisites: ITSE-1311, ITSE-1346

IMED-2345 Interactive Multimedia II (2-4-3) Instruction in the use of scripting language to create interactive multimedia projects. Topics include building a user interface, writing script, testing, and debugging. Prerequisites: IMED-2351

IMED-2349 Internet Communications (2-4-3) Advanced seminar in Web server design and maintenance. Topics include scripting, web site planning, testing, security, production, and marketing. Topics Include Development in the Field of Internet Communications.

IMED-2351 Multimedia Programming (2-4-3) Advanced Topics in Multimedia Programming Including Custom Scripts for Data Tracking. Emphasis on Developing Multimedia Programs Customized to the Client's Needs. Prerequisites: ARTV-1301 or ARTV-2301

IMED-2359 Interactive Web Elements (2-4-3) Production of projects using current web development tools that may incorporate dynamic data, web graphics, animation, video and audio streaming.

IMED-2370 Intermediate Web Technology (2-4-3) Students will attain the ability to create Web page connectivity to data sources using ColdFusion or comparable industry software. Students will learn use of ColdFusion for creating and implementing CFML language. Students will attain a working understanding of basic SQL language and ODBC connectivity.

IMED-2373 Web Page Design III (2-2-3) Advanced Web Authoring Programming Including Javascript, DHTM, SHTML, and Virtual HTML. Prerequisites: IMED-2315, ITSE-1346

IMED-2380 Cooperative Education Instructional Media Tech (1-19-3) Career related activities encountered in the student's area of specialization offered through an individualized agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience.

IMED-2388 Internship-Education/ Instructional Media (0-9-3) An experience external to the college for an advanced student in a specialized field involving a written agreement between the educational institution and a business or industry. Mentored and supervised by a workplace employee, the student achieves objectives that are developed and documented by the college and that are directly related to specific occupational outcomes. This may be a paid or unpaid experience. This course may be repeated if topics and learning outcomes vary.

IMED-2680 Cooperative Education/Instructional Media Tech (1-39-6) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INDS

INDS-1301 Basic Elements of Design (1-4-3) A study of basic design concepts with projects in shape, line, value, texture, pattern, spatial illusion, and form.

INDS-1341 Color Theory & Application (2-2-3) A study of color theory and its applications to interior design. Corequisites: ARTC-1325

INDS-2321 Presentation Drawing (2-3-3) An introduction to two- and three-dimensional presentations, including drawings with one- and two-point perspectives, plans, and elevations.

INEW

INEW-1340 Asp.Net Programming (2-2-3) Server side web programming concepts to implement solutions for common web programming tasks. Includes Basic ASP.NET web controls, user management and authentication, state management, and development of database-driven web applications. Prerequisites: ITSE-2313

INEW-2330 Comprehensive Software Project I: Planning & Design (1-4-3) A comprehensive application of skills learned in previous courses in a simulated workplace. Covers the development, testing, and documenting of a complete software and/or hardware solution. This course may be used as a capstone course for a certificate or degree. May be combined with Project II when the expected outcomes include completion of the programming life cycle. Prerequisites: INEW-2338 ITSE-2349 or ITSE-2346(

INEW-2332 Comprehensive Software Project II: Coding, Testing, & Implementation (2-2-3) A comprehensive application of skills learned in a simulated workplace. Course covers the coding, testing, and documentation of a complete software and/or hardware solution. This course may be used as a capstone course for a certificate or degree. Prerequisites: INEW-2330 or GAME-2359. Corequisites: INEW-2330

INEW-2334 Advanced Web Page Programming (2-4-3) Advanced applications for Web authoring. Topics may include Perl Scripts, Common Gateway Interface (CGI), Database Interaction, Active Server Pages, Java Applets, Javascripts, tables, HTML, and/or interactive elements. Prerequisites: ITSE-2302, IMED-2315

INEW-2338 Advanced Java Programming (2-4-3) A further application of Java programming techniques including Java applets, Java applications, servlets, and advanced graphical functions. Prerequisites: ITSE-2317

INEW-2375 Advanced Web Technology (2-4-3) Advanced Web Technologies is an advanced course in the study of standards based Web programming for the user interface, using eXtensible HyperText Markup Language and Cascading Style Sheets.

INMT

INMT-1280 Cooperative Education-Industrial/Manufacturing Tech (1-9-2) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance skills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

INMT-1305 Introduction to Industrial Maintenance (1-6-3) basic mechanical skills and repair techniques common to most fields of industrial maintenance. Topics Include Precision Measuring Instruments And General Safety Rules Common in Industry, Including Lock-Out/Tag-Out.

INMT-1319 Manufacturing Processes (2-2-3) Exploration of a variety of methods used in manufacturing. Theory and application of processes including but not limited to metal forming, welding, machining, heat treating, plating, assembly procedures, and process control considerations, casting and injection molding.

INMT-1343 CAD/CAM (2-4-3) Computer-assisted applications in integrating engineering graphics and manufacturing. Emphasis on the conversion of a working drawing using computer aided design/computer aided manufacturing (CAD/CAM) software and related input and output devices to translate into machine code.

INMT-1355 Industrial Power Plant Systems (1-6-3) A study of the principles of operation and maintenance of industrial power plants. The major engine systems will be studied. Emphasis will be placed on component replacement, tune-up, and field adjustments. Prerequisites: INMT-1305 or INMT-2303

INMT-1374 Introduction to Recreational Vehicle Services (2-4-3) This introductory course gives the students a basic understanding of the recreational vehicle industry that will prepare them to become maintenance technicians. The student will have an understanding of the history of the recreational vehicle industry.

INMT-1380 Cooperative Education-Industrial Manufacturing Technology/Technician (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INMT-1381 Cooperative Education-Industrial Manufacturing Technology/Technician (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INMT-1580 Cooperative Education-Industrial Manufacturing Technology (1-39-5) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INMT-1680 Cooperative Education-Industrial Manufacturing Technology/Technician (1-39-6) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance skills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

INMT-2280 Cooperative Education-Industrial/ Manufacturing Technology/Technician (1-0-2) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance skills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

INMT-2281 Cooperative Education-Industrial/ Manufacturing Technology/Technician (1-0-2) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, enhance skills, and integrate knowledge. Indirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

NMT-2301 Machinery Installation (1-6-3) Students utilize skills acquired in previous studies. Machinery foundation, locations, installation, and alignment activities are practiced and tested. Emphasis is on the various methods of shaft alignment including laser shaft alignment. Prerequisites: INMT-1305 or INMT-2303

INMT-2303 Pumps, Compressors, and Mechanical Drives (1-8-3) A study of the theory and operations of various types

of pumps and compressors. Topics include mechanical power transmission systems including gears, v-belts, and chain drives.

INMT-2345 Industrial Troubleshooting (2-4-3) An advanced study of the techniques used in troubleshooting various types of industrial equipment to include mechanical, electrical, hydraulic, and pneumatic systems and their control devices. Emphasis will be placed on the use of schematics and diagrams in conjunction with proper troubleshooting procedures.

INMT-2474 Recreational Vehicle Power Plants (2-8-4) This course gives the students a knowledgeable understanding of the recreational vehicle power plant system enabling them to become maintenance technicians. The principles of operation and maintenance of gasoline and diesel industrial engines will be covered along with major engine and generator systems. Students will receive hands-on training in performing some tune-up procedures of these devices along with making any critical adjustments and replacement of any major engine components. Critical safety issues will be covered in the content of the course.

INTC

INTC-1258 Flow and Measurement Calibration (0-6-2) A Study of the practical methods of flow measurements and flow integration. Emphasis on orifice selection and calculation methods in accordance with America Gas Association (AGA) and American Petroleum Institute (API) Standards. Prerequisites: INTC-1355, INTC-2333

INTC-1341 Principles of Auto Control (2-4-3) A study of the theory of control room operations, automatic control systems and design, closed loop systems, recorders, controllers, positioners, feedback, on-off control, proportional, reset and rate responses, ratio and cascade controllers. Prerequisites: CETT-1303, CETT-1409 or IEIR-1302

INTC-1343 Applications of Industrial Auto Control (1-7-3) A study of automatic process control including measuring devices, analog and digital instrumentation, signal transmitters, recorders, alarms, controllers, control valves, and process and instrument drawings. Includes connection and troubleshooting of loops. Prerequisites: CETT-1409, CETT-1305 or IEIR-1304

INTC-1348 Analytical Instrumentation (2-4-3) A study of analytical instruments emphasizing their utilization in continuous process applications including chromatography, Ph, conductivity, and Spectrophotometry instruments. Prerequisites: INTC-1341. Corequisites: CHEM-1305

INTC-1350 Digital Measurement & Controls (2-4-3) A study of the movement of digital data through common systems including led displays, teletypes, and cathode ray displays employing parallel and serial transfers using wire lines, fiber optics systems, and radio methods of transfer. Prerequisites: CETT-1325

INTC-1355 Unit Operations (2-4-3) An in-depth study of industrial processes including fluid flow and material transport, distillation, extraction, and automatic control requirements of these processes. instruction in control system design and control loop adjustments and analysis. Prerequisites: INTC-1341

INTC-1356 Instrumentation Calibration (2-4-3) A study of techniques for calibrating electronic and pneumatic transmitters, controllers, recorders, valves, and valve positioners including tear down, assembly, alignment, and calibration of equipment. Prerequisites: INTC-1341

INTC-1380 Cooperative Education-Instrumentation Tech. (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INTC-1381 Coop Ed-Instrumentation Tech. (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INTC-1580 Coop Ed-Instrumentation Tech. (1-39-5) career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INTC-1680 Coop Ed-Instrumentation Tech. (1-39-6) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INTC-2333 Instrumentation and Installation (2-4-3) A capstone course in Instrumentation Technology that integrates material from previous courses including the process to design, size, install, connect, and start up a small pilot plant. Prerequisites: INTC-1341, INTC-1355

INTC-2336 Dist Control & Prog. Logic (2-4-3) An overview of distributed control systems including configuration of programmable logic controllers, smart transmitters, and field communicators. Functions of digital systems in a process control environment. Prerequisites: INTC-1341(2732) ELPT-2319

INTC-2350 Fieldbus Process Control Systems (2-4-3) A comprehensive view into the field of instrument technicians with regards to fieldbus systems, fieldbus equipment and systems with the theory, applications, and hands-on experiences preparing the student for the installation and maintenance of this apparatus will be introduced.

INTC-2380 Coop Education-Instrumentation Tech. (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INTC-2381 Cooperative Education-Instrumentation Tech. (1-19-3) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

INTC-2580 Cooperative Education-Instrumentation Technology (1-39-5) Career related activities encountered in the student's area of specialization through a cooperative agreement between the college, employer, and student. Under supervision of the college and the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

IRAD

IRAD-1301 Radiation Detection Measurements I (2-3-3) Principles and methods utilized to detect and measure radiation with emphasis on gas-filled-ionization, proportional, and Geiger Muellar (G-M) Detectors. Topics include statistics of counting, calculation of efficiencies, and performance of surveys.

ITCC

ITCC-1301 Exploration - Network Fundamentals (2-2-3) A course introducing the architecture, structure, functions, components, and models of the internet. Describes the use of OSI and TCP layered models to examine the nature and roles of protocols and services at the applications, network, data link, and physical layers. Covers the principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations. Build simple LAN topologies by applying basic principles of cabling; perform basic configurations of network devices, including routers and switches; and implementing IP addressing schemes. Prerequisites: ITNW-1358

ITCC-1304 Cisco Exploration 2 - Routing Protocols (2-4-3) This course describes the architecture, components, and operation of routers, and explains the principles of routing and routing protocols. Students analyze, configure, verify, and troubleshoot the primary routing protocols RIPv1, RIPv2, EIGRP, and OSPF. Recognize and correct common routing issues and problems. Model and analyze routing processes. Prerequisites: ITCC-1301

ITCC-2308 Cisco Exploration 3 - LAN Switching and Wireless (2-4-3) This course helps students develop an in-depth understanding of how switches operate and are implemented in the LAN environment for small and large networks. Detailed explanations of LAN switch operations, VLAN implementation, Rapid Spanning Tree Protocol (RSTP), VLAN Trunking Protocol (VTP), Inter-VLAN routing, and wireless network operations. Analyze, configure, verify, and troubleshoot VLANs, RSTP, VTP, and wireless networks. Campus network design and Layer 3 switching concepts are introduced. Prerequisites: ITCC-1304

ITCC-2310 Cisco Exploration 4 - Accessing the Wan (2-4-3) This course explains the principles of traffic control and access control lists (ACLs) and provides an overview of the services and protocols at the data link layer for wide-area access. Describes user access technologies and devices and discover how to implement and configure Point-to-Point Protocol (PPP), Point-to-Point Protocol over Ethernet (PPPoE), DSL, and Frame Relay. WAN security concepts, tunneling, and VPN basics are introduced. Discuss the special network services required by converged applications and an introduction to quality of service (QoS). Prerequisites: ITCC-2308

ITDF

ITDF-1300 Intro to Digital Forensics (2-4-3) A study of the application of forensic science and technology to collect, analyze, document, and present after-the-fact digital information from digital sources while maintaining a documented chain of custody to determine exactly what happened on a digital device. Overview of ethics, white collar crime, HIPAA, SOX, GLBA, and other legal guidelines/regulations/laws. Includes overview of tools used for forensic analysis of digital devices seized in investigations. Also covers securing a search warrant, collecting digital evidence, protecting digital evidence, and obtaining information from offenders.

ITDF-1305 Fundamentals of Digital Data Storage (2-4-3) Exploration, examination, and assessment of the characteristics and details of digital storage media used in computers systems and small-scale digital devices, such as cell phones, cameras, DVRs, PDAs, websites and other devices. Includes experimenting with various open source tools to reinforce identification of evidentiary data.

ITDF-2320 Digital Forensics Collection (2-4-3) A study of acquiring digital evidence from devices, networks and logs while preserving the evidentiary chain. Includes the legal aspects of

the search and seizure of computers and related equipment/information.

ITDF-2325 Digital Forensics Tools (2-4-3) Skills-based course in the applications of major forensic hardware and software tools such as EnCase, ILook, Forensic Tool Kit, write blockers, StegAlyzerSS, X-Ways forensic software, ProDiscover Basic, and others.

ITDF-2330 Digital Forensics Analysis (2-4-3) Digital forensic analysis, report preparation, and evidence presentation. Emphasizes balancing legal and technical aspects of cases where digital forensics is employed.

ITDF-2335 Comprehensive Digital Forensics Project (1-6-3) Comprehensive application of skills learned in previous digital forensics courses in a simulated crime scene or workplace investigation. Includes collection, analysis, and presentation of digital data and evidence in a problem-based case study format. This course is used as a capstone course for a certificate or degree.

ITMT

ITMT-2340 Design Security for Microsoft Network (2-2-3) Assembling the design team, modeling threats, and analyzing security risks in order to meet business requirements for securing computers in a networked environment. Includes decision-making skills through an interactive tool that simulates real-life scenarios. Focuses on collecting information and sorting through details to resolve a given security requirement. Prerequisites: ITMT-2300 ITMC-1343 or ITNW-1345

ITNW

ITNW-1308 Implementing and Supporting Client Operating System (1-4-3) Skills development in the management of client as desktop operating systems. Prerequisites: READ-0200

ITNW-1325 Funds of Networking Technologies 12-4-3) Instruction in networking technologies and their implementation. Topics include the OSI reference model, network protocols, transmission media, and networking hardware and software.

ITNW-1337 Introduction to the Internet (1-6-3) Introduction to the internet with emphasis on using the world wide Web to locate, transfer, and publish information survey of emerging technologies on the internet.

ITNW-1345 Implementing Network Directory Services (2-4-3) Provides students with the knowledge and skills necessary to install, configure, and administer Network Directory service. Prerequisites: ITMC-1319

ITNW-1351 Fundamentals of Wireless LANS (2-4-3) Designing, planning, implementing, operating, and troubleshooting wireless LANs (WLANs). Includes WLAN design, installation, and configuration; and WLAN security issues and vendor interoperability strategies.

ITNW-1353 Support Network Server Infrastructure (1-4-3) Installing, configuring, managing, and supporting a network infrastructure. Prerequisites: ITMC-1319

ITNW-1354 Implementing and Supporting Servers (2-4-3) Implement, administer, and troubleshoot information systems that incorporate servers in a networked computing environment. Prerequisites: ITNW-1345, READ-0200

ITNW-1358 Network+ (2-4-3) Prepares individuals for a career as a Network Engineer in the Information Technology support industry. Includes the various responsibilities and tasks required for service engineers to successfully perform in a specific environment. Prepares individuals to pass the Computing Technology Industry Association (CompTIA) Network+ certification exam. Prerequisites: READ-0200

ITNW-1380 Cooperative Business System Network and Tel (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ITNW-1392 Special Topics in Computer Systems Network & Telecoms (2-4-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency. Prerequisites: READ-0200

ITNW-1472 Intro to E-Comm Programming (2-8-4) Students will be introduced into problem solving specifically to programming oriented problems, the methods for testing, evaluating, and documenting changes in applications and applications programming in a networked e-commerce environment. Included will be the e-commerce field possibilities and potential job assignments.

ITNW-1580 Cooperative Business System Network and Tel (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ITNW-1680 Cooperative Business System Network and Tel (1-39-6) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ITNW-2311 Implementing Mail Servers (2-4-3) An in-depth study of electronic messaging using mail servers. Prerequisites: ITMT-2350

ITNW-2313 Networking Hardware (2-4-3) Preparation to work with and maintain network hardware devices. Topics include network cables, servers, and workstations; network connectivity devices such as routers, hubs, bridges, gateways, repeaters, and uninterruptible power supplies; and other networking hardware devices.

ITNW-2321 Networking with TCP/IP (2-2-3) Set up, configure, use, and support Transmission Control Protocol/Internet Protocol (TCP/IP) on networking operating systems. Prerequisites: ITNW-1358 or ITNW-1325.

ITNW-2332 UNIX Network Integration (2-4-3) Installation, configuration, management, and support of a network infrastructure in a large computing environment that uses a version of the UNIX server operating system.

ITNW-2335 Network Troubleshooting and Support (2-4-3) Instruction in the techniques used to troubleshoot and support networks with emphasis on solving real world problems in a hands-on environment. Topics include troubleshooting and research techniques, available resources, and network management hard/software. Prerequisites: ITSC-1329, or ITSC-1307, ITNW-1358. Corequisites: ITSC-2370

ITNW-2352 Administering SQL Server (2-4-3) Administering SQL Server is a skills development course in the installation, configuration, administration, and troubleshooting of SQL Servers client/server database management system version.

ITNW-2354 Internet/Intranet Server (1-4-3) Hands-on experience in designing, installing, configuring, maintaining, and managing an internet server. Prerequisites: READ-0200

ITNW-2356 Designing a Network Directory Infrastructure (2-4-3) Design, implement, and support a network directory infrastructure in a multi-domain environment.

ITNW-2359 Web Server Support and Maintenance (1-6-3) Instruction in the installation configuration, and implementation of Microsoft Internet Information Server (MIIS).

ITNW-2372 Supercomputer Construction (2-4-3) Create a functioning Linux cluster, a type of supercomputer. Topics include the physical properties of cluster supercomputer construction including temperature management, power distribution, and network connectivity. Implement logical aspects of a cluster including operating system installation, parallel software installation, time synchronization, shared file system, network address translation, and Internet Protocol Version 4 addressing.

ITNW-2373 High Performance Computing Sys. Support (2-2-3) This course is designed to prepare students for ongoing maintenance and support of high performance computing systems. Students will learn how to use system management tools and cluster monitoring software to keep HPC clusters operating. During the course, students will be presented with performance problems that require troubleshooting and problem-solving skills.

ITNW-2374 Parallel Programming With MPI (3-0-3 This course is focused on using MPI programming to create an application to run on a high performance computing cluster. The course will introduce students to parallel programming which will enable them to support the computational demands of scientific research.

ITNW-2581 Cooperative Business System Network and Tel (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ITSC

ITSC-1301 Introduction to Computers (1-4-3) Overview of computer information systems. Introduces computer hardware, software, procedures, and human resources. Explores integration and application in business and other segments in society. Fundamentals of computer problem-solving and programming may be discussed and applied. Examines applications and software relating to a specific curricular area.

ITSC-1307 Unix Operating System I (2-4-3) A study of the Unix Operating System including multi-user concepts, terminal emulation, use of system editor, basic UNIX commands, and writing script files. Topics include introductory systems management concepts.

ITSC-1309 Integrated Software Applications (2-4-3) Integration of applications from popular business productivity software suites. Instruction in embedding data, linking and combining documents using word processing, spreadsheets, databases, and/or presentation media software. Prerequisites: READ-0100

ITSC-1316 Linux Installation and Configuration (1-4-3) Open-source Linux operating system. Includes Linux installation, basic administration, utilities and commands, upgrading, networking, security, and application installation. Emphasizes hands-on setup, administration, and management of Linux. Also covers maintaining and securing reliable Linux systems. Prerequisites: ITSC-1329, or ITSC-1307

ITSC-1321 Intermediate PC Operating Systems (2-2-3) Continued study in advanced installation and configuration troubleshooting, advanced file management, memory and storage management. Update peripheral device drivers, and use of utilities to increase system performance. Prerequisites: READ-0100

ITSC-1325 Personnel Computer Hardware (1-4-3) A study of current personal computer hardware including personal computer assembly and upgrading, setup and configuration, and troubleshooting. Prerequisites: READ-0200

ITSC-1341 Principles of Open-Source Software (2-4-3) Open-source philosophy, history, and advocacy. Includes identification of current legal, ethical, and economic issues. Also covers a survey of available open-source software and comparison of open-source and closed-source licenses.

ITSC-1358 UNIX System Administration I (2-4-3) Basic UNIX workstation administration. Includes installing a stand alone system, adding users, backing up and restoring file systems, and adding new printer support. Emphasis on the procedures needed to perform system administration tasks. Introduces the concept of the system and disk management. Prerequisites: ITSC-1329, ITSC-1316 or ITSC-1307

ITSC-2342 As/400 Operating System II (2-4-3) Advanced Study of the As/400 Operating System. Topics include advanced concepts of systems management and communications, installation and maintenance of software, network security, and data integrity. Prerequisites: ITSC-1311

ITSC-2346 Computer Center Management (3-0-3) Assessment of needs of a computing center and general principles of hardware and software acquisition, maintenance, licensing, and improving usage scheduling. Emphasis on interpersonal communication and management skills.

ITSC-2370 Final Project-Systems Administration (1-7-3) Students will design and implement a systems administration plan for specified parameters utilizing knowledge and skill sets learned in the course of instruction. The students will be given a set of desired administrative outcomes and will implement current or impending technologies to obtain the desired administrative outcomes. Prerequisites: ITMT-1340, or ITMC-1319, ITSC-1329, or ITSC-1307

ITSC-2380 Cooperative Education Computer Programming and Information Science (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ITSC-2381 Cooperative Education Computer Programming and Information Science (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ITSC-2580 Cooperative Education Computer Programming and Information Science (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

ITSE

ITSE-1249 System Analysis and Design (1-3-2) Comprehensive introduction to the planning, design, and construction of computer information systems using the systems development life cycle and other appropriate design tools.

ITSE-1301 Web Design Tools (1-4-3) Designing and publishing Web documents. Includes graphic design issues and exploration of tools available for creating and editing Web documents.

ITSE-1306 Computer Programming Using Hypertext PHP (2-4-3) A study of hypertext preprocessor (PHP). Includes the basics of PHP, design of web-based applications, arrays, strings, regular expressions, file input/output, e-mail and database interfaces, stream and network programming, debugging, and security. Prerequisites: ITSE-1307

ITSE-1307 Introduction to Computer Programming Using C++ (2-4-3). Emphasis on the fundamentals of structured design with development, testing, implementation, and documentation. Includes language syntax, data and file structures, input/output devices, and files. Prerequisites: READ-0200, DMTH-0200

ITSE-1311 Web Page Programming (2-2-3) instruction in internet Web page programming and related graphic design issues including mark-up languages, Web sites, internet access software, and interactive topics. may include use of HTML, CGI, JAVA, OR ASP. Corequisites: IMED-1316

ITSE-1318 Introduction to COBOL Programming (2-4-3). Emphasis on the fundamentals of structured design, development, testing, implementation, and documentation. Includes language syntax, data and file structures, input/output devices, and files. Prerequisites: ITSE-1307

ITSE-1322 Introduction to Programming Using C (2-4-3) Emphasis on the fundamentals of structured design, development, testing, implementation, and documentation. Includes language syntax, data and file structures input/output devices, and files.

ITSE-1329 Programming Logic and Design (2-4-3) A disciplined approach to problem-solving with structured techniques and representation of algorithms using appropriate design tools. Discussion of methods for testing, evaluation, and docu-

mentation.

ITSE-1330 Introduction to C# Programming (2-4-3) A study of C# syntax including data types, control structures, functions, syntax, and semantics of the language, classes, class relationships, and exception handling.

ITSE-1332 Introduction to Visual Basic.Net Program (2-4-3) Introduction to Visual Basic.NET (VB.NET) including data types, control structures, functions, syntax, and semantics of the language, classes, class relationships, and exception handling.

ITSE-1345 Intro Oracle SQL & Procedure Language (2-4-3) An introduction to the design and creation of relational databases. Topics include storing, retrieving, updating, and displaying data using Structured Query Language (SQL) and Procedure Language (PL) Prerequisites: READ-0200, DMTH-0200

ITSE-1346 Database Theory and Design (2-2-3) Introduction to the analysis and utilization of data requirements and organization intro normalized tables using the four normal forms of database design. Corequisites: IMED-1316

ITSE-1350 System Analysis and Design (2-4-3) Comprehensive introduction to the planning, design, and construction of computer information systems using the systems development life cycle and other appropriate design tools. Prerequisites: GAME-2359, INEW-2338 ITSE-2349, or ITSE-2354

ITSE-1359 Introduction to Scripting Languages (2-4-3) ntroduction to scripting languages including basic data types, control structures, regular expressions, input/output, and textual analysis.

ITSE-1378 Software Development (2-4-3) This course will include a fast, practical, and concise introduction to the three-dimensional (3-D) graphics and animation. Topics will include video animations, titles for videos, visualization of research results, modeling with polygon frames, curves systems, skeletons, and lattices.

ITSE-1392 Special Topics in Computer Programming (2-4-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency. Prerequisites: INEW-2338 ITSE-2349, or ITSE-2346

ITSE-1407 Introduction to C++ Programming (2-6-4) Introduction to computer programming using C++ . Emphasis on the fundamentals of structured design with development, testing, implementation, and documentation. Includes language syntax, data and file structures, input/output devices, and files.

ITSE-1418 Introduction to Cobol Programming (3-2-4) Introduction to computer programming using COBOL. Emphasis on the fundamentals of structured design, development, testing, implementation, and documentation. Includes language syntax, data and file structures, input/output devices, and files.

ITSE-2302 Intermediate Web Programming (2-4-3) Intermediate applications for web authoring. Topics may include server side include (SSI), PERL, HTML, JAVA, JAVASCRIPT, and/or ASP. Prerequisites: ITSE-1311, ITSE-1346

ITSE-2305 Windows Programming (2-4-3) Introduction to computer programming for Windows. Fundamentals of structured design, development, testing, implementation, and documentation. Includes language syntax, data and file structures, input/output devices, and files. Prerequisites: ITSE-1307

ITSE-2309 Intro to Database Programming (2-4-3) Application development using database programming techniques emphasizing database structures, modeling, and database access. Prerequisites: ITSE-2351

ITSE-2313 Web Authoring (2-4-3) Instruction in designing and developing web pages that incorporate text, graphics, and other supporting elements using current technologies and authoring tools. Prerequisites: ITSE-1311, ITSE-1346

ITSE-2317 Java Programming (2-4-3) Introduction to Java Programming with object-orientation. Emphasis on the fundamental syntax and semantics of java for applications and Web applets.

ITSE-2321 Object-Oriented Programming (2-4-3) Introduction to object-oriented programming. Emphasis on the fundamentals of structured design with classes, including development, testing, implementation, and documentation. Includes object-oriented programming techniques, classes, and objects. Prerequisites: ITSE-2302

ITSE-2331 Advanced C++ Programming (2-4-3) Further application of C++ programming techniques including subjects such as file access, abstract data structures, class inheritance, and other advanced techniques. Prerequisites: ITSE-1407 or ITSE-130

ITSE-2333 Implementation of Database/Microsoft SQL Server 7.0 (2-4-3) Skills development in the implementation of a database solution using Microsoft SQL Server Client/Server Database Management System Version 7.0

ITSE-2334 Advanced Visual Basic Net Programming (2-4-3) Continuation of Visual Basic.NET programming using advanced features.

ITSE-2337 Assembly Language Programming (2-4-3) Comprehensive coverage of low-level computer operations and architecture. Includes design, development, testing, implementation, and documentation of programs; language syntax; data manipulation; input/output devices and operations; and file access.

ITSE-2340 Oracle Dist Db&c/S Sys (2-4-3) An introduction to oracle client/server connectivity and distributed databases. Topics include configuring, administering, tuning, troubleshooting, oracle sql *net and related tools in a secure client/server environment and implementing a network in conjunction with one or more oracle or non-oracle databases. The student will implement distributed applications and databases;

troubleshoot and recover from distributed database errors; describe the basic architecture and functions in SQL*NEt; identify connectivity issues in a client/server network environment; configure, administer, and troubleshoot oracle SQL*NET and related tools in a secure client/server environment and describe connectivity issues related to non-oracle databases. Prerequisites: ITSE-2356, ITNW-1325

ITSE-2343 Advanced Windows Programming (2-4-3) Further applications of windows programming techniques, including file access methods, data structures and modular programming, program testing and documentation. Prerequisites: ITSE-1307

ITSE-2345 Data Structures (2-4-3) Further applications of programming techniques. Includes an in-depth look at various data structures and the operations performed on them.

ITSE-2346 Oracle Application Development Forms I (2-4-3) Skill development in the use of forms in a developer/2000 environment. Topics include the use of object navigator and virtual graphics system (VGS), layout editor and menu options. Prerequisites: ITSE-1345

ITSE-2349 Advanced Visual Basic Programming (2-4-3) Further applications of programming techniques using visual basic. Topics include file access methods, data structures and modular programming, program testing and documentation. Prerequisites: ITSE-2305

ITSE-2354 Advanced Oracle SQL and PL/SQL (2-4-3) A continuation of Oracle SSL and PL/SQL. Topics include hierarchical queries, set based queries, correlated subqueries, scripting, and scripting generation. Prerequisites: ITSE-1345

ITSE-2357 Advanced Object-Oriented Programming (2-4-3) Application of advanced object-oriented programming techniques such as abstract data structures, class inheritance, virtual functions, and exception handling. Prerequisites: ITSE-2321

ITSE-2358 Oracle Database Administration II (2-4-3) A continuation of Oracle Database Administration I. Topics include recovery procedures, logical backups, standby database capabilities, and performance tuning of the Oracle Server. Common performance problems and the use of diagnostic tools to troubleshoot and optimize throughput will be discussed. The student will list the oracle backup and recovery components; practice backup and recovery operations; use Oracle tools to diagnose performance problems; and optimize and troubleshoot oracle database performance. Prerequisites: ITSE-2356

ITSE-2359 Advanced Computer Programming (2-4-3) Advanced programming techniques including file access methods, data structures, modular programming, program testing and documentation. Prerequisites: ITSE-2349

ITSE-2375 Developing PL/SQL Program Unit Applications 1 (2-4-3) This course is designed as a continuation of Oracle SQL and PL/SQL. Topics include hierarchical queries, set-based queries, correlated subqueries, scripting, and scripting generation. Prerequisites: ITSE-1345(11040);

ITSE-2380 Cooperative Education Computer Program (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary, Prerequisites: ITSE-2347, ITSE-2373 ITSC-1302, ITSE-1350, ITSE-2343 ITSE-2377; ITSE-2344 ITSE-2376, ITSE-2377, ITSE-2317, ITSE-2359, ; ITSE-1350, ITSC-1327

ITSE-2381 Cooperative Education Computer Program (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: ITSE-2380, ITSE-2380

ITSE-2580 Cooperative Education Computer Program (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: ITSE-2347, ITSE-2373 ITSC-1302, ITSE-1350, ITSE-2343 ITSE-2377; ITSE-2344 ITSE-2376, ITSE-2377, ITSE-2317, ITSE-2359, , ITSE-1350, ITSC-1327

ITSW

ITSW-1307 Intro to Database (2-2-3) Introduction to database theory and the practical applications of a database. Prerequisites: ITSC-1309

ITSW-1310 Introduction to Presentation Graphics Software (2-2-3) Instruction in the utilization of presentation software to produce multimedia presentations. Graphics, text, sound, animation and/or video may be used in presentation development. Prerequisites: GRPH-1325(2196) or ARTC-1302

ITSW-1407 Introduction to Database (3-4-4) Introduction to database theory and the practical applications of a database.

ITSW-2337 Advanced Database (1-6-3) Mastery of database design and functionality. Prerequisites: ITSW-1307

ITSY

ITSY-1300 Fundamentals of Information Security (1-4-3) Basic information security goals of availability, integrity, accu-

racy, and confidentiality. Vocabulary and terminology specific to the field of information security are discussed. Identification of exposures and vulnerabilities and appropriate countermeasures are addressed. The importance of appropriate planning and administrative controls is also discussed.

ITSY-2301 Firewalls and Network Security (2-4-3) Identify elements of firewall design, types of security threats, and responses to security attacks. Use best practices to design, implement, and monitor a network security plan. Examine security incident postmortem reporting and ongoing network security activities. Prerequisites: ITSY-1300 or ITCC-1304

ITSY-2342 Incident Response & Handling (2-4-3) In-depth coverage of incident response and incident handling, including identifying sources of attacks and security breaches; analyzing security logs; recovering the system to normal; performing postmortem analysis; and implementing and modifying security measures. Prerequisites: ITSY-1300

ITSY-2343 Computer System Forensics (2-4-3) In-depth study of system forensics including methodologies used for analysis of computer security breaches. Gather and evaluate evidence to perform postmortem analysis of a security breach. Prerequisites: ITSY-1300

ITSY-2359 Security Assessment & Auditing (2-4-3) Capstone experience for the security curriculum. Synthesizes technical material covered in prior courses to monitor, audit, analyze, and revise computer and network security systems to ensure appropriate levels of protection are in place. Prerequisite: ITNW-2370 or ITSY-2343, ITNW-2371, or ITSY-2342, ITNW-2374 or NSTC-2370

LNWK

LNWK 1291 Special Topics in Lineworker (1-5-2) Topics address recently identified current events, skills, knowledges, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

LNWK 1301 Orientation and Line Skill Fundamentals (2-4-3) Examination of utility company operations. Topics include company structure, safety and distribution standards handbook, lineman's tools, vocabulary, and work procedures. Discussion of basic electrical systems including the history of power generation and distribution with emphasis on generating plants and substations.

LNWK 1311 Climbing Skills (1-6-3) Theory and application of pole climbing. Includes safety, climbing techniques, tool inspection, poles inspection, personal protective equipment, and fall protection.

LNWK 2321 Live Line Safety (1-6-3) Study of cover-up procedures and safety requirements for work on energized electrical circuits. Includes use, care, and inspection of cover-up material, recognizing nominal voltages and energized parts, approach distances, and safety.

LNWK 2322 Distribution Line Construction (1-6-3) Study of electric distribution line construction. Includes reading staking sheets and framing specifications, tailboard discussions, pole framing and setting, installing conductors, transformers and other line equipment, and OSHA and NESC regulations.

LNWK 2324 Troubleshooting Distibution Systems (2-4-3) Study of power outages and voltage complaints on distribution systems. Includes lockout-tagout procedures, safety grounds, backfeed, induced voltage, causes of outages, and analyzing voltage complaints.

LOTT

LOTT-1241 Electro-Optics Components (1-4-2) An in-depth study of the properties, applications, and commercial sources of optical and mechanical components commonly used in industry. Emphasis on the mathematical computations necessary to enable the student to properly choose the correct component for a particular task. Prerequisites: DMTH-0050

LOTT-1280 Coop Laser Electro-Optics Technician Technology/Technician (1-7-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

LOTT-1281 Cooperative Laser Electro-Optics Technician Technology/Technician (1-7-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

LOTT-1301 Intro to Fiber Optics (2-4-3) An introductory course in fiber optics and its application including advantages of fiber, light transmission in fiber, types of fiber, sources, detectors, and connectors. Prerequisites: DMTH-0050.

LOTT-1343 Geometrical Optics I (2-4-3) Theory of light as a geometric ray. Applications of the laws of reflection and refraction from the mathematical, graphical, and experimental aspects. Prerequisites: DMTH-0050, or equivalent as determined by Placement Test.

LOTT-1344 Fundamentals of Lasers and Laser Safety (2-4-3) An introduction to the general nomenclature of the laser including laser safety, light and its properties, lasing action, optical cavities, modes of oscillation, and laser characteristics and classifications. Prerequisites: DMTH-0050, or equivalent as determined by Placement Test.

LOTT-1372 Overview in Technology (2-4-3) The purpose of this class is to have the student become familiar with the nomenclature of laser/semiconductor technology and the laser/semiconductor technology related issues. This will be a cursory overview of the laser/semiconductor industry including the familiarization of computer hardware and software; industry related issues; research searching techniques; internet usage in

industry, and how computers, telecommunication, and technology is used in the workplace. Prerequisites: DMTH-0050

LOTT-1380 Cooperative Education Electro-Optics Technician Technology/Technician (1-14-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

LOTT-1381 Cooperative Education-Laser Electro-Optics Tech Technology/Technician (1-14-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

LOTT-1391 Special Topics Laser Electro-Optics (2-4-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency. Prerequisites: LOTT-2572

LOTT-1443 Geometrical Optics I (3-4-4) Theory of light as a geometric ray. Applications of the laws of reflection and refraction from the mathematical, graphical, and experimental aspects.

LOTT-2332 Laser Maintenance & Repair (1-7-3) A course in planning, disassembling, testing, and troubleshooting various systems. Emphasis on practical utilization of support test equipment. Prerequisites: CETT-1329, or CETT-1479

LOTT-2336 Wave Optics (2-4-3) Principles and theory of light and its wave nature including origin of light, spectral characteristics of light, radiometry, photometry, reflection, refraction, propagation of light, interference, diffraction, and polarization. Prerequisites: LOTT-2339

LOTT-2339 Geometrical Optics II (2-4-3) A study of thick lenses, lens and mirror aberrations, the effects of stops, and optical instrument design from the mathematical, graphical, and experimental aspect. Prerequisites: LOTT-1343

LOTT-2349 Photonics (1-7-3) A study of wave and quantum aspects of optical radiation and various applications of coherent and non-coherent photonic devices. Emphasis on fiber optics, optic-electronic devices, and photo devices as they apply to industrial controls, data transmission, and telecommunications. Prerequisites: LOTT-2336

LOTT-2380 Cooperative Education-Laser Electro-Optics Technology (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

LOTT-2381 Cooperative Education-Laser Electro-Optics Technology (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

LOTT-2435 Electro-Optic Devices (2-6-4) Theory and operation of special purpose devices to measure laser output parameters, manipulate laser beams, modulate and Q-switch lasers, photo detectors, and special techniques in photography and holography. Prerequisites: LOTT-2572. Corequisites: LOTT-2349

LOTT-2436 Wave Optics (3-4-4) Principles and theory of light and its wave nature including origin of light, spectral characteristics of light, radiometry, photometry, reflection, refraction, propagation of light, interference, diffraction, and polarization.

LOTT-2559 Laser Electro-Optics Applications (3-6-5) A variety of equipment and processes employing lasers. Includes micro-machining, drilling, welding, other material processing, laser communication, tracking and alignment system, laser construction tools, holography, holographic testing, and measurements.

LOTT-2572 Continuous Wave & Pulsed Laser (2-9-5) A mathematical and conceptual study of continuous wave (CW) lasers, including indepth descriptions of helium-neon, argon ion, neodymium, and carbon dioxide systems: pulsed lasers including ruby, neodymium, glass, transverse excited atmospheric molecular, semiconductor diode, diode pumping of solid-state lasers, and liquid dye systems. Emphasis on the operation and maintenance of these systems and the measurement of their output characteristics and data analysis. Prerequisites: LOTT-1344, IEIR-1304.

LOTT-2580 Coop Ed-Laser Electro-Optics Technology (1-39-5) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

LOTT-2581 Coop Ed-Laser Optic Technology (1-39-5) An intermediate or advanced course with lecture and work-based instruction that helps students gain practical experience in the discipline, Enhance skills, and integrate knowledge. Endirect supervision is provided by the work supervisor while the lecture is provided by the college faculty or by other individuals under the supervision of the educational institution. Cooperative education may be a paid or unpaid learning experience.

MAIR

MAIR-1449 Refrigerators, Freezers, Window Air Conditioners (2-6-4) Theory, sequence of operation, components and repair, electrical schematics, and troubleshooting electronic components in air conditioning and refrigeration. Emphasis on safety for the electrical, mechanical, and sealed systems.

MAIR-1471 Recreational Vehicle Appliances Installer & Repairer (2-5-4) This course gives the students a knowledgeable understanding of the recreational vehicle liquid propane (LP) gas appliances enabling them to become maintenance technicians. The principles of operation and maintenance of LP gas stoves, ovens, water heaters and refrigerators will be covered. Emphasis will be placed upon preventative maintenance procedures, system operations and troubleshooting with component replacement, tune-up, and adjustments that are often performed in the field. Safety is stressed throughout the course.

MBST

MBST-1407 Masonry I (2-6-4) Introduction to masonry including safety, tools and equipment, masonry materials, theory, terminology, federal and state guidelines, building plans, mortar mixing and spreading. Emphasis on the fundamentals of laying bricks and block.

MCHN

MCHN-1201 Beginning Machine Shop (1-3-2) Fundamental machine shop safety, math, measurement, and theory of saws and drill presses.

MCHN-1308 Basic Lathe (1-4-3) An introduction to the common types of lathes. Emphasis on basic parts, nomenclature, lathe operations, safety, machine mathematics, blueprint reading, and theory.

MCHN-1320 Precision Tools and Measurements (2-4-3) An introduction to the modern science of dimensional metrology. Emphasis on the identification, selection, and application of various types of precision instruments associated with the Machining Trade. Practice of basic layout and piece part measurements while using standard measuring tools.

MCHN-1325 Millwright I (2-3-3) An introduction to the millwright trade. A study of common millwright tools and fasteners. Skills developed in basic layout procedures, gasket making, and installation, and oxygen/fuel cutting. Emphasis on safety in the accomplishment of these activities.

MCHN-1330 Statistical Process Control for Machines (3-0-3) An introduction to statistical process control used by machinist and machine operators. Analysis of data collected from workpieces.

MCHN-1338 Basic Machine Shop I (1-8-3) An introduction to machine shop theory, math and terminology, basic bench work, and part layout using a variety of common measuring tools. Application of basic operation of Machines tools such as, bandsaws, grinders, drill presses, lathers and mills with common hand tools.

MCHN-1343 Machine Shop Mathematics (2-4-3) Designed to prepare the student with technical, applied mathematics that will be necessary in future machine shop-related courses.

MCHN-1354 Intermediate Machining II (1-8-3) Development of job process plan to include operation of lathes, milling machines, drill press machines, and power saws. Set-up, layout, and tool maintenance is included. Emphasis on shop safety and preventative maintenance. Prerequisites: MCHN-1201, MCHN-1338

MCHN-2334 Operation of CNC Machining Centers (2-4-3) A continuation of Fundamentals of CNC Machine Controls with an emphasis on machining centers.

MCHN-2335 Advanced CNC Machining (2-4-3) The study of advanced CNC operation with an emphasis on programming and operations of machining and turning centers.

MCHN-2338 Advanced Computer-Aided Manufacturing (2-4-3) A Study of Advanced techniques in Computer-Aided Manufacturing (CAM).

MCHN-2341 Advanced Machining I (1-8-3) An advanced study of lathe and milling operations. Emphasis on advanced cutting operations of the lathe and milling machines, including the use of carbide insert tooling, special tooling, bench assembly, and materials metallurgy.

MCHN-2344 Computerized Numerical Control Programming (2-4-3) Programming and operation of computer numerically controlled (CNC) machine shop equipment. Prerequisites: MCHN-1354 MATH-1316, or TECM-1343

MCHN-2447 Specialized Tools & Fixtures (2-8-4) An advanced course in the designing and building of special tools, such as jigs, fixtures, punch press dies, and molds. Machining and assembling of a production tool using conventional machine shop equipment. Application of production tool theory, care, and maintenance. Prerequisites: MCHN-1201 MCHN-1354 MCHN-1338, ENTC-1371

NANO

NANO-1305 Nano Technology (2-4-3) Introduction to Nano sciences. Includes terminology, current and future uses, and the impact of nano technology on biology, solid-state manufacturing, material science, and chemistry.

NANO-2405 Nano Characterization (2-6-4) Nano scale materials characterization process. Emphasizes surface roughness, adhesion, scratch, wear, film thickness, surface potential, micro-nano indentation, and mapping of micro and nano materials. Includes characteristics of nano materials measurements, processes and analysis at micro and nano level, improvement techniques, repeatability, and reproducibility. Prerequisites: NANO-1305 CETT-1479 MATH-1316, SMFT-1341, SMFT-2343

NANO-2407 Nano Measurements (2-7-4) Measurements and techniques essential for controlling micro and nano fabrication processes for repeatability and reproducibility. Includes discussion of monitoring techniques such as residual gas analysis, optical emission spectroscopy, and end point detection. Covers measurement tools such as Scanning Electron Microscopy (SEM), x-ray spectroscopy, Atomic Probe Microscopy (APM),

Transmission Electron Microscopy (TEM), Advanced Optical Microscopy (AOM), laser microscopy, Fourier Transform Infrared Spectroscopy (FTIS), optical thin film measurements, ellipsometry, profilometry, and resistively/conductivity measurements. Also includes discussion of the measurements of some simple chip structures and Micro-Electrical Mechanical Systems (MEMS) devices. Prerequisites: NANO-1305 CETT-1479 MATH-1316, SMFT-1341, SMFT-2343

NANO-2455 Nano Technology Systems (2-8-4) Capstone course requiring a special lab project from the areas of data storage, millipede, micro-nano actuators, tribological issues, thin films, crystallography, manufacturing strategies, Micro-Electronic Mechanical Systems (MEMS), and Nano-Electronic Mechanical Systems (NEMS) measurements. Requires formal written oral and visual proposal presentation. Prerequisites: NANO-2405 NANO-2407 CHEM-1305, CHEM-1105

NDTE

NDTE-1310 Liquid Penetrant/Magnetic Particle Testing (2-4-3) A theoretical study and practical application of the non-destructive testing techniques of penetrant and magnetic particle testing required by quality assurance and test personnel including proper test technique, or combination of techniques and interpretation, evaluation of test results.

NDTE-2311 Preparation Welding Inspection (2-2-3) General principles of welding inspection including welding processes, terms and definitions, welding discontinuities, duties and responsibilities of inspectors, destructive and nondestructive testing, quality assurance/ quality control, welding codes and blueprints, procedures, and case studies. An overview of welding tools and equipment, metallurgy, chemistry, and joint design.

NSTC

NSTC-2370 Security+ Certification (2-2-3) This course is designed to prepare students for the Security+ exam. Security+ validates knowledge of systems security, network infrastructure, access control, assessments and audits, cryptography and organizational security. It is an international, vendor-neutral security certification.

NSTC-2376 Security + (2-4-3) This course is designed to prepare students for the Security + certification exam and prepares students for careers in Network Security. Foundational knowledge of computer security is applied at the system, network, and organizational levels. Prerequisite: ITSY-1300

NUCP

NUCP-1270 Nuclear Power Plant Fundamentals (1-2-2) The goal of the class is to introduce the student to several of the major topics of interest to people working in a nuclear power plant. The course will cover the fundamental information that the industry has stated that students entering the force need. The students should be able to discuss topics at a basic level of comprehension. The course will cover topics ranging from basic computer, math, chemistry, and physics understanding to radiation safety, radiation detection, and reactor safety systems. How each of these topics relates to and is important to nuclear power will be included in the class.

NUCP-1319 Radiation Physics (2-4-3) A study of atomic structure, radioactivity (primarily alpha, beta gamma), and the interaction of radiation with matter. Topics include radioactive decay law, gamma attenuation equation, and inverse square law. Prerequisites: READ-0100

NUCP-1391 Special Topics Nuclear Power Tech (2-2-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student.

NUCP-2301 Radiation Prot I (2-3-3) Introduction to the field of radiation protection: the art and science of protecting human beings from injury from radiation. Topics include dose and exposure measurements and units, permissible exposure limits, and internal exposure evaluations.

NUCP-2335 Radiological Emergencies (2-3-3) A study of the procedures to follow during an an unplanned release of radiation and/or radioactive materials. Topics include a historical review of significant radiation accidents.

NUCP-2401 Radiation Protection (3-3-4) Introduction to the field of radiation protection: the art and science of protecting human beings from injury by radiation. Topics include dose and exposure measurements and units, permissible exposure limits, and internal exposure evaluations.

NUCP-2402 Radiation Protect II (3-3-4) Continued study in the field of protecting humans from unwarranted radiation exposure. Topics include the use of personnel monitoring devices, radiation dose assessment, bioassay techniques, and record keeping. Prerequisites: NUCP-2301;

NUCP-2680 Cooperative Nuclear/Nuclear Power Tech. (1-39-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

NUCP-2681 Coop Education-Nuclear/Nuclear Power Tech/ Tec (1-35-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

OSHT

OSHT-1209 Physical Hazards Control (1-4-2) A study of the common physical hazards in industry and methods of workplace design and redesign to control hazards. Emphasis on the regulation codes and standards associated with the control of physical hazards.

OSHT-1221 Fire Protection Systems (1-4-2) Study of fire protection systems and their applications with emphasis on the National Fire Protection Association Codes.

OSHT-1313 Accident Prevention, Inspection and Invest (2-3-3) Principles and practices providing a basis for understanding the nature of occupational hazard recognition, accident prevention, loss reduction, inspection techniques, and accident investigation analysis.

OSHT-1316 Material Handling (2-3-3) Proper methods for material handling and storage including safety practices, proper equipment usage, engineering controls, personal protective equipment, and motor fleet safety.

OSHT-1405 OSHA Regulations - Construction Industry (2-4-4) A study of Occupational Safety and Health Administration (OSHA) Regulations Pertinent to the Construction Industry. Prerequisites: READ-0100, or READ-0200

OSHT-2270 Noise Control and Acoustics Engineering (1-4-2) A course designed to qualify the student in all facets of industrial noise control. The student is presented with applications to industrial operations and evaluation of noise hazards. Engineering and administrative controls are emphasized. Students will learn to conduct employee audiometric tests.

OSHT-2309 Safety Program Management (2-3-3) A study of the occupational safety and health act, cost analysis of accidents, records and record keeping, reporting, job safety analysis, and fundamentals of safety training. An introduction to The Occupational Safety and Health Administration's (OSHA) General Industry Standards and an overview of the more frequently cited violations in recent years.

OSHT-2320 Safety Training Presentation Techniques (2-4-3) Principles of developing and presenting effective industrial/business training. Emphasis on instructor qualifications and responsibilities, principles teaching including use of teaching aids and presentation skills.

OSHT-2370 Safety and Health First Aid Certificate (2-3-3) This course is designed to offer the student certification in standard first aid and CPR along with a full understanding of the principles of emergency care. The student will learn on-scene planning as well as action necessary to deal with accidents and injuries in an industrial setting. The student will learn the physiology of the human body and the principles behind pressure points and actions taken in splint application and body immobilization.

OSHT-2388 Internship OSH Technology/Technician (0-10-3) an experience external to the college for an advanced student in a specialized field involving a written agreement between the educational institution and a business or industry. Mentored and supervised by a workplace employee, the student achieves objectives that are developed and documented by the college and that are directly related to specific occupational outcomes. This may be a paid or unpaid experience. This course may be repeated if topics and learning outcomes vary.

OSHT-2401 OSHA Regulations - General Industry (3-3-4) A Study of Occupational Safety and Health Administration (OSHA) regulations pertinent to general industry. Prerequisites: READ-0100, or READ-0200

OSHT-2580 Cooperative Education OSHA Technician (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

PFPB

PFPB-1223 Plumbing Codes I (2-1-2) An introductory study of state and local plumbing codes and their application in residential and light commercial settings.

PFPB-1321 Plumbing Maintenance and Repair (2-4-3) Instruction in the practices and procedures employed by a plumber in the usual and unusual service work field of residential plumbing repairs including public relations.

PFPB-1323 Plumbing Codes I (2-4-3) An introductory study of state and local plumbing codes and their application in residential and light commercial settings.

PFPB-1340 Lawn Irrigation Systems (2-4-3) Design, layout, and installation of residential and commercial lawn irrigation systems. Emphasis on safety, piping, fitting, and timing equipment.

PFPB-1347 Backflow Prevention (1-5-3) Principles, practices, and regulations of backflow. Includes backpressure, public health, laws and responsibilities, mechanics and use of backflow devices, and equipment testing used in backflow devices.

PFPB-1350 Plumbing and Pipefitting Equipment Safety (2-4-3) Safe use of hand tools, power tools, rigging, and power equipment used in the plumbing trade for installation of different plumbing systems.

PFPB-1353 Commercial Plumbing II (2-4-3) Methods used in the installation of pneumatic controls, water heating systems, circulating water systems, and other piping systems commonly found in commercial buildings.

PFPB-2307 Pipe Fabrication and Installation I (2-4-3) Pipe fabrication procedures of threaded, socketweld, and buttweld pipe joints. Includes pipe and tube bending with hand benders, saddling in and saddling on pipe braces to pipe headers, and fabrication and installation of pipe supports.

PFPB-2308 Piping Standards and Materials (1-6-3) A study of piping standards and specifications, the identification and use of various materials, and material take-offs.

PFPB-2309 Residential Construction Plumbing I (1-6-3) Skill development in the procedures and techniques employed by a plumber in the rough-in and top-out stages of a new home or the remodeling of an older home.

PFPB-2315 Intermediate Technologies for Piping Trades (2-4-3) Piping techniques and materials within the pipe trades. Includes pipefitting procedures for applications and upgrades on techniques and practices designed to deal with federal, state, and local environmental and safety regulations.

PFPB-2336 Commercial Construction and Fixture Setting (2-4-3) Practices and procedures employed by a plumber in the common construction of a commercial building including multilevel drain waste vent systems, water systems, and fixture installations.

PFPB-2343 Pipe Practices (1-6-3) An advanced course in testing; steam traps; valve maintenance; and the identification, storage, and handling of in-line specialties.

PFPB-2349 Field Measuring, Sketching, and Layout (2-4-3) Use, care, and setup of transit and level. Includes field dimensioning, sketching, and layout of future process piping. Emphasizes advanced trade math including the use of trigonometric functions and tables.

PFPB-2357 Plumbing Codes II (2-4-3) State and local plumbing codes and the application of potable water, waste water, and gas systems relating to residential and light commercial settings.

PHRA

PHRA-1202 Pharmacy Law (2-0-2) Survey of federal and state laws governing the practice of pharmacy. Describes the legal and ethical constraints governing technician responsibilities and pharmacist responsibilities in various settings. Prerequisites: PHRA-1301

PHRA-1205 Drug Classification (0-6-2) Study of pharmaceutical drugs, abbreviations, classifications, dosages, actions in the body, and routes of administration. Emphasis on the location of drugs within a pharmacy, inventory control, safety, and quality assurance procedures. Prerequisites: DMTH-0200, READ-0200, WRIT-0200

PHRA-1209 Pharmaceutical Math I (0-6-2) Pharmaceutical mathematics including reading, interpreting, and solving calculation problems encountered in the preparation and distribution of drugs. Conversion of measurements within the apothecary, avoirdupois, and metric systems with emphasis on the metric system of weight and volume. Topics include ratio and proportion, percentage, dilution and concentration, milliequivalent, units, intravenous flow rates, and solving dosage problems. Prerequisites: DMTH-0200, READ-0200, WRIT-0200

PHRA-1243 Pharmacy Technician Cert Review (2-0-2) An overview of major topics covered on the National Pharmacy Technician Certification Examination. Prerequisites: PHRA-1247 PHRA-1345

PHRA-1247 Pharmaceutical Math II (0-6-2) A continuation of pharmaceutical mathematics i. topics address ratio and proportion, dilution and concentration, milliequivalent units and intravenous flow rates.Prerequisites: PHRA-1209

PHRA-1301 Intro to Pharmacy (3-0-3) Examination of the qualifications, operational guidelines, and job duties of a pharmacy technician. Topics include definitions of a pharmacy environment, the profile of a pharmacy technician, legal and ethical guidelines, job skills and duties, verbal and written communication skills, professional resources, safety techniques, and supply and inventory techniques. Prerequisites: DMTH-0200, READ-0200, WRIT-0200

PHRA-1313 Community Pharmacy Practice (2-3-3) Master of skills necessary to interpret, prepare, label, and maintain records of physicians' medication orders and prescriptions in a community pharmacy. Designed to train individuals in the administration of supply, inventory, and data entry. Topics include customer service and advisement, count and pour techniques, prescription calculations, drug selection and preparation, over-the-counter drugs, record keeping, stock level adjustment, data input and editing, and legal parameters. Prerequisites: DMTH-0200, READ-0200, WRIT-0200

PHRA-1345 Intravenous Admixture and Sterile Compounding (1-6-3) Mastery of skills in compounding sterile products. introduction to sterile products, hand washing techniques, pharmaceutical calculations, references, safety techniques, aseptic techniques in parenteral compounding, proper use of equipment (autoinjectors, pumps), Preparation of sterile products (intravenous, irrigation, ophthalmic, total parenteral nutrition, and chemotherapy drugs), and safe handling of antineoplastic drugs. Prerequisites: PHRA-1209

PHRA-1349 Institutional Pharmacy Practice (2-3-3) Exploration of the unique role and practice of pharmacy technicians in an institutional pharmacy with emphasis on daily pharmacy operation. Topics include hospital pharmacy organization, work flow and personnel, medical and pharmaceutical terminology, safety techniques, data entry, packaging and labeling operations, extemporaneous compounding, inpatient drug distribution systems, unit dose chart fills, quality assurance, drug storage, and inventory control. Prerequisites: PHRA-1313

PHRA-1441 Pharmacy Drug Therapy and Treatment (2-6-4) Study of therapeutic agents, their classifications, properties, actions, and effects on the human body and their role in the management of disease. Provides detailed information regarding drug dosages, side effects, interactions, toxicities, and incompatibilities. Prerequisites: PHRA-1205

PHRA-2461 Clinical (0-12-4) A basic, intermediate, or advanced type of health professions work-based instruction that

helps students synthesize new knowledge, apply previous knowledge, or gain experience managing the workflow. Practical experience is simultaneously related to theory. Close and/or direct supervision is provided by the clinical professional (faculty or preceptor), generally in a clinical setting. Clinical education is an unpaid learning experience. Prerequisites: PHRA-1205, PHRA-1209

PHRA-2462 Clinical (0-20-4) A basic, intermediate, or advanced type of health professions work-based instruction that helps students synthesize new knowledge, apply previous knowledge, or gain experience managing the workflow. Practical experience is simultaneously related to theory. Close and/or direct supervision is provided by the clinical professional (faculty or preceptor), generally in a clinical setting. Clinical education is an unpaid learning experience. Prerequisites: PHRA-1247, PHRA-1345, PHRA-1349

PHTC

PHTC-1341 Color Photography I (2-4-3) Examination of color theory as it applies to photography. Emphasis on color concepts and the intricacies of seeing and photographing in color.

PHTC-2301 Intermediate Photography (2-4-3) Study of advanced exposure and printing techniques, printing for maximum print quality. Intermediate photography skills will be developed thru photo projects enhanced by digital imaging software and techniques. Prerequisites: PHTC-1311 or PHTC-1341

PHTC-2343 Portfolio Development (2-4-3) A culmination experience for the evaluation of the student's photographic competencies. Includes association with a professional photographic organization, skills in resume creation, review of photography portfolio, professional self-presentation, comprehensive testing, and seminars in areas of photographic interest. Prerequisites: PHTC-1311 or PHTC-1341

PHTC-2345 Illustrative Photography II (2-4-3) A continuation of the study of commercial photographic principles with an emphasis on enhancing technical and creative quality.

PHTC-2349 Photo Digital Imaging II (2-4-3) Continued skill development in the use of the computer and software for photographic manipulation and output.

PLTC

PLTC-1306 Plastics Quality Control (2-3-3) A course in reading and interpreting blueprints for inspection purposes of plastic parts. Emphasis on geometric dimensioning and tolerancing and hands on setup using modern inspection tools and gages.

PLTC-1345 Plastic Process I (2-4-3) Identification and examination of thermoplastic processes. Emphasis on safety, selection, and preparation of raw materials, machine functions, mold set up, and the use of auxiliary equipment associated with injection molding.

PLTC-2331 Troubleshooting Plastic Processes (2-4-3) A course in process diagnosis and corrective action including minor repair procedures for plastics processing equipment. Prerequisites: PLTC-1345, PLTC-1306

PLTC-2346 Plastic Process II (2-4-3) A continuation of Plastic Processes I with further emphasis on injection molding techniques. Examination of thermoset molding utilizing both compression and transfer processes. A survey of vacuum forming, extrusion, and blow molding. Prerequisites: PLTC-1345 PLTC-1306

PSTR

PSTR-1301 Fundamentals of Baking (1-6-3) Fundamentals of baking including dough, quick breads, pies, cakes, cookies, tarts, and doughnuts. Instruction in flours, fillings, and ingredients. topics include baking terminology, tool and equipment use, formula conversions, functions of ingredients, and the use of proper flours. Prerequisites: DMTH-0050

PSTR-1340 Plated Desserts (1-6-3) Preparation and service of hot and cold desserts with a focus on individual desserts, a la minute preparations, and numerous components within one preparation. Emphasis on station organization, timing, and service coordination for restaurant dessert production.

PSTR-2331 Advanced Pastry Shop (1-6-3) A study of classical desserts. French and international pastries, hot and cold desserts, ice creams and ices, chocolate work, and decorations. Emphasis on advanced techniques. Prerequisites: PSTR-1301, DMTH-0050

QCTC

QCTC-2331 Standards (2-3-3) A study of the philosophy and theory of standards, appropriate standards organizations, and systems integration relating to the application of standards criteria in society. Prerequisites: DFTG-1405 or DFTG-1305

RBPT

RBPT-1400 Fundamentals of Residential Bldg Science (2-6-4) A study of the house as a complex interrelated system of people, building technologies, and the environment. Emphasizes residential building techniques and how they affect the needs for energy, water, and materials while providing a safe, healthy, and comfortable home.

RBPT-2329 Residential Verification & Rating (2-4-3) A summary of the skills needed to be an energy rater and a green rater for homes. Emphasizes onsite building testing, use of rating software and criteria, producing reports, and presenting recommendations to improve building performance scores.

RBPT-2450 Residential Retrofit Strategies (2-6-4) Evaluation of existing homes and retrofit strategies to improve energy efficiency and environmental quality. Includes retrofitting a home for onsite power generation. Covers using a whole-house approach to evaluate the effects of comfort, safety, indoor environmental quality, financial incentives, cost effectiveness, environmental impact, energy efficiency, and the movement of heat, moisture, and air through the building enclosure.

RBTC

RBTC-1245 Robot Interfacing (1-4-2) A Study of the basic principles of robot controllers, controller input/output, memory, and interfacing with computer integrated manufacturing. Prerequisites: ELPT-1341, RBTC-1305

RBTC-1305 Robotic Fundamentals (2-4-3) An introduction to flexible automation. topics include installation, repair, maintenance, and development of flexible robotic manufacturing systems. Prerequisites: CETT-1303, or IEIR-1302

RBTC-1309 Pneumatics (2-4-3) A study of principles of pneumatics, including formulas, functions, and circuits with hands-on experience in these industrial automated systems.

RBTC-1341 Vision Systems (2-4-3) An overview of machine vision systems, including terminology and components. Topics include optics, sensors, lighting, image analysis, and user interfaces. Prerequisites: RBTC-2339

RBTC-1345 Robot Interfacing (2-3-3) A study of the basic principles of robot controllers, controller input/output, memory, and interfacing with computer integrated manufacturing. Prerequisites: ELPT-1341, RBTC-1305

RBTC-1359 Pneumatics (2-4-3) A study of principles of pneumatics, including functions, and circuits with hands-on experience in these industrial automated systems. Prerequisites: HYDR-1305

RBTC-1380 Cooperative Education-Robotics Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RBTC-1381 Cooperative Education-Robotics Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary. Prerequisites: RBTC-1380

RBTC-1391 Robotic and Automated Equipment Applications and Setup (2-4-3) Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

RBTC-1580 Cooperative Education-Robotics Technology (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RBTC-2339 Robot Programming and Diagnostic (1-4-3) A course in the programming of industrial robots, the development of programming techniques, and the diagnosis of faults in systems.

RBTC-2380 Cooperative Education-Robotics Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RBTC-2381 Cooperative Education-Robotics Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RBTC-2445 Robot Application, Set-Up, and Testing (3-4-4) A capstone course that provides the student with laboratory experience in the installation, set-up, and testing of robotic cells. Topics include maintenance.

RBTC-2447 Computer Integrated Manufacturing (3-3-4) The principles of computer integrated manufacturing, including case studies and implementation of process control techniques, cad/cam, operations, software, and networking for CIM systems. Prerequisites: RBTC-1305

RBTC-2580 Cooperative Education-Robotics Technology (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RSTO

RSTO-1221 Menu Management (2-0-2) A study of the food service principles involved in menu planning, layout, and evaluation for a variety of types of facilities and service methods. Emphasis on analysis of menu profitability, modification, commodity use, and other activities generated by the menu.

RSTO-1301 Beverage Management (3-0-3) A study of the beverage service of the hospitality industry including spirits,

wines, beers, and non alcoholic beverages. Topics include purchasing, resource control, legislation, marketing, physical plant requirements, staffing, service, and the selection of wines to enhance foods.

RSTO-1304 Dining Room Service (1-7-3) Introduces the principles, concepts, and systems of professional table service. Topics include dining room organization, scheduling, and management of food service personnel.

RSTO-1313 Hospitality Supervision (3-0-3) Fundamentals of recruiting, selection, and training of food service and hospitality personnel Topics include job descriptions, schedules, work improvement, motivation, and applicable personnel laws and regulations. Emphasis on leadership development.

RSTO-1325 Purchasing/Hospitality Operations (3-0-3) Study of purchasing and inventory management of foods and other supplies to include development of purchase specifications, determination of order quantities, formal and informal price comparisons, proper receiving procedures, storage management, and issue procedures. Emphasis on product cost analysis, yields, pricing formulas, controls, and record keeping at each stage of the purchasing cycle.

RSTO-1380 Cooperative Education Food and Beverage Restaurant Operations (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RSTO-1381 Cooperative Education Food and Beverage Restaurant Operations (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RSTO-1680 Cooperative Education-Restaurant, Culinary, and Catering Management/Manager (1-39-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

RSTO-2301 Principles/Food and Beverage Controls (3-0-3) A study of financial principles and controls of food service operation including review of operation policies and procedures. Topics include financial budgeting and cost analysis, emphasizing food and beverage labor costs, operational analysis, and regulatory reporting procedures. Prerequisites: IFWA-1217

RSTO-2380 Cooperative Education Food and Beverage Restaurant Operations (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RSTO-2381 Cooperative Education Food and Beverage Restaurant Operations (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

RSTO-2505 Management/Food Production and Service (2-9-5) A Study of quantity cookery and management problems pertaining to commercial and institutional food service, merchandising and variety in menu planning, and customer food preferences. Includes laboratory experiences in quantity food preparation and service. Prerequisites: CULA-2301, CHEF-2301, ITSC-1309

RSTO-2680 Cooperative Education-Food and Beverage Operations Man (1-0-6) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

RTVB

RTVB-1291 Technical and Production Issues in Radio/TV Broadcast (1-2-2) A general overview of the basic theories and practices of radio and television broadcasting including past, current, and future trends in the industry which includes high definition television programming, market research, promotions, on-air operations, and business management concerns and practices. These will apply to both commercial and educational levels. Prerequisites: RTVB-1321

RTVB-1310 Introduction to Mass Communications (3-0-3) Basic factors affecting human communication, including theories and models of communication, the relationship of mass media and society, trends in newspaper, radio, television, file and books, advertising, public relations, and photography. Prerequisites: DVLA-0050 READ-0050

RTVB-1321 TV Field Production (2-4-3) A study of the preproduction, production, and post-production process involved in field television production. Topics include field camera setup and operation, field audio, television directing, and in-camera or basic continuity editing with an emphasis on underlying principles of video technology. Prerequisites: RTVB-1325

RTVB-1325 TV Studio Production (2-4-3) A study of basic television production as it applies to live and taped studio pro-

gramming. Topics include studio camera operation, television audio, and television directing with an emphasis on underlying principles of video technology.

RTVB-1329 Writing for Electronic Media (2-4-3) An introduction to the writing of commercials, public service announcements, promos, news documentaries, and other broadcast and film materials. Emphasis on the format and style of each type of writing and development of a professional writing style. Prerequisites: WRIT-0200

RTVB-1391 Special Topics in Radio and Tv Broadcast (2-4-3) Topics address recently identified current events, skills, knowledges, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.

RTVB-2337 TV Production Workshop I (2-4-3) Study of advanced application and design of video productions in location or studio shoots with real deadlines and quality control restrictions. Prerequisites: RTVB-1321

SCIT

SCIT-1543 Appl. Analytical Chemistry (3-6-5) Instruction in gravimetric and titrimetric analysis of practical samples by classical and standard methods. Prerequisites: CHEM-1305, CHEM-1105, CHEM-1405, or SCIT-1414

SMER

SMER-1434 Small Engine Two Stroke Overhaul (1-7-4) Overhaul procedures for two stroke small engines as used in lawn and garden applications. Emphasis on proper shop procedures for disassembly, inspection, servicing, and assembly of two stroke small engines and their applicable drive systems. Corequisites: DEMR-1225

SMER-1437 Small Engine Four Stroke Overhaul (1-7-4) Overhaul procedures for four stroke small engines, transmissions, and transaxles. Emphasis on shop procedures for disassembly, assembly, component inspection, component measurement, component servicing, transmission troubleshooting, transmission inspection, and transaxle inspection. Corequisites: DEMR-1225

SMFT

SMFT-1211 Vacuum Principles (1-4-2) An introduction to vacuum technology, vacuum principles, pumping systems, gauging, leak detection, and safety practices. Prerequisites: DMTH-0050, or equivalent as determined by Placement Test.

SMFT-1280 Cooperative Education-Semiconductor Manufacturing Technology (1-9-2) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

SMFT-1341 Semiconductor Mfg Methods (2-4-3) Various aspects of semiconductor manufacturing including elements of manufacturing, total productive manufacturing, teamwork dynamics, quality control, continuous improvement, statistical process control (SPC), capability studies, and productivity issues. Prerequisites: DMTH-0100 or equivalent as determined by Placement Test.

SMFT-1343 Semiconductor Mfg Technology I (2-4-3) A study of the processes, materials, and equipment used in the manufacturing of semiconductors, including an overview of the semiconductor industry, related terminology, and standard safety practice. Prerequisites: IEIR-1302, DMTH-0050, or equivalent as determined by Placement Test.

SMFT-2335 Vacuum Technology (2-4-3) Skill Development in Vacuum Technology, Including Vacuum Principles, Pumping Systems, Gauging, Leak Detection, and Safety Principles. Prerequisites: SMFT-1211. Corequisites: IEIR-1302

SMFT-2338 RF Plasma Systems (1-7-3) A study of RF energy and its applications in the semiconductor manufacturing industry. Topics include plasma physics, rd power amplification and oscillators, transmission lines, impedance matching, and safety. Prerequisites: CETT-1305, SMFT-2335(4764) IEIR-1304

SMFT-2343 Semiconductor Manufacturing Tech II (2-4-3) The continuation of Semiconductor Manufacturing I covering the processes, materials, and equipment used in the manufacturing of semiconductors. Topics address process-yield analysis and process troubleshooting. Prerequisites: SMFT-1343, CHEM-1305, CHEM-1105

SMFT-2450 Vacuum Thin Films (2-8-4) A study of physical vapor deposition (PVD), chemical vapor deposition (CVD), and related systems. The student will plan, repair, maintain, and test various systems including evaporators, e-systems, ion plating, direct current (DC) and radio frequency (RF) sputtering systems. The course is intended to enhance and apply knowledge gained in previous vacuum-related classes. Other topic areas include the planning, repairing, maintaining, and coating of various chemical depositions used as coatings in manufactured optics and semiconductors. Prerequisites: SMFT-2335, CETT-1479

SMFT-2470 Semiconductor Manufacturing Technology (1-6-4) A study of the processes, materials and equipment used in the manufacturing of semiconductors, process yield analysis and troubleshooting. The course includes and overview of the industry, related terminology and standard safety practices.

SOLR

SOLR 1371 Introduction to Solar and Alternative Energy Technologies (2-4-3) Introduction to Renewable Energy is an overview to the most common types of renewable energy with an emphasis on solar system types and applications. This course introduces solar system types, components, safety issues, and history.

SOLR 1372 Foundations of Solar Photovoltaic Power Generation (2-4-3) Foundations of Solar Photo-Voltaic Power Generation is the basic course for solar electrical power generation using photovoltaic (PV) equipment. This course covers calculation of power generation and demand requirements, installation process for solar system components, and strategies for optimizing system performance and reliability.

SOLR 1373 Foundations of Solar Thermal (2-4-3) The background course for solar thermal uses and applications. This course discusses industry terminology, safety issues, solar thermal systems design and installation procedures.

SOLR 2374 Solar System Equipment and Components (2-4-3) The solar course dedicated to the design and operation of solar system equipment, components, subsystems, and balance of plant. Design considerations include environmental, architectural, structural, and legal requirements.

SOLR 2375 Solar System Design, Installation, Troubleshooting & Repair (2-4-3) The Capstone course for the Solar Technician Program and dedicated to design considerations including site assessment and desired system operation, installation, commissioning, maintenance, operation, troubleshooting and repair, and decommissioning. This course reviews safety issues, personal protection equipment, and tools of the trade associated with installation, operation, maintenance, and troubleshooting and repair of solar systems.

SRVY

SRVY-1301 Introduction to Surveying (2-4-3) an overview of the surveying profession. The history of surveying and its impact on the world. Review of the mathematics used in surveying. Introduction to basic surveying equipment with emphasis on measurements. Instruction on surveying procedures and the limitation of errors. Calculation to determine precision and error of closure. Prerequisites: DMTH-0100

SRVY-1309 Surveying Measurement (2-4-3) an introductory lab course covering the equipment and hardware of the profession necessary to measure horizontal and vertical distances, in accordance with prevailing and applicable professional standards, e.g., standards of the national geodetic survey, state and local statues, and regulations, professional standards, such as the Texas society of professional surveyors. Prerequisites: DMTH-0100, DMTH-0200, or TECM-1341

SRVY-1313 Plane Surveying (2-4-3) An introductory overview of surveying equipment and measurement techniques used in mapping. Emphasis on leveling and traversing for preparing a map. Prerequisites: TECM-1341, DMTH-0100, or DMTH-0200

SRVY-1315 Surveying Calculations (3-0-3) An introduction to the mathematics used in surveying and mapping, including algebra, plane trigonometry, and plane, solid, and analytical geometry. Prerequisites: MATH-1316 or TECM-1343;

SRVY-1335 Land Surveying Applications (2-4-3) A lab course covering the equipment, techniques, and hardware of the profession necessary to measure horizontal and vertical angles and distances used in traversing, according to prevailing and applicable professional standards. Prerequisites: SRVY-1301

SRVY-1341 Land Surveying (3-0-3) A study of the measurement and determination of boundaries, areas, shapes, location through traversing techniques. Instruction in a variety of adjustment methods using programmed and non-programmed hand-held calculators and computers. Methods of traversing and adjustment of errors according to prevailing and applicable professional standards.

SRVY-1342 Techniques for Surveying and Mapping For Surveying and Mapping (2-4-3) Introduction to the Global Positioning System (GIS) in surveying and mapping activities. Major topics include structuring a GPS system, designing a GPS data collection project, using GPS data collection equipment, collecting and processing GPS dat, and correcting data errors. Prerequisites: DMTH-0100, DMTH-0200, TECM-1341

SRVY-1343 Surveying-Legal Principles I (3-0-3) The study of location, conveyance, ownership, and transfer of real property under the laws of the State of Texas. Emphasis on the history of disposition of public land, interpreting written descriptions, dignity of calls and evidence, record search of public and private land records and preparation of a deed record sketch.

SRVY-1380 Coop Edu - Surveying Technology (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

SRVY-1381 Cooperative Education-Survey Technology/ Surveying (1-19-3) Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Prerequisites: SRVY-2313 SRVY-2331

SRVY-2309 Computer Aided Mapping (1-6-3) An intermediate to advanced level course designed to teach the student how to produce a survey map using appropriate software and coordinate geometry. Production of survey maps and plats, civil engineering design drawings and topographic maps utilizing coordinate geometry. Prerequisites: DFTG-1313, or DFTG-1309

SRVY-2313 Control Surveying (3-0-3) Emphasis on field astronomy calculations, state plane coordinates and the reduction of information received from global positioning system receivers. Prerequisites: TECM-1343 or MATH-1316

SRVY-2331 Geodetic Surveying & Mapping (2-4-3) A study of field astronomy, polaris and solar observations, state plane coordinate systems and global positioning system. Prerequisites: SRVY-1342

SRVY-2335 Geodetic Surveying & Mapping Application (2-4-3) Emphasis on the field techniques of making astronomic observations, recovering control monuments, setting control

monuments, and the planning and use of Global Positioning System receivers in data collection.

SRVY-2339 Engineering Design Surveying (2-4-3) A study of the theory and field methods of surveying alignments, to include highway routes, pipelines, utility and waterway construction, transmission lines and site stakeout, including the study of horizontal circular curves, parabolic curves, areas, and earthwork volumes. Prerequisites: SRVY-1315

SRVY-2341 Engineering Design Survey Lab (2-4-3) The companion lab for engineering design surveying emphasis on field methods of surveying alignments, Prerequisites: SRVY-2339

SRVY-2344 Surveying-Legal Principles II (3-0-3) An advanced course in legal principles, retracement and boundary location with application of legal principles and rules of construction; writing survey reports and property descriptions; and a review of boundary law cases. Prerequisites: SRVY-1343

SRVY-2455 Advanced Boundary Project (1-8-4) Designed for students for performing boundary surveying of large tracts of land using an environmental approach to determine real-time boundary lines. Students will interact with private citizens and public agencies in assessing boundary lines and limitations. Course includes the use of the latest, state-of-the-art Geographic Positioning Systems (GPS), total stations, historical data, and deed references. Prerequisites: SRVY-2313, SRVY-2331, SRVY-2341

VHPA

VHPA-1301 Auto Parts Nomenclature (2-2-3) Overview of automotive parts, principles of operation, and location on the vehicle. Prerequisites: DVLA-0050, READ-0050

VHPA-1441 Auto Parts Center Sales (2-4-4) Skill development in communications, sales, and merchandising of auto parts to vehicle owners and repair technicians with an emphasis on customer relations, communication, sales, and merchandising Skills. Prerequisites: EECT-1200, READ-0100, DMTH-0100, POFT-1325

VHPA-2331 Auto Parts Management (2-4-3) Skill development in managing the inventory of a parts department using manual and computerized programs. Topics include store orders, inventory control practices, database management, and physical inventory. Prerequisites: READ-0100, DMTH-0100, POFT-1325

WDWK

WDWK-1413 Cabinet Making I (2-6-4) Design and construction of base cabinets and wall cabinets for kitchens and bathrooms. Emphasis on the safe use of portable and stationary power tools. Finishing techniques include proper sanding, sealing, and staining.

WLDG

WLDG-1307 Introduction to Welding Using Multiple Processes (2-2-3) an overview of the basic welding processes, including oxy-fuel welding and cutting, shielded metal arc (SMAW), gas metal arc (GMAW), and gas tungsten arc welding (GTAW).

WLDG-1312 Introduction to Flux Cored Welding (FCAW) (1-4-3) An overview of terminology, safety procedures, and equipment set-up. Practice in performing T-joints, lap joints, and butt joints using self-shielding and dual-shield electrodes.

WLDG-1313 Introduction to Blueprint Reading (3-0-3) A study of industrial blueprints. Emphasis placed on terminology, symbols, graphic description, and welding process, including systems of measurement and industry standards. Interpretation of plans and drawings used by industry.

WLDG-1323 Welding Safety Tool and Equipment (3-0-3) An introduction to welding careers and safety practices, including welding safety; OSHA and the hazardous communication act; material safety data sheets (MSDS); basic mathematics; measuring systems; shop operations; use and care of precision measuring tools; and the use and care of hand and power tools. Instruction on various types of welding equipment and processes basic welding gases, fluxes, rods, electrodes, symbols, and blueprints.

WLDG-1337 Intro to Metallurgy (1-8-3) A study of ferrous and nonferrous metals from the ore to the finished product. Emphasis on metal alloy, heat tearing, hard surfacing, welding techniques, forging, foundry processes, and mechanical properties of metal including hardness, machinability, and ductility.

WLDG-1380 Cooperative Education Welder/Welding Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

WLDG-1381 Cooperative Education Welder/Welding Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

WLDG-1417 Introduction to Layout and Fabrication (2-8-4) A fundamental course in layout and fabrication related to welding industry. Major emphasis on structural shapes and use in construction.

WLDG-1428 Introduction to Shielded Metal Arc Welding (2-8-4) An introduction to shielded metal arc welding process. emphasis placed on power sources, electrode selection, oxy-fuel cutting and various joint designs. Instruction provided in SMAW fillet welds in various positions.

WLDG-1430 Instruction Gas Metal Arc (2-4-4) A study of the principles of gas metal arc welding, setup and use of GMAW equipment, and safe use of tools/equipment. Instruction in various joint designs.

WLDG-1434 Introduction Gas Tung Arc (TIG) (2-8-4) An introduction to the principles of gas tungsten arc welding (GTAW), Setup/use of GTAW equipment, and safe use of tools and equipment. Welding instruction in various positions on joint design.

WLDG-1435 Introduction Pipe Welding (2-8-4) An introduction to welding of pipe using the shielded metal arc welding process (SMAW), including electrode selection, equipment setup, and safe shop practices. Emphasis on weld positions 1g and 2g welds using various electrodes. Prerequisites: WLDG-1457

WLDG-1457 Intermediate Shielded Metal Arc Welding (2-8-4) A Study of the production of various fillets and groove welds. Preparation of specimens for testing in all test positions. Prerequisites: WLDG-1428

WLDG-1580 Cooperative Education Welder/Welding Technology (1-28-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

WLDG-2350 Orbital Tube Welding (1-6-3) An overview of welding in the semi-conductor and related industries. Special emphasis on the disciplines of orbital tube welding, including cutting, facing, and development of weld procedures. Prerequisites: WLDG-1434, WLDG-1430, WLDG-2413

WLDG-2355 Adv Weld Metallurgy (1-8-3) A study of metallurgy as it applies to welding, including structure, identification, and testing of metals; temperature changes and their effect on welded metals; properties of metals, and factors affecting weldability of ferrous and nonferrous metals. Prerequisites: WLDG-1337

WLDG-2380 Cooperative Education Welder/Welding Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

WLDG-2381 Cooperative Education Welder/Welding Technology (1-19-3) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

WLDG-2406 Intermediate Pipe Welding (2-7-4) A comprehensive course on the welding of pipe using the shielded metal arc welding (SMAW) process. Position of welds will be 1G, 2G, 5G, and 6G using various electrodes. Topics covered include electrode selection, equipment setup, and safe shop practices. Prerequisites: WLDG-1457

WLDG-2413 Welding Using Multiple Processes (2-8-4) Instruction using layout tools and blueprint reading with demonstration and guided practices with some of the following welding processes: oxy-fuel gas cutting and welding, shield metal arc welding (SMAW), gas metal arc welding (GMAW), flux-cored arc welding (FCAW), gas tungsten arc welding (GTAW), or any other approved welding process. Prerequisites: WLDG-1457, WLDG-1434, WLDG-1312, WLDG-1430

WLDG-2435 Advanced Layout/Fabrication (2-7-4) A Continuation of the intermediate layout and fabrication course which covers production and fabrication of layout tools and processes. Emphasis on application of fabrication and layout skills. Prerequisites: WLDG-1457

WLDG-2443 Advanced Shielded Metal Arc (SHAW) (2-8-4) Advanced topics based on accepted welding codes. training provided with various electrodes in shielded metal arc welding processes with open v-groove joints in all positions. Prerequisites: WLDG-1457

WLDG-2451 Adv Gas Tung Arc (TIG) (2-8-4) Advanced topics in GTAW welding, including welding in various positions and directions. Prerequisites: WLDG-1434

WLDG-2453 Adv Pipe Welding (2-7-4) Advanced topics involving welding of pipe using the shielded metal arc welding (SMAW) Process. Topics Include electrode selection, equipment setup, and safe shop practices. Emphasis on weld positions 5g and 6g using various electrodes. Prerequisites: WLDG-1435

WLDG-2580 Cooperative Education Welder/Welding Technology (1-39-5) Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student.

Under supervision of the college and the employer, the student combines classroom learning with work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.



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❖ Capstone course: A required learning experience which results in a consolidation and synthesis of a student's educational experience. The capstone experience certifies mastery of entry-level work place competencies.

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Withers, Paul Dwayne A.A.S.
Texas State Technical College
Wood, Pamela K. Certificate
Texas State Technical College
*Yantis, Walton Todd A.A.S.
Texas State Technical College
Yezak, Ashley Andrew A.A.S.
Texas State Technical College

Directors

Accounting
Vrbas, Margie — B.B.A.
Baylor University

Campus Living
Rachels, Michelle — B.S.
Howard Payne University

Center for Assessment
Hunter, Pamelia — M.A.
Washington University, St. Louis

Development
Musil, Becky — Ed.D.
University of Mary-Hardin Baylor

Distance Education
Zimmerman, Lance G. — B.S.
Tarleton State University

Educational Technology
Meyers, Susan — A.A.S.
Texas State Technical College

External Resource Development
Hyde, Carliss — M.A.
Baylor University

Financial Aid
Adler, Jackie J. — B.B.A.
University of Mary Hardin-Baylor

Institutional Effectiveness, Research & Planning
Morris-Baldwin, Darline — Ph.D.
University of North Texas

Library
Koepf, Linda S. — M.L.S.
Syracuse University

Marketing & Communications
Osburn, Jan — B.B.A
Northwood University

Printing Production
Evridge, Bill — A.A.S.
Texas State Technical College

Recruiting Services
Balch, Marcus — B.B.A.
Texas Wesleyan University

Retention Programs & Campus Outreach
Khoury, Dawn — M.S.
Texas Tech University

Student Living
Worthey, Frances C. — M.Ed.
Prairie View A&M University

QUESTION	ANSWERER	LOCATION	EXT.#s
Absences	Individual Instructor	Faculty Offices	
Adding or Dropping a Class	Program Adviser	Individual Department	
Admissions Policies	College Records	SSC	2361
Books (Buying and Selling)	Bookstore Staff	SSC	3800
Campus Employment	Student Employment Officer	Financial Aid Office-SSC	2220
Career Counseling	Retention Programs	SSC	3609
Cashing a Check	Cashiers	SSC	3787
Catalogs (Other Colleges)	Librarians	Library	4846
Checking out a Book	Librarians	Library	4846
Childcare Assistance	Department of Student Life	SSC	3634
Clubs/Organizations	Student Activities Supervisor	SRC	3606
Counseling	Department of Student Life	SSC	3609
Deaf Student Assistance	DSS Staff/Interpreters	Fentress Center	3600
Degree Plans	Department Chair	Individual Department	
Disabled Student Services	DSS	Fentress Center	3600
Evening Classes	Individual Department Staff	Individual Department	
Game Room	Student Activities Staff	SRC	3400
Grants	Financial Aid Staff	SSC	4814
I.D. Cards (TechOne)	TechOne	SSC	2287
Illness	Nurse	Student Health Services-SSC	3820
Insurance	Nurse	Student Health Services-SSC	3820
Internet Access	Campus Help Desk	SSC	3072
Intramural Sports	Intramural Sports Supervisor	SRC	3440
Loans and Scholarships	Financial Aid Staff	SSC	4814
Newspaper (“Tech Times”)	Marketing & Communications	PH	3035
Parking Citations	Police Chief	Public Safety	3690
Photocopying	Printing Production Staff	PGCC	4879
Postage Stamps	Cashiers	SSC	3794
Schedule Changes	College Records	SSC	2361
Study Skills	Student Success Center	RDC, Rm 123	2303
THEA Test	Center for Assessment	SSC	3609
Theft/Other Legal Infractions	Police Chief	Police Department	3690
Transcripts	College Records	SSC	2361
Tutoring	Student Success Center	RDC, Rm 123	2303
Veterans Certification/Info.	Veterans Certification Officer	College Records, SSC	4817
Withdrawing	College Records	College Records, SSC	2361
Women’s Issues	Department of Student Life	SSC	
3634			

Key

DSS = Disability Support Services
FSC = Food Service/Culinary Arts Building
JCTC= John B. Connally Technology Center
PGCC = Provence Graphic Communications Center
PH = Patterson Hall
RDC = Dr. Roy Dugger Academic Center
SRC = Murray Watson Jr. Student Recreation Center
SSC = Student Services Center
THEA= Texas Higher Education Assessment

Contact Us

Admissions & Records.....254.867.2361
Deaf/Disabled Student Services.....254.867.3600
Financial Aid.....254.867.4814
Housing—Single
- Residence Life (Red River & Lavaca).....254.867.4809
- Village Oaks.....254.867.3823

Housing—Family 254.867.3824
Women's Resource Center.....254.867.3824

TSTC Educational Partnership Locations

Texas State Marine Education Center, Palacios.....361.972.3687
WCJC Fort Bend Technical Center, Richmond.....281.239.1549

Texas State Technical Colleges

TSTC Harlingen
800.825.8784
956.364.4000

TSTC Marshall
888.382.8782
903.935.1010

TSTC Waco
800.792.8784
254.867.3371

TSTC West Texas
800.592.8784
Abilene 325.672.7091
Breckenridge 254.559.6556
Brownwood 325.643.5987
Sweetwater 325.235.7300

TSTC
Texas State Technical College

3801 Campus Drive
Waco, Texas 76705
800.792.8784
254.799.3611
www.tstc.edu

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❖ Capstone course: A required learning experience which results in a consolidation and synthesis of a student's educational experience. The capstone experience certifies mastery of entry-level work place competencies.