



# **2006-2008 CATALOG**

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Angola, IN 46703  
260.665.4100  
800.347.4878  
[tristate.edu](http://tristate.edu)

Dear Student:

Welcome to Tri-State University. You will find that Tri-State is an exciting place, where young men, women and working adults acquire the knowledge and skills that transform their lives and prepare them for challenging, rewarding careers.

Since 1884, Tri-State has offered affordable, career-oriented, comprehensive educational opportunities to deserving students who are determined to make a difference. The placement rate of TSU students in work related to their majors within six months of graduation is among the highest in the country, and the starting salaries for our graduates exceed the national average in every category.

The placement rates and starting salaries of our graduates are a testament to the kind of education that is available at Tri-State—one that is practical and grounded in fundamentals. It is the kind of education that can only be gained through interaction and collaboration between committed professors and motivated students, through the sharing of diverse viewpoints and common respect.

It's the kind of education you will get whether you are enrolled in Tri-State's Allen School of Engineering & Technology, Ketner School of Business, Franks School of Education, Jannen School of Arts & Sciences, our two master's degree programs, or in the School of Professional Studies, which operates four locations throughout northern Indiana—TSU Fort Wayne, TSU Howe, TSU Kendallville, TSU Merrillville, TSU North (Angola), TSU South Bend—and has a partnership with Glen Oaks Community College in Centreville, Michigan.

As part of our commitment to developing the total person, Tri-State offers a wide range of social, special interest and athletic activities. TSU's Student Ambassadors and members of the Residence Life team work with the Student Life staff to ensure that the residence halls provide a safe, nurturing environment for the more than 600 full-time students who live on campus.

The Athletic Department offers 19 intercollegiate sports for men and women, along with intramural sports for recreational athletes. Tri-State's commitment to excellence in sports can be seen in its current transition to the National Collegiate Athletic Association (NCAA) Division III and to America's oldest athletic conference, the Michigan Intercollegiate Athletic Association (MIAA).

Again, welcome to the Tri-State University community. I hope you will feel free to stop by my office at any time to seek assistance or guidance, or just to visit. My door is always open, and you are always welcome.

Sincerely,

Earl D. Brooks II, Ph.D., President

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# TRI-STATE UNIVERSITY IN PROFILE

## DESCRIPTION

Tri-State University is a private, comprehensive, career-oriented, degree-granting institution. It offers degrees in 40 academic programs through five schools—Allen School of Engineering & Technology, Ketner School of Business, Jannen School of Arts & Sciences, Franks School of Education, and the School of Professional Studies. The University is governed by a self-perpetuating Board of Trustees. 

## MISSION STATEMENT

The Mission of Tri-State University, a private institution founded in 1884, is to provide career-oriented higher education in the areas of engineering, business, arts and sciences and teacher education in a learning environment in which students receive personal attention through small classes and excellent teaching. The Institution's undergraduate and graduate programs encourage and foster lifelong learning that prepare graduates to be productive in professional-level positions early in their careers, to advance to leadership roles, and to provide service to society.

## PURPOSES OF TRI-STATE UNIVERSITY

In particular, the purposes of Tri-State University are as follows:

- I. to provide students with educational tools needed to develop careers of leadership in their chosen professions;
- II. to provide students with general education courses and activities that expose them to a variety of academic disciplines, broadening their cultural horizons;
- III. to provide students with continuing programs that respond to contemporary needs of businesses and industries in the community and region;
- IV. to provide students with opportunities to pursue graduate studies, lifelong learning and professional expertise; and
- V. to provide students with higher education designed to enable them to be contributing citizens of local, regional and international communities, primarily in the areas of engineering, business and teacher education.

Adopted on May 7, 1999 and revised April 30, 2004 by the Board of Trustees

## ACCREDITATION

Tri-State University is accredited by the Higher Learning Commission and a member of the North Central Association, [www.ncahigherlearningcommission.org](http://www.ncahigherlearningcommission.org). Telephone 312.263.0456. Tri-State University's programs in chemical engineering, civil engineering, electrical engineering and mechanical engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). ABET's national office is located at 111 Market Place, Suite 1050, Baltimore, Maryland, 21202-4012, USA, Telephone 410.347.7700. All teacher preparation programs are accredited by the National Council for the Accreditation of Teacher Education (NCATE, [www.ncate.org](http://www.ncate.org)) and the Indiana Department of Education /Division of Professional Standards Board ([www.doe.state.in.us/dps/](http://www.doe.state.in.us/dps/)).

## DISCLAIMER

The information contained in this catalog is subject to change. It is the responsibility of the student to ensure that information, particularly in regard to fees, is current. Up-to-date information is available through academic advisors or on the Tri-State University website at [tristate.edu](http://tristate.edu).

## HISTORY

Tri-State was founded in 1884 by 12 private citizens. It was and is a product of the normal school movement of that time, a fact that was reflected in its original name, Tri-State Normal College.

As a result, Tri-State's mission and focus differed radically from the prevailing concepts of higher education in that day. The first schools of higher education in this country were essentially in the British mold, with emphasis on the liberal arts and training for the learned professions, particularly the clergy. By contrast, normal schools provided higher education for students in the "normal occupations" of life, such as teaching, engineering, telegraphy, domestic science and other practical arts.

Although they provided an unpretentious type of education, normal schools were generally bold and innovative. They simply took students in and encouraged them to do as much as they could through self-development. They also encouraged active student participation in classes, as opposed to the prevailing lecture format. For the convenience of their students, the schools operated on a year-round basis. Coeducation was another striking feature of the normal school movement.

But it was the emphasis on the useful and practical, rather than the traditional, that enabled normal schools to flourish. By 1888, 30 normal schools had been founded in Indiana, including Ball State Teacher's College, Valparaiso, and, of course, Tri-State Normal College, located on six acres of land in the tiny village of Angola. Within 30 years, however, Tri-State was the only school to survive as an independent; all of the other schools had perished or had become state- or church-sponsored.

One reason that Tri-State succeeded while the other schools failed was because of its early leader, Littleton M. Sniff. His fierce sense of independence and total devotion to this school is documented in hundreds of letters he wrote to prospective students, assuring them they could start college regardless of their academic background and that they could earn degrees in the shortest time possible at a cost they could afford. Most of these letters concluded with the simple command and exhortation of "Come."

And then came Sniff, Tri-State's second president, presided over the school's first commencement ceremonies in 1888. By May 1922, Tri-State College—renamed in 1906—had more than 200 graduates, representing nearly every state in the Union and 30 countries. Sniff died on September 14, 1922, in his 36<sup>th</sup> year as president, the longest tenure in school history. The strength of his character and the power of his convictions were part of his legacy to Tri-State.

Tri-State's original curricula featured teaching, bookkeeping, science, commercial law, penmanship, and some courses in the classics and music. Under Sniff's guidance, Tri-State kept pace with the needs of the new scientific era by adding or dropping courses of study according to demand, financial feasibility, and the needs of the marketplace. In 1927, Tri-State reorganized to focus solely on its strengths in engineering and business; all other programs were discontinued, including teacher preparation, fine arts, music, and the School of Law. The School of Pharmacy opened in 1902 and closed in 1922.

The School of Engineering, which was established in 1902 by George Neihous (who had come to Tri-State at the request of President Sniff), offered accelerated bachelor of science degree programs in civil, mechanical, electrical and chemical engineering. There was also a new engineering need to be met in the expanding world of transportation: aviation. Ever flexible and alert, TSC listed aeronautical engineering as a degree program in 1929, two years after Charles Lindbergh crossed the Atlantic. During this time, the school's flying clubs—the Stick and Wing Club and the Glider Club (later renamed the Thunderbirds)—were formed. In 1934, Tri-State celebrated its 50<sup>th</sup> anniversary at the 1934 World's Fair in Chicago with daily demonstrations of its miniature wind tunnel.

The School of Commerce, built around the objectives of the American private enterprise system, offered accelerated bachelor of science degree programs in business administration and accounting.

World War II could not have ended too soon for Tri-State College. By 1945 its enrollment sank to 170, putting its future in jeopardy. Several administrators had gone two years without pay. But the war ended and more than 1,300 students—mostly GIs—swelled the campus in the fall of 1946. War surplus buildings were secured from the Federal Public Housing Agency to provide additional classroom buildings and student housing for an over-crowded campus. In 1947, due to the volume of students completing their coursework early, a Mid-Year Commencement was instituted. With its future secure, the stockholders agreed to reorganize the 60-year-old school into a nonprofit educational corporation, marking the first time Tri-State was granted exemption from federal tax.

Dr. Richard M. Bateman began his fifteen-year tenure on campus in 1960. His era would prove to be of great significance. The Tri-State campus underwent one of its largest expansions in history, adding Ford Library (1962), Stewart Hall (1965), Best Hall of Sciences (1967), Hershey Hall (1970) and Zollner Golf Course (1971). Five new dormitories were constructed in 1968 as student enrollment hit a record: 2,022 students.

In 1964, as a first step in gaining accreditation with the North Central Association of Colleges and Secondary Schools (NCA), Tri-State discontinued its accelerated 27-month programs and began enrolling students in standard 36-month programs. While many had serious misgivings about ending the accelerated programs, most realized the importance of gaining accreditation. NCA accreditation was achieved in 1966.

In 1968, the Division of Arts and Sciences was formed to offer two-year transfer programs to students who planned to earn bachelor of science degrees in the liberal arts at other schools. The new programs proved popular, and, in 1970, the division was upgraded to a school with four-year degree programs. Teacher preparation returned to the curriculum in the 1970s. With three schools—Engineering, Business, Arts & Sciences—Tri-State had become more than a college. Shortly after Bateman's departure in 1975, Tri-State College was officially renamed Tri-State University.

During the ten years leading up to its Centennial Celebration in 1984, Tri-State continued to innovate and excel. The first Grand Prix go-kart race was held in 1971. The first International Students Association dinner was served in 1974. The first WEAX (student radio station) broadcast was heard in 1978. A free film series was inaugurated in 1980. The Trojans, known as the Engineers until 1967, had great success in golf, track and field, and particularly basketball, which collected eleven consecutive Mid-Central Conference titles and earned two appearances in the NAIA national tournament.

Tri-State celebrated its 100<sup>th</sup> anniversary with the publishing of *From Carriage to Computer: The First 100 Years of Tri-State University*, written by Elizabeth Brown Orlosky.

In the early 1990s, Tri-State received approval from NCA to offer adult degree programs outside of Angola. Between 1994 and 1998, TSU opened four locations across northern Indiana—Angola, Fort Wayne, Merrillville, South Bend.

Hershey Hall was the site of the 1996 and 1997 NAIA Division II Women's Basketball Championship. (The Tri-State Thunder advanced to the Elite Eight in 1996). The women's golf team captured Tri-State's first national championship in 1997. The men's volleyball team won the school's second national championship in 1998, the same year Thunder football rolled to an 11-3 record and a semi-final appearance in the national playoffs.

More than 120 years after its founding, Tri-State continues on a successful path. Since 2001, significant renovations have given the campus new life. The Administration Building will soon house the school's executive offices once again, under the name C.W. Sponsel Administration Center. The school's newest and largest building will be completed in 2007-2008: University Center and the Center for Online Resources. Academics remain strong in all five schools: Allen School of Engineering & Technology, Franks School of Education, Jannen School of Arts & Sciences, Ketner School of Business, and School of Professional Studies.

## **CORPORATE STATUS**

Tri-State University is an educational corporation organized and existing under the laws of the state of Indiana. The correct corporate name of the institution is Tri-State University, Incorporated. The University was founded in 1884 as Tri-State Normal College. The governing body of the University is the Board of Trustees, which has an authorized membership of 30 trustees, each of whom serves without compensation and none of whom may be employed by the University in any administrative or teaching capacity. Two of the trustees are authorized to be elected by the alumni. Consistent with this form of organization and non-profit operation, Tri-State University has been granted exemption from federal income tax by the Commissioner of Internal Revenue, Treasury Department under Section 501 (c) (3) of the Internal Revenue Code. Contributions to the University are deductible to the extent provided by law; bequests, legacies, devises or transfers to the University are deductible in arriving at the value of the net estate of a decedent for estate tax purposes in the manner and to the extent provided by law; and gifts of property are deductible in computing net gift for gift tax purposes in the manner and to the extent provided by the Internal Revenue Code.

## **FINANCIAL INFORMATION**

Selected financial data are available from the institution's "Annual Report." That report may be obtained from the office of the President or of the Vice President for Finance.

## **CAMPUS SECURITY**

A copy of the annual "Campus Security Report" is available by September 1st of each year on the TSU web site ([tristate.edu](http://tristate.edu)). It contains statistics, policies, and a description of programs that promote campus safety as well as drug prevention program information.

## **LOCATIONS**

### **MAIN CAMPUS**

Nestled in the heart of Steuben County, Tri-State University's 485-acre main Angola campus serves as the hub of TSU's seven locations. Aside from housing 101 of Indiana's natural lakes, Steuben County is also known as one of the fastest growing areas in the state. In recent years, it has been touted as being one of 50 boom towns in the U.S. in Money Magazine. Though the town has a population of only 9,000 residents, 750,000 visitors flock to Steuben County's scenic gem- Pokagon State Park. Due to the abundance of water and natural beauty, fishing, camping, skiing, and boating are all popular pastimes. Given that Angola is located at the major highway intersection of Interstate 80/90 and Interstate 69, it is easily accessible from any of the major cities in the area and also has a healthy economy with its 300 businesses and industries, many of whom partner with TSU to offer enhanced educational opportunities. Restaurant and shopping chains, in addition to an outlet mall in Fremont, also provide quick access to all the luxuries of a big city. Additionally, a variety of family-centered activities are nearby, like putt-putt, Fun Spot Amusement Park, and a movie theater. Virtually every necessity, including healthcare at Cameron Memorial Hospital or Urgent Care Facility, is met either on or near campus.

The AEROSPACE ENGINEERING BUILDING contains 4-by-4-by-6-foot subsonic and 4-inch supersonic wind tunnels, aircraft structures, machine shop, and student project laboratory. It also houses the office for Campus Operations.

Named in honor of John G. Best, a distinguished alumnus and former member of the Board of Trustees, the JOHN G. BEST HALL OF SCIENCE contains classrooms and science laboratories. The building houses the Jannen School of Arts and Sciences, which was recently named in honor of Tri-State alumnus and trustee emeritus, Dr. Robert L. Jannen and his wife, Dolores. Best Hall also houses the Fairfield Lecture Room; the Department of Mathematics and Computer Science; the Department of Science; the science laboratories; the Computer Center; the telephone services; and the Department of Criminal Justice, Psychology and Social Sciences.

The UNIVERSITY COMPUTER CENTER houses an academic computer system that consists of Pentium microcomputers running up-to-date programs and providing state-of-the art digital technology. There are more than 200 computers dedicated to student access in labs across campus. Students can access computers at their convenience because every room in each dorm is wired to the University network and the Internet.

FORMAN HALL, which includes the TRINE WELCOME CENTER, named after current trustee Ralph, and his wife Sheri, Trine, and the Radcliffe Conference Room, was dedicated in April 2001. It houses the Office of Admission, Student Financial Planning, Office of the Registrar, Business Office, Office of Student Retention & Success, and Centennial Station coffee shop.

The THOMAS L. FAWICK HALL OF ENGINEERING was named in honor of Thomas L. Fawick, an inventor, industrialist, and friend of the University. Renovation on the interior of the building and the updating of all laboratories, classrooms, offices and the Kitsuda Seminar Room was completed in 1997. The building, which houses a scanning electron microscope, is the home of the University's Allen School of Engineering & Technology. The school is named after alumni Jerry and Jorja Allen.

The chemical engineering laboratories and offices are housed in the HOWARD P. CONRAD CHEMICAL ENGINEERING WING of Fawick Hall, named in honor of Howard P. Conrad, distinguished industrialist and friend of the University.

The central entrance of Fawick Hall is known as the CLIFFORD W. SPONSEL TOWER and is named in honor of Dr. Clifford W. Sponsel, an emeritus member of Tri-State's Board of Trustees and a 1931 civil engineering graduate of Tri-State.

Named in honor of a former chair of the Board of Trustees, the PERRY T. FORD MEMORIAL LIBRARY is a three-level building with reading and study areas, library offices, work areas and exhibit areas, the University archives, and the Hershey Museum. The library's physical collection includes books, videos, microfilm, journals and newspapers, as well as kits, models, maps and globes. The catalog of the entire collection is web-based, and available via the Internet. Materials not available in the TSU collection are easily accessed via inter-library loan. Additionally, TSU students receive reciprocal borrowing privileges with a number of private Indiana colleges and universities. The library also offers a strong collection of electronic resources, including scholarly and technical indexes, databases with full-text articles, and online resources with a range of technical, statistical, legal and political information. These resources may be accessed by PC workstations in the library, or by any computer on the Tri-State network.

The Ford library also houses the Franks School of Education which was recently named after long standing trustee member Lawrence Franks. The MARY MOGISH KOSTYSHAK EDUCATIONAL MEDIA RESOURCE CENTER is also located in the Ford Library. The center offers a juvenile literature and school curriculum collection, kits and audio-visual resource materials as well as workspace and materials to support education students. Named in honor of Paul and Mary Mogish Kostyshak, the KOSTYSHAK WING of the Perry T. Ford Memorial Library was dedicated May 19, 1995. Paul Kostyshak was a 1949 Tri-State civil engineering graduate. THE UNIVERSITY BOOKSTORE is operated by Follett College Stores in the lower level of the Ford Library.

The GENERAL LEWIS B. HERSHEY HALL athletic complex was named in honor of General Lewis B. Hershey, a distinguished alumnus, member of Tri-State's Board of Trustees, and 29-year director of the U.S. Selective Service System. Hershey Hall contains offices, classrooms, the KETNER SPORTS CENTER, the GETTIG FITNESS CENTER, the John Behee Conference Room, racquetball courts, an indoor track, and a main arena for basketball and volleyball with a seating capacity of 4,000. Hershey Hall was renovated prior to serving as the site of the 1996 and 1997 NAIA Women's National Basketball Tournament. It also houses the Department of Health, Physical Education and Sport Management.

The largest of the University's residence halls, STEWART HALL was named after Dr. Robert B. Stewart, former TSU trustee and former vice president and treasurer of Purdue University. The building houses both male and female students on separate floors of the four-story building. Stewart Hall is also the home of the University's radio station, WEAX; the campus mail room; the Comfort Zone (lounge), the ROBERT L. AND DOLORES JANNEN ACTIVITY CENTER; and the offices of the *Triangle*, the university newspaper; and the *Modulus*, the university yearbook. The Jannen Center was constructed with a gift from Dr. Jannen, a 1950 chemical engineering graduate and chair emeritus of the Board of Trustees, and his wife, Dolores. In 2000, attractive entranceways were added to the building's west side. Now known as STOUT TOWERS, the entranceways were named in honor of Dr. Richard W. Stout, a 1949 business administration graduate and founder of Stoutco, Inc.

THE PARK AVENUE CAFE, also housed in Stewart Hall, is operated by Bon Appetit.

ALWOOD HALL, PLATT HALL, CONRAD HALL and FABIANI HALL house men, and CAMERON HALL houses women. These residence halls are directly across the street from Stewart Hall, the location of the main lounge and recreation area and the main dining room for students. Parking is available behind and in front of the residence halls, and additional street parking is available. Student Life offices are located on the lower level of Alwood Hall. In 1995 and 1996, the original Alwood, Cameron and Platt residence halls were demolished. They had been named in honor of three former trustees: Ray Alwood, an accomplished Angola businessman and former vice chair of the Board of Trustees; Dr. Don Cameron, a 1905 Tri-State graduate and founder of Angola's Cameron Hospital; and Dr. Henry Platt, Jr., a business and industry leader in the Chicago area. On April 5, 2000, the residence halls were renamed in the trustees' honor. On May 4, 2000, Conrad Hall was dedicated to honor the memory of Mr. Howard P. and Dr. Martha Conrad, both past presidents of Northern Indiana Fuel & Light Co. Dr. Martha Conrad was also a former member of Tri-State's Board of Trustees. Fabiani Hall was named in honor of Dr. Dante C. Fabiani, a 1938 TSU graduate and former chair of the Board of Trustees. His son, James P. Fabiani, is currently a member of the Board of Trustees.

CAREER SERVICES is located in the lower level of Conrad Hall.

Named in honor of Jack F. Ealy, a 1927 electrical engineering graduate, the EALY INTERNATIONAL CENTER was dedicated in the summer of 1996. It is located on the lower level of Conrad Hall and houses lounges for students and visitors and a kitchen and dining room for international students.

From 1905 to 1970, WILLIAM D. SHAMBAUGH HALL was known first as the Engineering Building and later as the Recitation Building, which housed the classrooms for basic subjects. The building was renovated in 1988-89 and was named in honor of William D. Shambaugh, a distinguished alumnus. It now houses the Ketner School of Business, the Office of the President, the Office of the Vice President of Student & University Operations, the Office of the Vice President of University Advancement, the Department of Brand & Integrated Marketing, the Mark I. Forman Reading Room, the Wayne A. Champion Lounge, and the GTE Telecommunication Classroom.

Built in 1887, the LITTLETON M. SNIFF ADMINISTRATION BUILDING is the second oldest building on campus. It was named in honor of the second president of Tri-State University, Littleton M. Sniff. He served Tri-State as president longer than any other president in Tri-State's history—over 30 years—and has been a major influence in Tri-State's history. In 2004, a multi-year, \$2 million renovation was begun, which included renaming the building the C.W. SPONSEL ADMINISTRATION CENTER. The recent addition of a carillon in the bell tower of the building was a gift from current trustee and alumnus William Gettig. The bell chimes on the quarter hour and plays, among other tunes, the TSU alma mater.

The oldest building on campus was completed in 1884 and received a complete renovation in 1992. It was named in honor of 1936 mechanical engineering graduate Dr. Charles Taylor, a TSU Trustee since 1992, and his wife, Nancy. The CHARLES AND NANCY TAYLOR HALL OF HUMANITIES houses classrooms, the Department of English & Communication, the Wells Gallery, the Humanities Institute, the Writing Center, the Fine Arts Library, and the Wells Theater, which includes a GTE projection system.

The 18-hole ZOLLNER GOLF COURSE offers scenic recreation with its newly renovated bunkers and many challenging holes. The golf course is named in honor of Fred Zollner, a prominent industrialist and former chair of the Tri-State University Board of Trustees. In 1999, the WITMER CLUBHOUSE was named for Wilber E. Witmer, a 1947 business administration graduate and golf course benefactor.

#### SCHOOL OF PROFESSIONAL STUDIES

The School of Professional Studies is designed to provide quality, continuous higher education learning opportunities for adults who want to advance in their careers and keep pace with the growing complexities of today's career environment. Nearly one-fourth of all students attending Tri-State University are School of Professional Studies students.

#### TSU Fort Wayne

9910 Dupont Circle Drive E, Fort Wayne, IN 46825; 260.483.4949

#### TSU Howe

State Rd. 9

Howe, IN 46746 add phone

#### TSU Kendallville

1607 East Dowling

Kendallville, IN 46755 add phone

#### TSU Merrillville

3700 US 30 E, Merrillville, IN 46410; 219.942.9712

#### TSU North

498 E. Harcourt Road, Angola, IN 46703; 260.624.2420 or 877.299.4878

#### TSU South Bend

211 W. Washington, Suite 700, South Bend, IN 46601; 574.234.4810

#### TSU Centerville

(On the campus of Glen Oaks Community College)

62249 Shimmel Rd., Centerville, MI 49032; 877.299.4878

## **UNDERGRADUATE ADMISSION**

Tri-State University admits applicants on the basis of scholastic achievement and academic potential; selection is made without regard to race, religion, color, gender, sexual orientation or age. Prospective students are encouraged to visit the campus. An admission counselor will make arrangements for a visitor to meet faculty, students, coaches and financial aid personnel. Prospective students may visit classes and have a guided tour of campus facilities. Students who wish to arrange a campus visit should call or e-mail the Tri-State University Office of Admission at 260.665.4100 or [admit@tristate.edu](mailto:admit@tristate.edu).

TSU accepts an online application only. It can be accessed via the Internet at *tristate.edu*. Online applications may be sent by following the directions given on our website. (No application fee is required.)

## **RECOMMENDED HIGH SCHOOL PREPARATION**

All prospective students should have satisfactorily completed a minimum of the following high school courses: four years of English and three years each of science, social studies and mathematics.

### **ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE APPLICANTS**

In addition to the above, all prospective engineering, mathematics and computer science majors should at a minimum have completed two years of algebra, one year of geometry, and a semester of trigonometry.

### **ENGINEERING APPLICANTS**

Prospective engineering majors should have completed one year each of chemistry and physics.

### **PREPARATORY COURSES**

Every TSU academic program has a mathematics component. Faculty advisors recommend a beginning mathematics course based upon a student's SAT and/or ACT exam results and high school GPA. If adequate information regarding a student's math skills is not available, a student may be required to take a mathematics placement exam. A student may be assigned to non-credit, preparatory courses in mathematics.

### **MIDDLE COLLEGE (EARLY ENTRANCE PROGRAM)**

Through the Middle College, Tri-State University provides an opportunity for area students to take advanced, college-level courses while they are still in high school.

To qualify for Middle College, students must submit the official Middle College application for admission, and pass the GQE exam (tenth grade ISTEP test). Students may enroll after the sophomore year with a written recommendation of the local school's guidance counselor.

Summer courses are reserved for sophomores and juniors. Fall and spring semesters are for juniors and seniors, unless a student is highly advanced; special permission needs to be attained by principal or guidance counselor. Although it is advised that all applying students provide SAT or ACT scores, to demonstrate competency with high level college courses, students taking high school Advanced Placement classes should show SAT or ACT scores on their high school transcript. All students need to sign TSU financial acknowledgement sheets and abide by TSU policies, as stated in the TSU student handbook.

Middle College students may take a maximum of 15 credit hours per semester at less than half the normal rate of tuition. For additional information, contact the middle college coordinator at 260.665.4307.

## **GENERAL APPLICATION PROCEDURES AND REQUIREMENTS**

In addition to a completed application form, applicants must provide the following items: evidence of graduation from an accredited high school or an acceptable score on the General Education Development (GED) examination.

Potential main campus day students must have their official high school transcripts sent from the originating high schools, or official documentation from GED provided directly to the Office of Admission.

Transfer students must request that all of the post-secondary schools they have attended send official transcripts directly to the Office of Admission.

Results from the American College Aptitude Test (ACT) or the Scholastic Aptitude Test (SAT) are required unless the applicant has been out of high school for five years or more. The writing sections of both the ACT and SAT are optional and not required for admission.

A person may apply as a non-degree student without showing evidence of a high school diploma or an acceptable score on the GED test. Non-degree students who later apply for degree status must meet the degree requirements of the program to which they seek admittance.

## **HOUSING INFORMATION**

An application form for a University residence hall contract is mailed upon admission to each first-time student planning to attend. Students must send their signed contracts and Enrollment Deposits to the Office of Admission by the **National Candidate Reply Date of May 1** for full time admission. Request for an extension must be made in writing. For more information on housing requirements, see the "Student Life" section of the catalog, or review the "Student Life" section on the web at [www.tristate.edu](http://www.tristate.edu).

## **STUDENT HEALTH INSURANCE**

All full-time main campus day students are required to demonstrate that they have adequate health insurance coverage.

Tri-State University has entered into an administrative agreement with an outside insurance agency to provide comprehensive health insurance to those students who cannot demonstrate evidence of adequate coverage. This premium automatically appears on bills each semester. Continuous coverage is very important due to the pre-existing clause (especially for athletes). Insurance waivers and enrollments for coverage will be managed by the Business Office. If an applicant believes he/she has sufficient health insurance protection and would like to obtain a waiver from the outside agency's insurance plan, he/she must complete a waiver form and return it to the Business Office.

If an applicant receives an insurance waiver, he/she must obtain a waiver at the beginning of each academic year. If there are any changes in insurance status during the year, the Business Office must be notified.

## **INTERNATIONAL STUDENTS**

International students will not be granted health insurance waivers.

## **ATHLETES**

If an athlete is granted a waiver, the athlete or his/her family's health insurance company will be responsible for the first \$25,000 of any sports-related injury.

## **AWARDING OF CREDIT BY EXAMINATION**

### **ADVANCED PLACEMENT (AP) EXAMINATION**

An applicant for freshman standing who achieves a grade of 3, 4 or 5 on the College Entrance Examination Board's Advanced Placement (AP) Examination may be granted credit. Results of

the examination should be sent to the Office of the Registrar. Students who score 5 on an exam should contact the appropriate department chair for consideration of additional credit:

AP EXAMINATION	TSU CREDIT
Art	
History	3 sem. hrs. Humanities electives
Studio	3 sem. hrs. Humanities electives
Drawing	3 sem. hrs. Humanities electives
Biology	
Biology	BIO 114
Chemistry	
Chemistry	CH 104
Economics	
Macroeconomics	ECO 223
Microeconomics	ECO 213
English	
Language & Composition	ENG 103, 113
Literature & Composition	ENG 103, 153
French	
Language	3 sem. hrs. Humanities electives
Literature	3 sem. hrs. Humanities electives
German	
German	3 sem. hrs. Humanities electives
Government & Politics	
Government & Politics	GOV 113
History	
American	HIS 103, 113
European	HIS 203, 213
Latin	
Virgil	3 sem. hrs. Humanities electives
Catullus-Horace	3 sem. hrs. Humanities electives
Mathematics	
Calculus AB	MA 134
Calculus BC	If a student has a score of 4 or 5, credit will be given in MA 134 and MA 164. A score lower than 4 on the BC Exam may earn credit in MA 134 depending upon the AB subscore.
Statistics	MA 253
Music	
Music	3 sem. hrs. Humanities electives
Physics	
Physics B	PH 104
Physics C	PH 124
Psychology	
Psychology	PSY 113
Spanish	
Language	3 sem. hrs. Humanities electives
Literature	3 sem. hrs. Humanities electives

### **CLEP AND DANTES TESTING**

Tri-State University awards credits based upon the College Level Examination Program's (CLEP) general and subject-matter examinations as well as all DANTES examinations. Tri-State University is not a testing site for either examination program. For information regarding CLEP or DANTES credits, contact the Office of the Registrar.

Tri-State University accepts the American Council on Education's recommended passing score in effect at the time of the administration of the examination. Upon achieving a score considered "passing" by TSU, CLEP or DANTES credit will be listed on the student's transcript for the number of semester hours recommended in the official CLEP or DANTES publications. The student's department chair will determine whether the CLEP or DANTES credit received will apply toward a portion of the requirements in the University's general education requirements, school requirements, major requirements or electives.

### **NONCOLLEGIATE SPONSORED INSTRUCTION**

Tri-State University awards credit for college-level courses offered by business and professional organizations as recommended by the American Council on Education in its *National Guide to Educational Credit*. Credit is awarded for course work offered by the military as recommended by the American Council on Education in its *Guide to the Evaluation of Educational Experiences in the Armed Services*. Credits are awarded subject to the approval of the student's department chair.

### **UNIVERSITY CREDIT BY EXAM**

A student may earn credit by taking an examination for approved courses administered by the appropriate academic department. A list of courses for credit by examination is available in departmental offices. A fee is assessed, and application forms are available in the Office of the Registrar.

### **TRANSFER STUDENT ADMISSION**

A student at an approved institution of higher learning who is not on academic probation is eligible to apply for admission to Tri-State University. In addition to following the general application for admission procedures, the applicant must have a satisfactory academic record at the previous institution(s) of higher learning.

A student who does not meet Tri-State University's academic standards for freshman admission may apply as a transfer applicant once he/she has completed a minimum of 18 semester credit hours/or 27 quarter credit hours within a two semester/or three quarter period at a community or junior college or other 4-year institution. These 18 semester/or 27 quarter credits must include English Composition I, a mathematics course, and a social science or humanities elective. Developmental or preparatory classes are not to be included in this total. The student must earn a grade of C or better in each of these required courses and have a minimum grade point average of 2.0.

Transfer students applying to the School of Engineering must have a cumulative grade point average of 2.5 and a grade of C or better in Calculus I, Chemistry I, and English Composition I.

Tri-State University encourages applications from community college graduates. It has transfer relationships that facilitate the application process and offer special benefits with the following two and four-year institutions:

Bethel College, Mishawaka, IN  
Genesee Community College, Batavia, NY  
Glen Oaks Community College, Centreville, MI  
Ivy Tech Community College, Ft. Wayne, IN  
Jackson Community College, Jackson, MI  
Kellogg Community College, Battle Creek and Coldwater, MI  
Lansing Community College, Lansing, MI  
Lorain Community College, Elyria, OH  
Northwest State Community College, Archbold, OH  
Owens Community College, Toledo, OH  
Southwestern Michigan College, Dowagiac, MI  
Spring Arbor College, Spring Arbor, MI

Vincennes University, Terre Haute, IN

Graduates of two-year programs in applied science should anticipate a minimum of six semesters to complete a bachelor's degree in engineering. Tri-State offers a number of "two-plus-two" degree program options, including computer aided drafting and design technology, and selected business programs.

Tri-State University offers transfer scholarships to qualified full-time, main campus day program applicants.

### **TRANSFER CREDIT**

Credits earned at an approved institution with grades of "C" or better may be transferred to Tri-State University. Credits acceptable toward a Tri-State University degree shall be determined by the department in which the student is enrolled. An evaluation of transfer credit shall be made when the University receives an official transcript of the completed course work. To facilitate the evaluation, the applicant should provide the Office of Admission with a catalog or guide which contains descriptions of the courses completed elsewhere.

### **INTERNATIONAL STUDENT ADMISSION**

International students who wish to study full time on the main campus may apply for admission as freshmen or as transfer students. The application deadline for fall admission is May 1, and for spring admission October 1. By following these deadlines, the prospective student will have ample time for long distance correspondence, obtaining a US visa, and making travel arrangements. An international applicant to Tri-State is required to submit the following materials:

### **APPLICATION FORM**

A completed Tri-State University International online application must be submitted to the Office of Admission. Prospective students may apply online *tristate.edu*. (No application fee required.)

### **FINANCIAL GUARANTEE**

US Department of Homeland Security regulations require that students demonstrate their ability to finance the first year of education before receiving the I-20 AB form. A financial guarantee (bank statement) must be submitted before the I-20 AB form is issued.

### **ACADEMIC RECORDS**

The student should send complete, official academic records, in English, to: Tri-State University Office of Admission, and should include courses taken, grades received and degrees or certificates earned. An explanation of the coding system used to evaluate the student's work should accompany the records. Transfer students should have official transcripts sent from each institution of higher education attended, in English, as described above. Course descriptions and/or syllabi from those institutions must also be included. If the transfer student is presently residing in the United States, a photocopy of the current I-20 must be enclosed.

### **TEST SCORES**

Students must demonstrate proficiency in English by providing a TOEFL score (code is 1811), ACT (code is 1250) or SAT (code is 1811). A minimum TOEFL score of 550 is required on the paper test, or 213 on the computerized version. ACT and SAT minimum scores depend on the academic programs a student plans to pursue. Students interested in merit-based scholarships must submit ACT or SAT scores.

### **READMISSION**

A student whose enrollment is interrupted for any reason for more than one semester, not including the summer semester, is considered to have withdrawn and must be readmitted. Candidates for readmission must make application through the Registrar's Office.

For students not on academic probation who need some time away from campus and who do not wish to have their enrollment interrupted, Tri-State has a Planned Academic Leave program (PAL). This program provides the student with on-campus benefits during the period of the leave. Application materials are available in the Registrar's Office.

# **TUITION AND FEES**

## **PAYMENT OF EDUCATION COSTS**

Payment of tuition, fees, and room and board is due at the Business Office on the date indicated on the student's bill. Any student with outstanding financial obligations to the University will not be permitted to register for any subsequent semester, receive a transcript or diploma until the obligation is fulfilled. Any financial aid awarded will be deducted from the student's charges each semester. Each student is responsible for purchasing books using funds from personal and/or financial aid sources. Students maintaining a balance owed to the University will be assessed late fees and will be responsible for collection and/or costs if such efforts should become necessary.

## **INTERNATIONAL FEE**

All entering international students are assessed a one-time non-refundable fee of \$1,500 upon enrollment for an orientation program and specialized programs throughout the year.

## **ENROLLMENT DEPOSIT**

All admitted domestic applicants must confirm their intention to enroll by paying an enrollment deposit. A portion of the deposit will be credited to the student's first semester's tuition bill; the balance will be a housing damage deposit. The enrollment deposit is not refundable after May 1. Housing assignments are made by mid-summer and preferences are based on the date the enrollment deposit is received.

## **FLAT RATE TUITION**

A flat rate tuition charge is assessed to each main campus student registered for the full-time load of 12-18 credit hours per semester. Individual credit hour charges are applied to overloads and loads less than full time.

## **CREDIT BY EXAMINATION**

A fee per credit hour must be paid in advance to the Business Office for a school- or department-administered examination for credit. To learn the amount of this fee, call the Business Office at 260.665.4108.

## **AUDITING FEE**

A fee is charged per credit hour for auditing courses. To learn the amount of this fee, call the Business Office at 260.665.4108.

## **TRANSCRIPT FEE**

A per copy fee is assessed for issuance of official Tri-State University transcripts. A transcript will not be issued to a student with an outstanding financial obligation to the University.

## **OTHER COSTS**

### **BOOKS AND SUPPLIES**

Book and supply expenses vary depending on the number of courses taken and the major and are the personal obligation of each student.

### **MISCELLANEOUS FEES**

A student is responsible for any additional fees such as loft, long distance telephone charges, library fines, parking tickets and lab breakage.

### **ROOM AND BOARD**

Housing and food service in the residence halls are not available separately. Food service is available for residence hall students in either a 19-meal per week plan or a 10-meal per week plan. When the University is in session, three meals are served daily, Monday through Friday.

Brunch and evening meals are served Saturdays and Sundays. Villa students are required to have a 50-meal per semester plan. Commuter students may purchase any of the meal plans.

### **PERSONAL EXPENSES**

Expenditures for personal items such as laundry, dry cleaning, travel, membership fees and similar expenses should be included when prospective students are estimating total costs of their university experience.

### **PERSONAL INSURANCE**

TSU is not responsible for the damage and/or loss of a student's personal property of any type. This includes, but is not limited to, computers, printers, stereo equipment, microwaves, refrigerators, etc. All damage or loss incurred to a student's personal property is solely the responsibility of the student. This damage and/or loss can be caused by, but is not limited to, theft, power outages, power surges, etc. It is recommended that all students verify that their personal property is covered by their parents' homeowners insurance. If this is not the case, it is recommended that students acquire renter's insurance, which can be obtained through parents' homeowners insurance company and/or agent.

### **TELEPHONE SERVICE**

Students living in University residence halls will be provided local telephone service and voice mail capabilities free of charge. On request, students may have long distance service enabled.

### **STUDENT HEALTH INSURANCE**

All full-time students are required to demonstrate that they have adequate health insurance coverage. The Business Office manages the insurance waivers and enrollments for coverage. The premium for the insurance will automatically appear on the student's bill each semester. If you already have adequate health insurance, you may waive the outside agency's insurance plan; however, you must complete and return the waiver form by the bill due date each semester. If you need a waiver form, they are available in the Business Office. Waivers must be obtained for each academic year.

**INTERNATIONAL STUDENTS:** All International students will be required to carry Tri-State University's student insurance unless they are government sponsored and can provide proof of insurance through their sponsor.

**ATHLETES:** If an athlete is granted a waiver, the athlete or his/her family's health insurance company will be responsible for the first \$25,000 of any sports-related injury.

### **REFUNDS**

Refunds of credit balances due to excess financial aid or overpayment will be refunded after the drop/add period. A student withdrawing from a course may be eligible for a full or partial refund of tuition, room and board, depending on when the official withdrawal takes place. All refund requests must be made in writing by the student; forms are available from the Business Office.

A student is not officially withdrawn until the necessary withdrawal forms have been filed with the Office of the Registrar. Any withdrawal other than an official withdrawal does not permit refunds. Refunds of tuition and room and board follow the schedule below. The international fee and enrollment fee are not refundable.

Tuition: Week One - 100%; Weeks Two & Three - 50%; Week Four - 0%

Room and Board: Week One - Prorated at \$50/day; Weeks Two & Three - 50%; Week Four - 0%

A \$50 administration will be assessed for "exception" drops (per occurrence).

Please note: If a student receiving financial aid withdraws during the semester, that aid is subject to the federal refund calculation.

Refunds are processed through the Business Office approximately one month after a student officially withdraws and all charges/credits are posted.

The official withdrawal form and a room condition report, when applicable, are required for a refund to be processed.

Any student who is dismissed or suspended for misconduct shall not be entitled to any refund. No refund is provided at any time on fees, books and supplies, or personal expenses.

### **MONTHLY PAYMENT PLAN**

A monthly payment plan service is available through a national organization specializing in education financing. Parents desiring information concerning the monthly payment plan may request a pamphlet from TSU's student accounts administrator at 260.665.4112, or on the Tri-State University website.

# STUDENT FINANCIAL PLANNING

## PURPOSE

The Office of Student Financial Planning provides assistance to students and their families to make a college career at Tri-State University affordable. It is important to reward students for exceptional academic accomplishments. To provide such assistance allows students to attend who might otherwise not have the opportunity.

All scholarships are merit-based, i.e., they are based on academic achievement. However, other grants and loans are awarded based upon financial need as determined by the federal and state governments after completion of the Free Application for Federal Student Aid (FAFSA).

## APPLICATION PROCEDURES

All students applying for financial aid must complete the Tri-State University Application for Admission to be accepted into a degree-seeking program and complete a FAFSA.

The priority application deadline for Indiana residents is March 10 of each year for fall/spring/summer enrollment; however, aid is awarded throughout the school year. Current students need only complete the FAFSA once each school year before March 10 to reapply for all aid. The TSU FAFSA filing priority deadline is March 10th to be eligible for all institutional aid.

## MERIT-BASED SCHOLARSHIPS

Merit-based scholarships are institutional awards available to full-time, main campus day program students who have demonstrated outstanding academic achievement. Academic awards are renewable for each year a recipient is enrolled while maintaining satisfactory academic progress. At the end of every academic year, hours earned and cumulative GPA's are checked to verify eligibility.

Merit scholarship recipients are required to live in a Tri-State University residence hall unless they are independent by Department of Education standards, have completed 60 credit hours, live with parents, or are approved by Student Life to live off campus. If a student moves off campus, his/her on-campus grant/scholarship are removed. Other aid can be affected as well.

## ACADEMIC SCHOLARSHIPS

Scholarship grants to full-time, main campus students are based on test scores, either SAT or ACT, and cumulative grade point averages (GPA). The ranges of awards are \$2,500 to \$17,000 per year. Awards are renewable each year that a recipient is enrolled at Tri-State as a full-time student and maintains a satisfactory GPA. Please refer to your financial aid award letter for additional details. Awards are available to incoming freshmen and transfer students whether they are commuters or resident students.

## LEGACY SCHOLARSHIPS

Scholarships of \$1,500 are available for full-time, main campus students who are children, grandchildren or siblings of Tri-State University alumni.

## PRIVATE SCHOLARSHIPS

Alumni and friends of the University have established scholarships, often in the memory of loved ones, to provide financial assistance to current students attending the main campus as full-time students. Eligibility for and amounts of these scholarships vary and are not always renewable. Selection of recipients of these scholarships is made by the director of student financial planning. These awards replace academic awards to offset the amount. Although it is an honor to receive one of these awards and will look good on a resume, they are not awarded on top of academic awards. (working on language)

## **NEED-BASED ASSISTANCE**

Need-based assistance is available to qualified main campus students who file the Free Application for Federal Student Aid (FAFSA) by the TSU priority filing deadline of March 10. State of Indiana information is taken from the FAFSA—no separate form is required.

## **FEDERAL GRANTS**

(Amounts vary depending upon federal funding.)

Federal Pell Grants—\$400 to \$4,050

Federal Supplemental Educational Opportunity Grants (FSEOG)—\$200 to \$4,000

## **STATE GRANTS**

Indiana Higher Education Award (INHEA)—\$100 to \$3,605

Freedom of Choice (FOC)—\$100 to \$6,410

Twenty-first Century—up to \$5,004

## **FEDERAL FAMILY EDUCATION LOAN (FFEL) PROGRAM**

FFEL Stafford Loans are either subsidized or unsubsidized.

A **subsidized** loan is awarded on the basis of financial need. The student is not charged interest until repayment begins because the federal government “subsidizes” the interest. These loans have a 10-year payoff and a six-month grace period beginning after the student leaves college, either by graduation or withdrawal from the University.

An **unsubsidized** loan is not awarded on the basis of need. A student must be enrolled half-time to be eligible. There are maximum amounts a student can borrow, which is based upon grade level status. A student is charged interest from the time the loan is disbursed until it is paid in full. A student can choose to pay the interest while enrolled in school or defer those payments until repayment. These loans also have a 10-year payoff and a six-month grace period.

Parents of a dependent student may also be eligible for a **PLUS** loan. There is no grace period with a PLUS loan. Parents must begin repaying both principal and interest while the student is still in school, which is 45 days after the second disbursement. Parents need to go through a pre-approval process which is credit based to determine eligibility. Tri-State offers lenders who will work with parents to defer principal payments while the student is enrolled full-time.

## **EMPLOYMENT**

Opportunities for part-time employment are available at Tri-State University for students who are eligible. Students who have financial need as determined by the FAFSA may be designated as federal college work-study students. The University makes jobs available for these students.

Their pay is partially subsidized by the federal government.

## **INSTITUTIONAL**

Additional awards may be available to a student with extreme economic need, after his or her FAFSA has been received by the March 10 priority deadline. Eligibility requirements and responsibilities for need-based assistance are as follows:

1. Student must be a US citizen or an “eligible non-citizen.”
2. Student must be accepted for admission to Tri-State University.
3. Student must submit documentation to complete his or her financial aid file by June 1.
4. Student must be enrolled in the minimum number of credit hours needed to fulfill specific program requirements.
5. Student must complete the FAFSA by March 10.
6. Student must be accepted as a regular student in an eligible program that leads to a degree or certificate.
7. Student must not be in default on any Title IV loan (Perkins, NDSL, Federal Stafford, GSL, FSL) or owe a repayment on any Title IV grant (Federal Pell Grant or FSEOG) received for attendance at any institution.
8. Student must be registered with the US Selective Service System if required by law.

## **AWARDING**

Awards are processed by the Office of Student Financial Planning in accordance with University policy and the regulations governing the various aid programs. The University policy is established by the financial aid committee, and the student financial planning director is responsible for determining financial aid eligibility based on the results the Department of Education submits to TSU after a FAFSA is processed. An award letter detailing the type and amount of each award is mailed as soon as a FAFSA is received. All students who wish to have their funds held for them for enrollment must reply by returning the signed award letter within 15 days.

Assistance derived from Tri-State University may only be used for the costs of tuition, and room and board in University facilities during the academic year that it is issued.

Additional descriptions of aid programs and satisfactory academic progress standards are included in the *Tri-State University Student Handbook*.

## **DISBURSEMENT**

All aid is disbursed equally between semesters. (Aid is generally not available during the summer.) Aid is credited to students' accounts in the Business Office. Students who work on campus will receive paychecks every two weeks. Student loans are credited only after they are disbursed to the student's account. (For more information see the *Tri-State University Handbook*.)

## **ENROLLMENT STATUS**

Each type of aid requires main campus, day program students to enroll for a certain number of credit hours per semester. Most federal aid requires at least half-time status (six credit hours); state, institutional and private aid requires full-time enrollment (a minimum of 12 credit hours).

## **MAINTAINING ELIGIBILITY**

Currently enrolled students are required to maintain the appropriate grade point average for the award. Students must maintain satisfactory academic progress by completing the required number of credit hours each academic year (see the *Tri-State University Student Handbook*) and reapply for aid in the spring for the next academic year.

## **STUDENT RIGHTS AND RESPONSIBILITIES**

Tri-State University is committed to working with each student to provide the best financial aid package possible. At the same time, each student has the responsibility to apply for the aid and to meet and maintain eligibility requirements. Following is a list of basic rights and responsibilities of the students in regard to financial aid:

- Students must apply for financial aid.
- Financial aid information and counseling will be available.
- Students will be considered for financial aid on a first-come, first-served basis.
- Students will be notified in writing of their eligibility for financial aid.
- Students will be informed of the specific type of financial aid, the amount of each type of aid and the conditions to renew each type.
- Students will have the opportunity to review with the director of student financial planning the process by which awarded aid was determined.
- Students may request an additional review of their aid package with the director of student financial planning.
- All students who receive financial aid are required to abide by the policies and regulations of Tri-State University.
- Students receiving financial aid must inform the Office of Student Financial Planning about additional awards.
- Students must maintain satisfactory academic progress toward academic goals.
- Students must maintain good social standing.

- Students must reapply for financial aid between January 1 and March 10.
- Students must report to the Office of Student Financial Planning when transferring to another school.
- If applicable, students must participate in the Federal Stafford Loan entrance and exit interviews.

## **APPEALS**

Appeals to financial aid decisions can be filed with the director of student financial planning, who will present them to the financial planning review committee. Appeals must be filed in a timely manner.

## **REFUNDS AND REPAYMENTS**

If a student withdraws from classes during the semester, a calculation is required to determine how much money may be refunded to the student's account and how much must be refunded back to the various federal, state and institutional programs. (See the Fees section for information about the Tuition Refund Schedule and Residence Refund Schedule.) For current students, the federal refund calculation occurs through the 60 percent point of the term. Examples of these calculations may be seen in the Office of Student Financial Planning.

## **STUDENT LIFE**

In addition to the information regarding student life provided below, the *Student Handbook* provides a wide range of information for students.

### **HOUSING**

An information and residence hall contract is sent automatically to each new student upon admission. Former students may request housing applications upon readmission.

Before coming to campus, students must send their residence hall contract and information form to Student Life and their deposits to the Office of Admission.

### **HOUSING REQUIREMENTS**

Any full-time student under 21 years of age and not living at home with a parent or legal guardian must reside in the university housing. A married student or a student who is 21 years of age or older or has a dependent child may be waived from the university housing requirement. Students may move off campus following the completion of their sophomore year with the written approval of the Dean of Student Life and their parent or legal guardian.

### **RESIDENCE HALLS**

Residence halls at Tri-State University include housing for men and women. Women reside in Cameron Hall or Stewart Hall (coed). Men reside in Alwood, Conrad, Platt, and Fabiani halls or Stewart Hall (coed).

Apartment style villas are available for juniors, seniors, and honors freshmen. Applications are processed in the spring for the next academic year .

The Park Ave Café in Stewart Hall serves all residential students. The campus mail room and student mailboxes are located directly across from the dining center and serve all of the residence halls. A commuter meal plan is available for students not living in the residence halls.

The lower level of Stewart Hall houses WEAX, Tri-State University's radio station, and the Jannen Activity Center, which includes the Comfort Zone, a student recreation room with a big screen television, ping pong tables, pool tables, and various video games.

### **PERSONAL INSURANCE**

TSU will not reimburse students for damage to personal items as a result of theft, fire, flood and other disasters. Personal items must be covered by personal insurance.

### **COUNSELING SERVICES**

The purpose of Counseling Services is to provide students with short-term counseling that will enable them to overcome a variety of personal and interpersonal difficulties that may interfere with their pursuit of academic and career goals. Clinical counseling services, as well as prevention, outreach and consultation, are provided free on the residential Angola campus.

## **DISCIPLINE STRUCTURE**

### **Philosophy**

The basis for University Discipline finds its roots in the understanding of "community". Learning to live as productive members of a university community is a developmental process that starts as a freshman and continues throughout the college experience. The primary goals of university discipline are to educate students in the understanding of community and to help them assume

and demonstrate responsibility as a member of a civilized society. The primary principle upon which the disciplinary program is based is that of actions having consequences. Those consequences have varying degrees of impact, and the degree of consequence is directly linked to the level of the action.

Educational discipline is different from law enforcement. The goal is restoration and education. For that reason, the Office of Student Life operates within a different realm and makes decisions differently than those agencies that enforce public law.

### **Purpose**

Attending Tri-State University is an optional and voluntary action. Institutional acceptance for attendance extends an invitation to students to join an academic and social community and to remain a member of that community as long as academic and behavioral standards are met. The policies and procedures of Tri-State University have been established to ensure the educational purpose of the university will be met and an atmosphere of intellectual growth exists. Students are expected to abide by the guidelines set forth in the Student Handbook.

## **DISCIPLINARY SANCTIONS**

Sanctions for misconduct include any of the following, singly or in combination:

**Social Warning** – An official sanction notifying the student or organization that certain behavior has been unacceptable. Further misconduct may result in further disciplinary action.

**Disciplinary Probation** – An official sanction indicating to a student or organization that their behavior has resulted in a sanction close to suspension. Any subsequent misconduct during the period of probation will result in additional discipline. The term of the probation is determined by the Disciplinary Review Board or the Student Life staff member conducting the hearing.

**Restitution** – Reimbursement for damage to, destruction of, or misappropriation of University or personal property resulting from conduct in violation of University regulations.

**Fine** – A financial charge assessed for an infraction of policy by a designated University official.

**Educational/Service Activities** – Required activities as a result of the infraction of policy that may include, but is not limited to, reading assigned material, interviewing professionals, meeting with a counselor either on or off campus, writing reports or essays, meeting with mentors, performing community service, or other sanction of similar nature.

**Final Notice** – An official sanction notifying the student that any additional inappropriate behavior will result in his/her removal from the university either in a limited-term suspension or dismissal for at least the remainder of the academic semester.

**Disciplinary Suspension** – An official sanction that prohibits the student from attending the university, residing in, or entering into university owned or operated property, participating in any university activities, sports, academic organizations, or trips for a set period of time, typically to include at least one calendar week or the rest of the academic semester in which the offense occurred. Length of suspension will be determined by the Disciplinary Review Board. For academic year or semester suspensions, written request to return to the university must be submitted to the Dean of Student Life, or his or her designee, upon the expiration of the suspension well in advance of the semester in which the student intends to re-enroll. For suspensions, a student must complete an exit and re-entry interview with the appropriate university official before returning to campus.

**Disciplinary Dismissal** – An official determination canceling the student's registration at the university lasts usually for at least the remainder of the academic semester in which the offense occurred and additional semesters as the sanction warrants. In the instance of dismissal all academic grades may revert to "F" grades and monetary reimbursements will not be made for

tuition, housing, or any other university fee. Students who wish to return to school after the dismissal period has ended, must submit written notification to the Dean of Student Life, or his designee, prior to registering for the semester in which they intend to re-enroll. Failure to do so may result in delayed admission for the subsequent semester.

**Disciplinary Expulsion** – An official determination that permanently prohibits the student from attendance at the University; parents or guardians may be notified of the decision.

**For Information on the following, please see the current Student Handbook and Academic Planner.**

- **Student Organizations**
- **Professional Societies & Fraternities**
- **Honor Societies & Fraternities**
- **Greek Life**
- **Special Interest Groups**
- **Athletics**
- **Intramural Sports**
- **Religious Life**

## **CAREER SERVICES**

In accordance with Tri-State University's long-standing philosophy of providing a relevant education that allows its graduates easy entrance into the work world, the resources of Career Services are available throughout the student's academic preparation on campus and when the student becomes an alumnus. Career planning is an on-going process that begins when the student is a freshman and continues through the student's senior year. Along with maintaining a company database, Career Services accumulates information pertaining to employment opportunities, current salary trends, and placement statistics, which serve as resource information.

## **GRADUATE PLACEMENT**

Students nearing graduation are offered job search assistance and counseling for procuring major-related, professional employment. Career Services facilitates communication between graduates and employers, which includes providing résumés of qualified candidates. Student interviews are arranged for representatives of business, industry and educational institutions who visit campus to recruit prospective employees.

## **COOPERATIVE EDUCATION PROGRAM**

The Cooperative Education Program (co-op) is a work-study plan that promotes professional learning and enhances traditional university course and lab work. The Cooperative Education Program is designed to allow students to alternate work with an employer and campus sessions. This experience not only better prepares the student for entry into his or her chosen field, it often leads to immediate employment with the co-op employer. Another advantage is that co-op students can earn a salary while on work assignments, enabling them to finance a portion of their education. Students eligible for the Cooperative Education Program must have completed a minimum of 30 semester hours with a 2.0 cumulative grade point average and must meet criteria established by the prospective employer.

A student is considered a cooperative education student after having accepted employment with a cooperative education employer, after the cooperative education director and department chair have approved the student's program, and after the student has registered for the course CO 050 Co-op Employment. Work experience prior to acceptance into the Cooperative Education Program cannot be applied to the program.

A cooperative education student must complete a minimum of three semesters of work assignments with one work period occurring within the last calendar year prior to graduation. Approval of any changes in the alternating employment/class schedule must be obtained in writing from the cooperative education company, the cooperative education director, and the respective department chair. This approval should be obtained by mid-term of the semester before the proposed change. Consecutive work periods require separate registration.

A cooperative education student may have a second cooperative education employer only if a co-op position is terminated by the original employer or, in the extreme case, that no major-related experience or progression of responsibilities is occurring. Verification of major-related experience and progression must be made in writing by the cooperative education student and confirmed by both the cooperative education director and the respective department chair.

Upon completion of the final work assignment, the student must enroll in CO 453 Co-op Work Experience. Through this course, the student will prepare and submit a comprehensive report on his/her work experience to the cooperative education director and respective department chair. Upon approval of the finished report, three (3) hours of academic credit will be awarded.

Upon satisfactory completion of both academic and co-op work experience requirements, the cooperative education student will be granted a baccalaureate degree with the inscription

“Cooperative Education Program,” as well as a designation on his/her transcript noting cooperative education participation.

### **STUDENT EMPLOYMENT**

Although employment is not guaranteed, Career Services posts part-time employment openings. These employment opportunities are for students who want to work in Angola and communities within driving distance of campus.

In conjunction with the Office of Student Financial Planning, the Office of Career Services coordinates the work-study program for eligible students.

### **INTERSHIPS**

Career Services receives numerous requests for summer internship employment. Students submit resumes that are sent to employers who request them. These major-related work experiences, which usually are limited to a three-month time period, build credentials that are very useful in a graduate’s job search.

Internships for credit are also available for students who meet specific requirements within the student’s discipline or major field of study.

### **ALUMNI PLACEMENT**

Tri-State University alumni may file credentials with Career Services. Their résumés are then sent to employers who request the qualifications of experienced candidates.

### **EMPLOYMENT SERVICE FOR STUDENT SPOUSES**

Spouses of Tri-State University students who wish assistance in contacting employers in Angola and the surrounding area may use the resources of Career Services.

# ACADEMIC INFORMATION

## PLANNING

### ACADEMIC ADVISING

Each student is assigned a faculty advisor who assists the student in planning a program to meet graduation requirements and career goals. It is, however, the student's responsibility for meeting the academic program requirements presented in the catalog.

### PREPARATORY COURSES

Every TSU academic program has a mathematics component. Faculty advisors recommend a beginning mathematics course based upon student's SAT and/or ACT exam results and high school GPA. If adequate information regarding a student's math skills is not available, a student may be required to take a mathematics placement exam. A student may be assigned to non-credit, preparatory courses in mathematics.

### CHANGING A MAJOR

To change a major, students must get the approval of both their current department chair and the chair of the new department. Change-of-major forms are available in the Office of the Registrar. Admission requirements for each major are available in the departmental office.

When a student changes his or her major, all transcripts, including the Tri-State University transcript, are evaluated by the new chair. If the change of major is from one school to another, from a four-year to a two-year program, or from a two-year to a four-year program, courses with less than a C grade may be dropped from the student's cumulative totals, if the courses are not required in the new major and if the student is not currently enrolled in those courses. Dropped courses may not be repeated in the new major.

In cases where a student is readmitted to a school in which he or she was previously enrolled, all grades earned during enrollment in that school must be included in the cumulative grade point average.

Students wishing to change from non-degree status to a degree program should process the change through the Office of Admission.

### FULL-TIME STUDENT

A full-time student in the main campus day program is one who is carrying a minimum of 12 academic credit hours. If a student wishes to register for more than 18 credit hours, he or she must have written permission as follows: 19-20 credits requires permission from the department chair; 21-23 credits requires permission from the school dean; and 24 or more credits requires permission from the vice president for academic affairs.

### CLASSIFICATION OF STUDENTS

For purposes of registration and determination of eligibility for certain student activities, the registrar uses the following guidelines:

CLASS	CREDITS
Freshman	0-28
Sophomore*	29-59
Junior	60-89
Senior	90+

\*Students enrolled in associate degree programs remain sophomores when they have 60 or more credits.

## **NON-DEGREE STUDENT**

An applicant may be admitted to Tri-State University as a non-degree student in certain programs. The non-degree student is limited to a maximum of 30 semester credit hours attempted. To continue taking courses after 30 credit hours are earned, the non-degree student must apply for and be accepted to degree status. A change from non-degree to degree status is processed by the Office of Admission.

## **GENERAL EDUCATION PHILOSOPHY**

The objective of the General Education Requirements is to provide the Tri-State graduate with skills and perspectives to enhance lifelong learning opportunities and to improve communication with persons in other professions. It is designed to ensure breadth of knowledge and to promote intellectual inquiry.

The General Education Requirements consist of courses in two categories: Skills and Perspectives.

Skills courses consist of two written communication courses, English Composition I and either English Composition II or Technical Communication depending on the degree program.

Perspectives courses are required for all degrees, with specific requirement information presented under the heading General Education Requirements. Perspectives courses are in the following areas:

**Scientific**—*to learn to use analytical tools and applications in the study of that which is material.*

**Mathematical**—*to learn to connect mathematical ideas and applications through exploration and logical reasoning.*

**American**—*to gain knowledge useful in understanding the interrelationships between the American and other cultures.*

**Global**—*to become sensitized to differences and similarities among people in various parts of the world.*

**Arts, Culture, Philosophy & Society**—*to develop an appreciation for how humans express themselves creatively in the fine arts such as music, painting, architecture, film, literature, poetry and theater as well as in culture, philosophy and society.*

**Humanistic**—*to learn to appreciate the achievements which humanity has accomplished.*

**Social Sciences**—*to gain insight into the effects of human behavior on the individual, society and the world through history as well as in current times.*

**Computer Literacy**—*to master the computer and other pertinent technology.*

**GENERAL EDUCATION REQUIREMENTS FOR ALL BACHELOR DEGREES\*:**  
*(a summary sheet is below)*

Area		# of semester hours
Written Communication	(must include ENG 103 or ENG 104 and either ENG 113 or ENG 133)	6
Oral Communication	(SP 203 or COM 163)	3
Social Sciences & Humanities	(see checklist on the summary sheet)	12
Computer Literacy		3
Mathematics & Science	(must include at least 1 course in mathematics and 1 course in science)	10
Other	(additional hours to be taken from the above categories**)	8
<b>TOTAL</b>		<b>42</b>

\*A course must be taken from each perspective area. A course may satisfy more than one perspective.

\*\*HPS 102 Lifetime Wellness may be used to satisfy two of the eight additional hours.

TRI-STATE UNIVERSITY  
 General Education Requirements Checklist for Bachelor degrees  
 Minimum Credits Required: 42

**Communication**

ENG 103 or ENG 104  
 ENG 113 or ENG 133  
 SP 203 or COM 163

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Computer Literacy**

\_\_\_\_\_

**Mathematics**

\_\_\_\_\_

**Science**

\_\_\_\_\_

1 additional  
 math/science

\_\_\_\_\_

**Other**

**Course**

**Credit**

7 or 8 semester hours (depending on whether an extra hour of English was taken) must be taken from any of the categories listed above. HPS 102 Lifetime Wellness may be used to satisfy 2 of the 8 additional hours.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

12 additional semester hours must be chosen from those listed in the table on the next page and must include at least one course from each of the three rows and one course from each of the two columns in the table. A course may satisfy more than one perspective.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Total**

\_\_\_\_\_

**Global - Humanities**

COM 233  
ENG 204  
ENG 253  
ENG 263  
ENG 323  
ENG 363  
ENG 423  
ENG 433  
GER 104  
GER 114  
GER 203  
GER 213  
HIS 253  
SPL 104  
SPL 114

**American – Humanities**

COM 233  
ENG 214  
ENG 263  
ENG 403  
ENG 413

**Arts, Culture, Philosophy, & Society -  
Humanities**

ARC 292  
ART 252  
COM 203  
COM 233  
COM 363  
ENG 153  
ENG 204  
ENG 212  
ENG 214  
ENG 253  
ENG 263  
ENG 333  
ENG 403  
ENG 413  
ENG 423  
ENG 433  
ENG 443  
ENG 463  
FLM 202

**Global – Social Sciences**

ECO 213  
ECO 223  
ECO/GEO 343  
ECO 363  
ECO 383  
GEO 223  
GEO 303  
GEO/GOV 353  
GOV 313  
GOV/HIS 323  
GOV/HIS 363  
HIS 203  
HIS 213

**American – Social Sciences**

ECO 213  
ECO 223  
ECO/SOC 243  
ECO 323  
ECO/HIS 393  
GEO 313  
GOV 113  
GOV 333  
GOV/HIS 343  
GOV/PSY 373  
GOV/HIS 403  
HIS 103  
HIS 113  
HIS 423  
HIS 433

GER 104  
GER 114  
GER 203  
GER 213  
HNR 401  
MUS 272  
PHL 203  
PHL 313  
PHL 323  
PHL/SOC 333  
PHL 343  
SP 102  
SP 212  
SPL 104  
SPL 114

**Arts, Culture, Philosophy, & Society –  
Social Sciences**

**GEO 303**

**PHL/SOC 333**

**PSY 113**

**PSY 313**

**PSY 323**

**PSY 333**

**PSY/SOC 343**

**PSY 353**

**PSY 383**

**PSY 403**

**PSY 413**

**SOC 103**

**SOC 313**

**SOC 323**

**GENERAL EDUCATION REQUIREMENTS FOR ALL ASSOCIATE DEGREES\*:**  
**(a summary sheet is below)**

Area		# of semester hours
Written Communication	(must include ENG 103 or ENG 104 and either ENG 113 or ENG 133)	6
Social Sciences & Humanities	(see checklist on the summary sheet)	6
Computer Literacy		3
Mathematics & Science	(must include at least 1 course in mathematics and 1 course in science)	7
<b>TOTAL</b>		<b>22</b>

\*The above choices must include at least one course from the following Perspectives areas: Social Sciences, Humanistic, Computer Literacy, Mathematical, and Science.

TRI-STATE UNIVERSITY  
 General Education Requirements Checklist for Associate degrees  
 Minimum Credits Required: 22

ENG 103 or ENG 104	_____	_____
ENG 113 or ENG 133	_____	_____
Computer Literacy	_____	_____
Mathematics	_____	_____
Science	_____	_____

	<b>Course</b>	<b>Credit</b>
5 or 6 additional semester hours (depending on whether an extra hour of English was taken) must be chosen from those listed on the next page and must include at least one course from each of the two columns in the table.	_____	_____
	_____	_____
	_____	_____
	<b>Total</b>	_____

**Global - Humanities**

COM 233  
ENG 204  
ENG 253  
ENG 263  
ENG 323  
ENG 363  
ENG 423  
ENG 433  
GER 104  
GER 114  
GER 203  
GER 213  
HIS 253  
SPL 104  
SPL 114

**American – Humanities**

COM 233  
ENG 214  
ENG 263  
ENG 403  
ENG 413

**Arts, Culture, Philosophy, & Society –  
Humanities**

ARC 292  
ART 252  
COM 203  
COM 233  
COM 363  
ENG 153  
ENG 204  
ENG 212  
ENG 214  
ENG 253  
ENG 263  
ENG 333  
ENG 403  
ENG 413  
ENG 423  
ENG 433

**Arts, Culture, Philosophy, & Society –  
Social Sciences**

**Global – Social Sciences**

ECO 213  
ECO/GEO 343  
ECO 363  
ECO 383  
GEO 223  
GEO 303  
GEO/GOV 353  
GOV 313  
GOV/HIS 323  
GOV/HIS 363  
HIS 203  
HIS 213

**American – Social Sciences**

ECO 213  
ECO 223  
ECO/SOC 243  
ECO 323  
ECO/HIS 393  
GEO 313  
GOV 113  
GOV 333  
GOV/HIS 343  
GOV/PSY 373  
GOV/HIS 403  
HIS 103  
HIS 113  
HIS 423  
HIS 433

ENG 443  
ENG 463  
FLM 202  
GER 104  
GER 114  
GER 203  
GER 213  
HNR 401  
MUS 272  
PHL 203  
PHL 313  
PHL 323  
PHL/SOC 333  
PHL 343  
SP 102  
SP 212  
SPL 104  
SPL 114

GEO 303  
PHL/SOC 333

**PSY 113  
PSY 313  
PSY 323  
PSY 333  
PSY/SOC 343  
PSY 353**

**PSY 383  
PSY 403  
PSY 413  
SOC 103  
SOC 313  
SOC 323**

## **GRADUATION REQUIREMENTS**

**1. Specific degree requirements:** Students must complete the degree requirements specific to their programs. Once in a program, if the requirements change, students have the option of graduating under the new requirements. Students who re-enter the University after an absence of more than one academic year are subject to the degree requirements in effect at the time of re-entry.

**2. General Education Requirements:** All Tri-State students receiving a baccalaureate or associate degree must meet the General Education Requirements. Details regarding the General Education Philosophy and Requirements are presented immediately before this section in the catalog.

3. A cumulative grade point average of not less than 2.0 must be achieved for all Tri-State University courses.

4. All required courses or approved substitutions must be completed as described in the respective degree programs.

5. Candidates for graduation must file with the registrar an intent to graduate no later than one semester before the final semester of attendance in which degree requirements shall be completed.

## **COMMENCEMENT PARTICIPATION**

All spring semester and summer semester graduates are eligible to participate in the annual spring commencement ceremony, which is usually held the first Saturday in May. Fall semester graduates are eligible to participate in the spring commencement ceremony prior to completing their degrees only if, by the end of the spring semester, they have 18 or fewer credit hours to complete to earn their degrees. If a fall graduate has more than 18 credit hours to complete, the student is invited to attend the commencement ceremony the following spring.

## **COURSE SUBSTITUTIONS**

An alternate course may be substituted for one required in a student's major if the student cannot schedule the required course without undue hardship. The substitution must be requested by the student's department chair. Proper notation must be made in the student's record and approval granted prior to the substitution. The substitution cannot be made simply on the request of the student to take a different course from the one required.

## **ACADEMIC RESIDENCY REQUIREMENT**

To be eligible for a baccalaureate degree, a student must earn a minimum of 30 credits at Tri-State University. To be eligible for an associate degree, a student must earn a minimum of 16 credits at Tri-State University. The last 30 credits of a four-year degree program or the last 16 credits of a two-year degree program must be taken at Tri-State unless a waiver is granted by the academic dean, upon the recommendation of the department chair.

## **THE SECOND DEGREE**

A candidate for a second Tri-State University baccalaureate degree is required to complete a minimum of 30 credit hours in residence above the total credit requirements for the first baccalaureate degree. In addition, the candidate must complete all other requirements for the second degree. A candidate for a second Tri-State associate degree is required to complete a minimum of 16 credit hours in residence above the total credit requirements for the first associate degree as well as meet all course requirements. A candidate for a Tri-State University baccalaureate degree who has already earned an associate degree from Tri-State must complete a minimum of 46 Tri-State credit hours.

Two baccalaureate degrees may be received at the same time provided all requirements for both degrees have been met, and the student has earned a minimum of 30 credit hours more than the degree with the lower minimum hour requirement. Two associate degrees may be received at the same time provided all requirements for both degrees have been met, and the student has earned a minimum of 16 credit hours more than the degree with the lower minimum hour requirement.

## **HONORS PROGRAM**

The mission of the Tri-State University Honors Program is to provide support, resources, and academic experiences to high achieving and highly motivated students, thus allowing them to grow intellectually and become active independent learners. A student in the Honors Program would be exposed to a breadth of teaching methods and topics and, through this exposure, will have a more fulfilling and varied educational experience.

### **ADMISSION REQUIREMENTS**

First-year students accepted to any Tri-State program with a minimum SAT of 1220/ACT 27 and a High School GPA of 3.75 or higher may be invited into the Honors Program. The Honors Program Director will review qualifications of incoming freshmen and will make recommendations for admittance, which will then go before the Honors Program Advisory Board for final approval. Current Tri-State Freshmen or Sophomores may **also** apply for admission into the Honors Program. These students must notify the Honors Program Director of their intentions, have a current Tri-State GPA of 3.50 or higher, and must submit a letter of recommendation from a Tri-State faculty member. Decisions regarding admission will be made on a case-by-case basis as space allows.

### **PROGRAM REQUIREMENTS**

Students accepted into the Honors Program will need to earn 22 Honors Program Points and satisfy the basic requirements for each category listed below. In addition, students also must maintain a 3.50 GPA to successfully earn their Honors Degree.

#### Introduction to Honors Seminar – HNR 101 (1 pt)

Honors students are required to take this course their first semester in the Honors Program. This course provides an introduction to the Honors Program and is also a forum to read and discuss various literary works. This is a one credit hour course and can be applied toward a student's general education requirements.

#### Honors Courses/ Contract Courses (13 pts)

Honors students are required to compile at least 13 points with any combination of dedicated HNR courses (ex HNR 401), honors sections of regularly offered courses (ex CH 104H), or contract courses in their departments. For HNR courses and honors sections of courses, the credits for each course will directly correlate to the number of points earned. Contract course points will vary depending on the degree of extra work involved. More information about contract courses can be found in the Honors Student Handbook.

#### Enrichment Experiences (4 pts)

Honors students are required to participate in extracurricular activities that enrich classroom learning. These activities are varied in scope and will center on the students' interests. Students are required to earn at least one enrichment experience point per year to total a minimum of four points before graduation. Enrichment experiences require prior approval of the Honors Director and the student must submit a one-paragraph summary of their experience at its conclusion.

#### Honors Thesis (4 pts)

Honors students are required to prepare and present an Honors Thesis in their senior year. This thesis may be completely new work or an elaboration on a concurrent capstone project. Students should choose an advisor and decide on a topic during the Fall semester of their Senior year. After successful completion of their thesis, students are then required to present their thesis at the Honors Symposium held at the end of the Spring semester.

## ACADEMIC PERFORMANCE

To participate in the Honors Program, a student must maintain a 3.50 cumulative grade point average at the end of each academic year. A student whose GPA falls below 3.50 will be placed on probation in the Honors Program and will have one semester to raise his/her GPA. A student may only be placed on probation once. If the GPA would fall below 3.50 a second time, the student would be removed from the Honors Program.

## ACADEMIC MINOR OR SECOND MAJOR

A candidate for a minor must file a minor declaration form with the registrar. Second majors must also be declared and are possible with certain degree programs. Students should check with their academic department, if interested.

## SCHOLASTIC AWARDS AT GRADUATION

**GOLD KEYS:** Gold Keys are awarded to bachelor degree students enrolled at the main campus who have earned GPAs of 3.75 or better while carrying at least 15 credit hours in each of four consecutive semesters. In the event that a student qualifies for the equivalent of a second Gold Key, the name of that person is placed upon a scholastic plaque. The exception to this policy is when a main campus student meets all requirements of the second gold key with the exception of the requirement of registering for 15 credits in the final term. The student's name will be placed on the scholastic plaque provided the student has registered for a minimum of 12 credit hours, which are the final credits required for graduation.

**SILVER KEYS:** Silver Keys are awarded to associate degree main campus students who earn 3.75 grade point averages or better while carrying at least 15 credit hours in each of three consecutive semesters.

**GRADUATION WITH HONORS:** A candidate for graduation will have his or her diploma inscribed as graduating with Honors if he or she achieves a cumulative grade point average of 3.50 or better, or with High Honors if he or she achieves a cumulative grade point average of 3.75 or better. The grade point average will be computed on the basis of all courses taken while at Tri-State University. To qualify for the award, a candidate for a bachelor's degree must earn a minimum of 40 semester hours at Tri-State University, and a candidate for an associate degree must earn a minimum of 20 semester hours.

**HONORS DAY:** For the purpose of Academic Honors and Academic High Honors recognition at Honors Day, the grade point average requirement of 3.5 for academic honors and 3.75 for academic high honors will be based upon the student's cumulative GPA **before** spring grades are posted. For either recognition, a minimum of 40 TSU credits must be completed by the end of the spring term for a bachelor's degree or a minimum of 20 TSU credits for an associate degree. Academic Honors and Academic High Honors will be listed on the diploma and transcript based upon the student's cumulative GPA **after** the final term's grades are posted and the student has met all degree requirements.

## GRADING SYSTEM

The grading system is as follows:

A	Excellent	4.0
B+	Very Good	3.5
B	Good	3.0
C+	Above Average	2.5
C	Average	2.0
D+	Below Average	1.5
D	Poor (lowest passing grade)	1.0
F	Failure	0.0
FI	Failure (original grade of I)	0.0
S	Satisfactory	not figured into GPA
U	Unsatisfactory	not figured into GPA
I	Incomplete	not figured into GPA

- IP In progress (grade deferred) not figured into GPA  
W Withdrawal before completion of 80% of the semester  
WP Withdrawal after completion of 80% of the semester with passing work at the time of withdrawal

### **GRADE OF INCOMPLETE**

Incomplete (I) is a temporary grade used by the instructor in cases where a student is unable to complete course requirements because of circumstances beyond the student's control such as illness, family emergency or other similar circumstances. It is assigned only if the student has satisfactorily completed the major portion of the course requirements and has convinced the instructor of his or her ability to complete the remaining work without registering for the course again. An instructor who assigns a grade of "I" submits to the department chair a formal statement of requirements that must be satisfied for removal of the incomplete grade. A copy of the statement of requirements, including deadlines for their completion, shall be made available to the student.

It is the student's responsibility to contact the instructor to make arrangements for completing the remaining work. The required work should be completed and a grade reported by the end of the student's next semester in residence, but in no case later than one calendar year following the receipt of the "I" grade. An "I" grade not removed within one year from the end of the semester in which the "I" grade was issued will be converted to an "FI" grade by the registrar. An "I" grade may not be removed by registering again for the course.

If the instructor giving the "I" grade is no longer a member of the faculty, the student should contact the department chair who will act on behalf of the former instructor. In the case of a graduating senior, if an "I" or "IP" grade is not removed until after the start of the next semester, the graduation date will reflect the new semester.

### **GRADE OF "IN PROGRESS"**

The "IP" (In Progress) grade is to be given only in courses so designated by the respective schools. The "IP" grade is designed for courses which require more than one semester for completion. An "IP" grade not removed within one year from the end of the semester in which the "IP" grade was issued will be converted to an "FI" by the registrar. An "IP" grade may not be removed by registering again for the course.

### **COURSE REPEAT**

Course repeat means that a student may retake a course at Tri-State University for a better grade. When a student has repeated a course, the honor points for the higher grade are substituted.

The student's record will not show additional hours attempted for the repeated course. Additional earned hours are given if a student passes a class where an "F" or "U" grade was originally received.

Courses which are repeated remain on the student's permanent record (transcript).

### **FAILING GRADES**

Credit for a course failed at Tri-State University may not be obtained by examination.

### **WITHDRAWAL FROM CLASS**

A student may withdraw from class through 80 percent of the semester, provided the student obtains the proper form from the registrar and obtains academic advisor approval. International students must also have the approval of the registrar if they will be dropping below 12 credit hours.

All students dropping below full-time status must have the approval of the director of student financial planning. The completed form shall be submitted to the registrar before 80 percent of the semester is completed.

No classes shall be dropped after the completion of 80 percent of the semester except for circumstances beyond the control of the student, such as illness, family emergency or other similar circumstances. Permission to withdraw after the completion of 80 percent of the semester must be obtained from the chair of the student's department. If permission is granted, a grade of "WP" will be issued if the student was passing at the time of withdrawal.

A grade of "F" will be issued if the student was failing and will count toward the student's cumulative and semester grade point averages.

Any deviation from the policy will be considered an unofficial withdrawal, and a grade of "F" will be issued.

### **COURSE AUDIT**

To audit is to take a course for no credit. A course may be audited only if space is available in the course. The approval of the student's academic advisor is required. A change to credit status is permissible if completed during the normal add period. Auditors shall receive a grade of "AU." At the discretion of the instructor, an auditor may participate in class discussion and take examinations.

### **SCHOLASTIC AWARDS AT THE END OF EACH SEMESTER**

**THE PRESIDENT'S LIST:** A main campus student whose semester grade point average is 3.75 or better, while carrying at least 15 credit hours, will be placed on the President's List.

**THE DEAN'S LIST:** A main campus student whose semester grade point average is between 3.50 and 3.749, while carrying at least 15 hours, will be placed on the Dean's List.

### **CLASS ATTENDANCE AND EXCUSED ABSENCES**

**Students are expected to attend all class and laboratory sessions.** Absences may be permitted for reasonable causes such as illness, disabling injury, death or serious illness in the immediate family, or in the case of a court order. Participation in University-sponsored activities shall also constitute a reasonable cause for absence from class. Written documentation of the reason for absence may be required and, in the case of University-sponsored events, such documentation will be provided by the University sponsor.

**It is the student's responsibility to discuss pending absences (field trips, athletic competitions, etc.) with his/her professor prior to the missed class period.** The faculty member may require the student to complete any work due prior to the absence. Class or team lists distributed via e-mail **do not** excuse a student from class or laboratory sessions, but rather provide confirmation to the faculty member that the activity is indeed University-sponsored.

It is the Instructor's responsibility to present a class attendance policy to each class at the beginning of the semester. Decisions regarding submittal of assignments will be at the instructor's discretion, but students may not be penalized for absences due to reasonable cause.

### **ACADEMIC PROBATION**

The academic performance of every student is monitored by the registrar and the academic departments to determine satisfactory progress. Students with GPAs below 2.0 will receive a letter warning them that they have fallen below the standard required for graduation.

Degree students who have attempted 59 or fewer semester hours at Tri-State University will be placed on academic probation when their cumulative honor points are more than six below the 2.0 graduation standard.

Degree students who have attempted 60 or more semester hours of course work must maintain a cumulative grade point average of 2.0 or be placed on academic probation. Transfer hours accepted into a degree program are added to Tri-State hours attempted for purposes of determining the 60 hours attempted. (See chart on next page for further explanation of required GPA.)

A student on academic probation will have one semester to reach minimum standards or be dismissed. After a period of not less than one semester (not including summer school), a dismissed student may apply for readmission to the program from which he or she was dismissed. A dismissed student may be readmitted without a waiting period in any degree program to which the student can gain acceptance by the readmit committee.

Financial aid is not automatically reinstated when a dismissed student is readmitted.

Students on academic probation will have the following restrictions placed on their attendance:

- They will be required to attend a meeting explaining a student success plan.
- They may not register for more than 15 credit hours. If they wish to take more, they must petition the Readmit/Probation Committee for permission.
- They may not participate in the “rush” system for any fraternity or sorority.
- They are NOT eligible to participate in any athletic competition. They may practice with the team only if their coach approves. They will not be permitted to travel with the team without approval of the athletic director.

For information concerning eligibility for the University’s extra-curricular activities, consult the *Student Handbook*.

The chart below lists the grade point average (GPA) required to be removed from probation. The required GPA is based on the number of GPA hours attempted at Tri-State.

GPA Hours Attempted	GPA	GPA Hours Attempted	GPA
1	0.000	31	1.806
2	0.000	32	1.813
3	0.000	33	1.818
4	0.500	34	1.824
5	0.800	35	1.829
6	1.000	36	1.833
7	1.143	37	1.838
8	1.250	38	1.842
9	1.333	39	1.846
10	1.400	40	1.850
11	1.455	41	1.854
12	1.500	42	1.857
13	1.538	43	1.860
14	1.571	44	1.864
15	1.600	45	1.867
16	1.625	46	1.870
17	1.647	47	1.872
18	1.667	48	1.875
19	1.684	49	1.878
20	1.700	50	1.880
21	1.714	51	1.882
22	1.727	52	1.885
23	1.739	53	1.887
24	1.750	54	1.889
25	1.760	55	1.891
26	1.769	56	1.893
27	1.778	57	1.895
28	1.786	58	1.897
29	1.793	59	1.898
30	1.800	60*	2.000

When a student has attempted a total of 60 credit hours, INCLUDING transfer credits, a 2.0 GPA is required to be removed from probation.

## **WITHDRAWAL FROM THE UNIVERSITY**

### **VOLUNTARY**

A student wishing to withdraw from the University during a term may obtain a withdrawal form from the registrar. A student living in a residence hall should consult the housing officer in Student Life about the room and board refund policy.

A student who plans to return to Tri-State University within one calendar year may apply for a Planned Academic Leave (PAL). Details and application forms are available in the Office of the Registrar.

### **UNAUTHORIZED**

A student leaving the University during a term without officially withdrawing will receive "F" grades in all courses and will not receive refunds of any kind, including fees and deposits.

The withdrawal procedure will not take place automatically for a student who leaves campus because of illness or family emergency. If official notification of withdrawal cannot be made in person, the student should contact the registrar in writing.

## **DISCIPLINARY**

Students dismissed for disciplinary reasons during a term may be given "F" grades and monetary reimbursement will not be made for tuition, housing, or any other university fee.

## **THE ACADEMIC RECORD**

A report of the student's grades earned in all courses taken during a semester is sent at the end of each term to the student. Grade reports are mailed to permanent addresses for domestic students and to local addresses for international students.

In cases of unsatisfactory work, a student may be warned, placed on probation or dismissed from the University.

A permanent record of all the student's courses, credits and grades earned is kept in the Office of the Registrar. The student should maintain a record of courses, credits and grades each term and check from time to time to see that this record agrees with the University version. The official record may also help the student determine eligibility for any activity that requires meeting specific scholastic standards. Copies of the transcript are available to the student upon written request and advance payment, as determined per copy.

## **RELEASE OF INFORMATION FROM STUDENT ACADEMIC RECORDS**

To ensure compliance with the federal government's Family Education Rights and Privacy Act (FERPA), the following general principles and procedures govern the release of information from student academic records.

A written request signed by the student whose name appears on the transcript and that contains information such as date of birth and/or the Tri-State University student identification number, is required before a University transcript or other information from the student's academic record may be released. Tri-State University will not release copies of transcripts from another institution. Exceptions to the above statements are outlined below:

- The Office of the Registrar may release transcripts or information from academic records including reports of academic standing to administrative and faculty members of Tri-State University whose responsibilities require this information.
- Public directory information from student records may be released at any time unless restricted by the student. This includes the student's name, local and permanent addresses and telephone numbers, e-mail address, date and place of birth, major field of study, class year, participation in officially recognized activities and sports, weight and height of athletic team members, dates of attendance, degrees, awards received, and photographs.
- Information pertaining to graduation and honors achieved may be released for publication unless otherwise restricted by the student.

Upon proper identification, a student will be shown the following:

- His or her Tri-State University permanent academic record, including the student's file and transcript
- His or her transcripts from another institution.

A hold may be applied to the release of a transcript, or other information requested from an academic record, for a student who has an overdue indebtedness to the University.

A current student may obtain a maximum of five unofficial (personal) copies of his or her Tri-State University transcript at no charge while attending the University. All official transcripts, bearing the registrar's signature and school seal, and additional unofficial transcripts are \$3 per copy.

## **ENTREPRENEURSHIP MINOR**

The Entrepreneurship minor is designed for students who are interested in starting a business. Open to students from any TSU program, the Entrepreneurship minor uses collaborative, problem-based learning, assessment of learning outcomes, and collaboration among students, faculty and business partners to deliver a dynamic program. Courses in the Entrepreneurship program will help students develop an “entrepreneurial mindset,” so that they can be innovative thinkers and leaders in a startup company or an existing company.

### **PROGRAM REQUIREMENTS**

**24 HRS.**

ENT 303	Entrepreneurial Leadership	(3)
ENT 313	Business Concepts	(3)
or		
ENT 323	Engineering Concepts	(3)
ENT 333	Entrepreneurship Seminar Series	(3)
ENT 413	Creativity – Product/Service Development	(3)
ENT 423	Entrepreneurship & Venture Planning	(3)
	Management or Engineering electives	(9)

Business students pursuing the Entrepreneurship minor must take ENT 323 Engineering Concepts. Engineering students pursuing the Entrepreneurship minor must take ENT 313 Business Concepts. Students from the School of Arts and Sciences or the School of Education must choose either ENT 323 or ENT 313; these students may elect to take both ENT 323 and ENT 313, one as a requirement, the other as an elective.

Management or Engineering electives are selected by agreement between the student and the Entrepreneurship minor advisor. The choice of electives should reflect the student's area of entrepreneurial interest.

# ALLEN SCHOOL OF ENGINEERING & TECHNOLOGY

Tri-State University's Allen School of Engineering and Technology includes these departments:

- McKetta Department of Chemical & Bioprocess Engineering
- Department of Civil & Environmental Engineering
- Department of Electrical & Computer Engineering
- Wade Department of Mechanical & Aerospace Engineering
- Department of Technology

Academic programs administered by the school are as follows:

- ***Master of Engineering***
- ***Master of Science in Engineering Technology***
- ***Bachelor of Science in Chemical Engineering***
- ***Bachelor of Science in Civil Engineering***
- ***Bachelor of Science in Computer Engineering***
- ***Bachelor of Science in Design Engineering Technology***
- ***Bachelor of Science in Electrical Engineering***
- ***Bachelor of Science in Engineering Administration***
- ***Bachelor of Science in Mechanical Engineering***
- ***Associate in Drafting & Design Technology***
- ***Associate in Manufacturing Technology***
- ***Minor in Bioprocess Engineering***
- ***Minor in Environmental Engineering***

## THE SCHOOL

The Drs. Jerry and Jorja Allen School of Engineering & Technology was named in honor of Jerry Allen, a 1978 mechanical engineering graduate and member of the University's Board of Trustees, and Jorja Allen, a 1978 business administration graduate and member of the Alumni Board of Governors.

## MISSION

The mission of the Allen School of Engineering & Technology is three-fold:

- Foremost is to provide graduates with quality preparation for the practice of engineering and technology at the professional level,
- To provide graduates with the opportunities to pursue graduate studies, lifelong learning, and to offer service to their profession,
- To provide technical and educational services to the community.

## PROGRAMMATIC ACCREDITATION

Tri-State University's programs in chemical engineering, civil engineering, electrical engineering and mechanical engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), [www.abet.org](http://www.abet.org), (410) 347-7700.

## PROGRAMS AND DEGREE REQUIREMENTS

The degree programs are listed and then described in the catalog section for each academic department with the exception of one degree program explained in this section. All degrees require students to fulfill General Education Requirements (discussed in detail under "General Education Requirements" on page 38), as well as specific program requirements.

## GENERAL ENGINEERING

Engineering students who are undecided about their major are classified as "general engineers." Since most courses in the first year are common to all engineering disciplines, a general engineering student will still be able to make progress toward an engineering degree even though a major has not been selected. During this year, the student should be actively investigating the options available in engineering by talking to faculty members and practicing engineers, attending meetings of the student chapters of professional societies, and doing library research. All general engineering students are expected to transfer into one of the engineering majors by the beginning of their second year.

While classified as a general engineer, a student would normally take the following courses. The student's instructor in GE 101 Introduction to Engineering can provide additional guidance.

**FIRST SEMESTER** **15 HRS.**

CH 104	General Chemistry I	
	or	
CH 104H	General Chemistry I Honors	(4)
ENG 103	English Composition I	(3)
GE 101	Introduction to Engineering	(1)
MA 134	Calculus I	(4)
	Social Sciences & Humanities elective	(3)

**SECOND SEMESTER** **15-18 HRS.**

ENG 133	Technical Communication	(3)
MA 164	Calculus II	(4)
PH 124	University Physics I	(4)
	Social Sciences & Humanities elective	(3)
	Engineering or Science course	(1-4)

**ENGINEERING FOUNDATIONS**

Students who do not meet the requirements for automatic admission directly into one of the engineering programs (or to general engineering in the case of undecided students) may be granted admission as "engineering foundations."

Students admitted as engineering foundations must improve their mathematics, science and English skills to demonstrate their readiness for engineering coursework. First-year engineering foundations students are advised to take both GE 101 Introduction to Engineering and UE 101 University Experience in their first semester. Provided that the necessary prerequisites have been met, additional courses taken as an engineering foundations student should mimic as closely as possible those listed for general engineering.

To gain admission into one of the engineering programs, an engineering foundations student must have a cumulative GPA greater than or equal to 2.0 and have successfully completed MA 134 Calculus I, CH 104 Chemistry I, and ENG 103 English Composition I with grades of C or better.

***Bachelor of Science in Engineering Administration***

Most engineers spend at least two-thirds of their time directing project groups, work teams or task forces (i.e. managing). Recent surveys indicate that about 40 percent of all industrial executives were trained as engineers. Furthermore, any company engaged in the manufacture and distribution of high-technology products needs technically trained personnel to interact with their customers, both in sales and service capacities. In response to this demand by industry for engineers who also have a solid foundation in business principles, a unique curriculum in engineering administration was created.

Students selecting this program will be prepared for a variety of career opportunities: administrators or managers in small engineering or manufacturing companies, managers or supervisors of large facilities, departmental supervisors in large technological corporations, engineering marketing representatives, technical representatives, or customer-service and sales engineering. Facilities managers may be responsible for large buildings, arenas, hospitals and convention centers as well as industrial plants. In general, a graduate would be qualified for a position in production, construction, marketing or sales in any firm involved with technical services, processes or products.

In addition to fundamental courses in engineering science and business administration, the engineering administration program includes areas of concentration in manufacturing, construction and electronics so that students may direct their education toward one of these industries. The facilities management area prepares students for employment as facilities or plant engineers and managers.

The mission of the engineering administration program at Tri-State University is to enable students to become productive technical managers, facilities managers, or sales and service

engineers, to advance to leadership roles in the profession, and to provide service to society. To meet these goals, specific program objectives have been defined. The engineering administration graduate must have the following:

1. the ability to clearly and effectively communicate ideas in writing, orally, and graphically;
2. an awareness of the engineer's social responsibilities with an appreciation of human achievements and insight into human behavior and culture;
3. knowledge of multivariate calculus and differential equations and familiarity with statistics, and the ability to apply this knowledge to the solution of engineering and business problems;
4. fundamental knowledge of natural phenomena and their quantitative expression in chemistry and physics;
5. knowledge of the engineering sciences and the ability to creatively apply this knowledge;
6. broad based knowledge of the fundamental principles of business administration;
7. specialized technical knowledge in one of the areas of construction, electronics, facilities, or manufacturing; and
8. the ability to integrate technical and business knowledge as a member of an engineering design team.

### **THE ENGINEERING ADMINISTRATION CURRICULUM**

The engineering administration curriculum provides a broad background in communication skills, social sciences and humanities, mathematics, natural science and computer applications in keeping with the University's General Education requirement. The unique feature of the program is the depth of preparation in the engineering sciences and in engineering analysis and design, combined with a strong background in business administration.

Students select an engineering area of concentration, which allows them to tailor their education toward specific career goals. Electives in both business administration and engineering provide for further depth in selected fields. The senior-level project course enables the student to gain valuable experience working as part of an engineering team.

In the following curriculum listing, an asterisk (\*) indicates that those courses satisfy the University's General Education Requirements.

### ***BACHELOR OF SCIENCE IN ENGINEERING ADMINISTRATION 132 HRS.***

<b>COMMUNICATION SKILLS</b>	<b>9 HRS.</b>
*ENG 103      English Composition I	(3)
*ENG 133      Technical Communication	(3)
*SP 203        Effective Speaking	(3)
<b>SOCIAL SCIENCE/HUMANITIES</b>	<b>12 HRS.</b>
*ECO 213      Microeconomics	(3)
*ECO 223      Macroeconomics	(3)
*Other courses selected to satisfy the University General Education Requirement	(6)
<b>MATHEMATICS/COMPUTER SCIENCE</b>	<b>22 HRS.</b>
*CS 132        Visual Basic Programming	
or	
*CS 162        Programming in "C"	(2)
*MA 134        Calculus I	(4)
*MA 164        Calculus II	(4)
*MA 213        Calculus III	(3)
*MA 233        Differential Equations	(3)
*MA 323        Operations Research	(3)
*MA 393        Probability & Statistics	(3)
<b>SCIENCE</b>	<b>12 HRS.</b>
*CH 104        General Chemistry I	
or	
*CH 104H      General Chemistry I	(4)

*PH 124	University Physics I	(4)
*PH 134	University Physics II	(4)

<b>ENGINEERING SCIENCE</b>		<b>17 HRS.</b>
ES 213	Statics	(3)
ES 223	Dynamics	(3)
ES 243	Solid Mechanics	(3)
ES 313	Thermodynamics	(3)
ES 323	Fluid Mechanics	(3)
ES 382	Engineering Economics	(2)

<b>BUSINESS ADMINISTRATION</b>		<b>21 HRS.</b>
AC 203	Accounting I	(3)
AC 213	Accounting II	(3)
FIN 303	Managerial Finance	(3)
LAW 203	Business Law I	(3)
MGT 353	Designing Operations	(3)
MGT 363	Organizational Behavior	(3)
MK 303	Marketing	(3)

<b>ENGINEERING AREA</b>		<b>24 HRS.</b>
Students select Area A, B, C, or D		

**A - MANUFACTURING**

EGR 143	Engineering Graphics	(3)
ES 233	Engineering Materials	(3)
ES 253	Electrical Science	(3)
MAE 303	Mechanics of Machinery	(3)
MAE 343	Manufacturing Processes and Equipment	(3)
MAE 353	Machine Component Design	(3)
MAE 373	Computer-Aided Machine Design	(3)
MAE 463	Mechanical Measurement Laboratory	(3)

**B - CONSTRUCTION**

EGR 153	Engineering Graphics	(3)
CE 204	Basic Surveying	(4)
CE 334	Civil Engineering Materials	(4)
CE 343	Structural Analysis	(3)
CE 353	Structural Steel Design	(3)
CE 363	Reinforced Concrete Design	(3)
CE 374	Soil Mechanics	(4)

**C - ELECTRONICS**

ECE 223	Circuits I	(3)
ECE 221	Circuits I Laboratory	(1)
ECE 224	Circuits II	(4)
ECE 293	Digital Systems I	(3)
ECE 291	Digital Systems I Laboratory	(1)
ECE 323	Modeling and Analysis	(3)
ECE 354	Electronics	(4)
ECE 351	Electronics Laboratory	(1)
ECE 382	Subsystem Design	(2)
ECE 492	Project Management	(2)

**D - FACILITIES MANAGEMENT**

EGR 153	Engineering Graphics	(3)
ETD 163	Environmental Health and Safety	(3)

ES 253	Electrical Science	(3)
CE 343	Structural Analysis	(3)
ES 343	Heat Transfer	(3)
CE 483	Construction Engineering	(3)
CHE 4083	Plant Management	(3)
MAE 423	Heating, Ventilating, and Air Conditioning	(3)

**PROFESSIONAL DEVELOPMENT**

**5 HRS.**

GE 101	Introduction to Engineering	(1)
GE 401	Professional Practice	(1)
GE 403	Engineering Project	(3)

**ELECTIVES**

**10 HRS.**

Business elective	(3)
Engineering elective	(3-4)
Unrestricted elective	(3-4)

***TOTAL IN DEGREE PROGRAM: 132 HRS.***

# MCKETTA DEPARTMENT OF CHEMICAL & BIOPROCESS ENGINEERING

The Dr. John J. McKetta Department of Chemical & Bioprocess Engineering was named in honor of Dr. John J. McKetta, a 1937 chemical engineering graduate and member of the University's Board of Trustees. The McKetta Department of Chemical & Bioprocess Engineering offers the following degree and minor:

- ***Bachelor of Science in Chemical Engineering***
- ***Minor in Bioprocess Engineering***

Chemical engineering is the field of engineering that has at its core the chemical sciences. The chemical sciences affect virtually every aspect of our lives: the food we eat, the clothes we wear, the materials for our homes and cars, our medicines and health care products, and the protection of the environment. Chemical engineers are found in every industry.

Chemical engineering is distinctive in its emphasis on chemistry. The chemistry studied by the chemical engineer includes quantitative analysis, organic chemistry, physical or biochemistry and instrumental analysis. These are the same courses that a chemist would be required to take. The chemical engineer takes these chemical principles and applies them to industrial processes.

Chemical engineering has many common elements with the other engineering disciplines. It is based upon the fundamentals of physics and mathematics. It shares the core engineering sciences of mechanics: fluid flow, heat transfer, thermodynamics and economics. Oral and written communication skills and interpersonal skills are required for success.

Engineering design is an integral component in chemical engineering course work. Solution of open-ended problems and the design process are introduced in the department's freshman engineering course. Design of experiments is covered in the Unit Operations laboratories, and equipment and process design concepts are taught through the Unit Operations and Chemical Engineering Kinetics courses. This work culminates in the capstone courses Chemical Process Design I and Chemical Process Design II.

Chemical engineering differs from the other engineering disciplines in three main ways. First, chemical engineers work with not only pure or single component materials, but with complex mixtures or multi-component materials. A chemical engineer must characterize and predict the behavior of these complex mixtures. Second, chemical engineers are the purification and separation specialists. The processes for removing impurities or extracting a valuable product are the domain of the chemical engineer. Third, by using chemical or biochemical processes, chemical engineers create materials that did not previously exist. These new and useful components or materials improve the way we live.

Chemical engineers find themselves employed in positions of research and development, process engineering and operations, engineering design and construction, technical sales and service, and plant and corporate management. Typical industries employing chemical engineers include bulk and specialty chemical, petroleum and natural gas, consumer products, pharmaceuticals and biomedical, steel production, plastics and polymers, semiconductor and electronic materials, environmental and consulting. Chemical engineering is also an excellent preparation for those desiring to undertake graduate studies in engineering and other fields such as medicine, law or business.

Tri-State University's chemical engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

## **MISSION AND OBJECTIVES**

In concert with Tri-State University and the Allen School of Engineering & Technology mission statements, the mission of the chemical engineering program at Tri-State University is to provide

career-oriented higher education in chemical engineering by providing a learning environment in which members of a diverse student body receive personal mentoring through small classes and excellent teaching. By emphasizing “hands-on” learning, the program prepares graduates to be productive early in their careers, to advance to leadership roles in their companies and professions, and to provide service to society.

To meet this mission, a graduate from the McKetta department of Chemical & Bioprocess Engineering must be able to demonstrate:

1. Technical competence
2. Problem solving ability
3. Communication skills
4. A sense of social awareness and responsibility

### THE CHEMICAL ENGINEERING CURRICULUM

The curriculum requires the completion of 132 hours of course work. The average course load is 16-17 hours based on eight semesters.

In the degree program description that follows, an asterisk (\*) indicates those courses that satisfy the University’s General Education Requirements.

## BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING 132 HRS.

<u>PROGRAM REQUIREMENTS</u>	<u>REQUIRED HOURS</u>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103      English Composition I	(3)
*ENG 133      Technical Communication	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203      Effective Speaking	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>12 HRS.</b>
*ECO 213      Microeconomics	
or	
*ECO223      Macroeconomics	(3)
*Additional hours selected in accordance with the Social Sciences & Humanities section of the General Education Requirements on page xxx.)	(9)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>49 HRS.</b>
*MA 134      Calculus I	(4)
*MA 164      Calculus II	(4)
MA 213      Calculus III	(3)
MA 233      Differential Equations	(3)
MA 393      Probability and Statistics	(3)
*CH 104      General Chemistry I	
or	
*CH 104H      General Chemistry I Honors	(4)
CH 114      General Chemistry II	
or	
CH 114H      General Chemistry II Honors	(4)
CH 203      Organic Chemistry I	(3)
CH 211      Organic Chemistry I Laboratory	(1)
CH 213      Organic Chemistry II	(3)
CH 232      Quantitative Analysis	(2)
CH 323      Instrumental Analysis	(3)
<b>Advanced Chemistry Elective</b>	(4)
CH 354      Physical Chemistry I	
or	
CH 434      Biochemistry	
*PH 124      University Physics I	(4)

PH 134	University Physics II	(4)
<b>FRESHMAN STUDIES</b>		<b>1 HR.</b>
GE 101	Introduction to Engineering	(1)
<b>ENGINEERING SCIENCE</b>		<b>5 HRS.</b>
ES 382	Engineering Economics	(2)
Engineering Science Elective		
or		
EGR 153	Engineering Graphics	(3)
<b>ANALYSIS AND DESIGN</b>		<b>40 HRS.</b>
CHE 111	Introduction to Chemical Engineering	(1)
*CHE 203	Material Balances	(3)
CHE 212	Energy Balances	(2)
CHE 221	Chemical Process Measurements Laboratory	(1)
CHE 335	Unit Operations I	(5)
CHE 345	Unit Operations II	(5)
CHE 362	Unit Operations Laboratory I	(2)
CHE 365	Chemical Engineering Thermodynamics	(5)
*CHE 412	Applied Numerical Methods	(2)
CHE 453	Chemical Engineering Kinetics	(3)
CHE 462	Unit Operations Laboratory II	(2)
CHE 463	Chemical Process Dynamics and Control	(3)
CHE 473	Chemical Process Design I	(3)
CHE 483	Chemical Process Design II	(3)
<b>PROFESSIONAL DEVELOPMENT</b>		<b>1 HR.</b>
GE 401	Professional Practice	(1)
<b>CHEMICAL ENGINEERING ELECTIVES</b>		<b>6 HRS.</b>
<b>FREE ELECTIVES</b>		<b>9 HRS.</b>
<i>TOTAL IN DEGREE PROGRAM:</i>		<i>132 Hrs.</i>
<b>BIOPROCESS ENGINEERING MINOR</b>		<b>24-27 HRS.</b>
(Open to all students)		
There has been an increased focus on biological engineering techniques utilized by industries that include, but are not limited to pharmaceuticals, food processing, consumer products, agricultural and biotechnology firms. This increased focus from an industrial standpoint has resulted in increased demand for prospective employees that have a strong background in both engineering and life sciences. The curriculum is designed to provide students with a foundation to pursue a career in these industries.		
<b>REQUIRED SCIENCE COURSES</b>		<b>12 HRS.</b>
CH 203	Organic Chemistry I	(3)
CH 211	Organic Chemistry I Laboratory	(1)
BIO 324	Microbiology	(4)
BIO 434	Biochemistry	(4)
<b>REQUIRED ENGINEERING COURSES</b>		<b>9-11 HRS.</b>
CHE 335	Unit Operations I	(5)
or		
ES 323	Fluid Mechanics	(3)
CHE 4073	Biochemical Engineering	(3)
CHE 4173	Bio-Separations Processes	(3)

Advanced Bio-Elective (departmental approval needed)

3-4 HRS.

## **CIVIL & ENVIRONMENTAL ENGINEERING**

The Department of Civil and Environmental Engineering offers the following degree and minor:

- ***Bachelor of Science in Civil Engineering***
- ***Minor in Environmental Engineering***

The civil and environmental engineering profession provides for our basic needs: housing, cities, commerce, transportation, education, recreation, clean air, water, environmental projects and

energy production. Civil engineers plan, design and construct safe and purposeful civic facilities that add to the quality of life.

Today, civil engineers explore the frontiers of high technology for solutions to global needs. They deal with the techniques of modern computer-integrated design, as well as do research for new methods and materials of construction. They design and conduct experiments to study the wind effects on tall buildings and the hydrodynamic effects on offshore structures. They use computer simulations to predict hydrologic events, assess flood damage, and manage transportation systems. They employ computers to monitor treatment facilities, lasers for precision surveying, and remote sensing technologies for geodetic surveying. The civil engineers of tomorrow will explore the frontiers of space, mine the moon, and build space habitats where people will work and live.

Based on this vision of the future, the Department of Civil & Environmental Engineering, with the support of the Allen School of Engineering & Technology and Tri-State University, will excel in the education of individuals uniquely prepared for the practice of civil and environmental engineering at the professional level.

Civil engineers, individually, cannot be accomplished in all of the above areas. Therefore, they concentrate on specific areas of civil engineering, such as structures, hydraulics, geotechnics, environmental engineering, highway and transportation engineering, urban planning or construction management. Yet civil engineering projects require a combined knowledge of many of these areas, as well as managerial skills, which include the ability to make decisions that are based not only on sound engineering principles, but also on an understanding of the social, ethical and economical makeup of society. Therefore it is essential that students receive a broad foundation in the areas of mathematics, physical and engineering sciences, analytical and design methods, communication skills, and the social sciences and humanities.

Civil engineers find career opportunities with architectural and engineering firms, construction corporations, material manufacturers, material testing services, utility corporations, and the petroleum and aircraft industries. As many civil engineering entities such as highways, bridges, dams, land reclamation and water distribution systems belong to the public sector, a significant proportion of civil engineers work for local, state and federal governments, as well as the Army Corps of Engineers, the Air Force and the Navy. Those who pursue advanced degrees often enter teaching and research careers in universities. Presently, 35 percent of all civil engineers are in general management.

The civil engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

### **MISSION AND OBJECTIVES**

The mission of the civil engineering program at Tri-State University is to provide graduates with quality preparation for the practice of civil and environmental engineering, to provide graduates with opportunities to pursue graduate studies, and to provide technical and educational services to their profession and communities. To meet these goals, the student objectives in the civil engineering program at Tri-State University are to acquire the following:

1. The ability to clearly and effectively communicate ideas in written, and oral formats.
2. The ability to apply mathematics and science to solve engineering problems.
3. Knowledge of engineering ethics and understanding of the engineer's professional ethical responsibility.
4. The ability to conduct laboratory experiments and interpret the results.
5. The ability to use computers for data analysis, problem solving and reporting.
6. A broad education and knowledge of contemporary issues.
7. The ability and understanding of the need to engage in lifelong learning.
8. The ability to work effectively in multi-disciplinary engineering design teams.

### **CIVIL & ENVIRONMENTAL ENGINEERING CURRICULUM**

The requirements and guiding principles for the attainment of this mission are available from the Department. To prepare the student for a professional career in civil and environmental engineering, the curriculum listed below is specified. Its flexibility allows considerable freedom to choose courses that best fit a student's interests or objectives. Additional substitutions may be allowed when warranted.

The program design experience begins with the freshman engineering program.

Introduction to the design process, ethics, professionalism, economics and communication skills are presented and explored through individual and team assignments. As the analytical problem-solving capabilities of the students develop in their sophomore and junior years, design projects become more complex and involve engineering specifications, analysis, testing, safety and societal constraints. Finally, the program design experience is completed with a senior design project. A multi-faceted civil and environmental engineering need is identified, and a problem statement is formulated. Alternative solutions are explored, and a detailed design is documented and presented.

In the degree program description that follows, an asterisk (\*) indicates those courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE IN CIVIL ENGINEERING 132 HRS.**

The assessment of the fulfillment of the department's mission is obtained from portfolios of course and student work, alumni and placement data.

All civil engineering students must take the Fundamentals of Engineering (FE) examination as a requirement for graduation.

<b><u>PROGRAM REQUIREMENTS</u></b>	<b><u>REQUIRED HOURS</u></b>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103      English Composition I	(3)
*ENG 133      Technical Communication	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203      Effective Speaking	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>12 HRS.</b>
These hours must be selected in accordance with the Social Sciences & Humanities section of the General Education Requirements found on page <b>XXX</b> .	
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*EGR 153      Engineering Graphics	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>33 HRS.</b>
*MA 134      Calculus I	(4)
*MA 164      Calculus II	(4)
MA 213      Calculus III	(3)
MA 233      Differential Equations	(3)
MA 393      Probability and Statistics	(3)
*CH 104      General Chemistry I	
or	
*CH 104H    General Chemistry I Honors	(4)
CH 114      General Chemistry II	
or	
CH 114H    General Chemistry II Honors	(4)
PH 124      University Physics I	(4)
PH 134      University Physics II	(4)
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>

GE 101	Introduction to Engineering	(1)
<b>ENGINEERING SCIENCE</b>		<b>17 HRS.</b>
ES 213	Statics	(3)
ES 223	Dynamics	(3)
ES 243	Solid Mechanics	(3)
ES 313	Thermodynamics	(3)
ES 323	Fluid Mechanics	(3)
ES 382	Engineering Economics	(2)
<b>ANALYSIS AND DESIGN</b>		<b>44 HRS.</b>
CE 204	Basic Surveying	(4)
CE 304	Hydraulic Engineering	(4)
CE 314	Environmental Engineering (Aqueous)	(4)
CE 334	Civil Engineering Materials	(4)
CE 343	Structural Analysis	(3)
CE 353	Structural Steel Design	(3)
CE 363	Reinforced Concrete Design	(3)
CE 374	Soil Mechanics	(4)
CE 4292	Civil and Environmental Engineering Design Seminar	(2)
CE 4294	Civil and Environmental Engineering Design	(4)
	Geotech elective with 2 hours of design credit	(3)
	Environmental elective with 2 hours of design credit	(3)
	Water Resources elective with 2 hours of design credit	(3)
<b>PROFESSIONAL DEVELOPMENT</b>		<b>1 HR.</b>
GE 401	Professional Practice	(1)
<b>ELECTIVES</b>		<b>12 HRS.</b>
<i>TOTAL IN DEGREE PROGRAM:</i>		<i>132 HRS.</i>
<b>ENVIRONMENTAL ENGINEERING MINOR</b>		<b>27 HRS.</b>
(Open to all students)		
In the past, the environmental impacts of an engineering project or design were considered as an afterthought. Today, environmental concerns strongly influence almost all aspects of engineering practice. The curriculum is designed to provide students with a foundation to pursue a career in environmental engineering and an understanding of the environmental consequences of their designs.		
<b>REQUIRED SCIENCE COURSES</b>		<b>11 HRS.</b>
*CH 104	General Chemistry I	
or		
*CH 104H	General Chemistry I Honors	(4)
CH 114	General Chemistry II	
or		
CH 114H	General Chemistry II Honors	(4)
ES 323	Fluid Mechanics or equivalent (i.e. CHE 335 Unit Operations I)	(3)
<b>REQUIRED ENVIRONMENTAL ENGINEERING BREADTH COURSES</b>		<b>7 HRS.</b>
CE 313	Environmental Engineering (Non-Aqueous)	(3)
CE 314	Environmental Engineering (Aqueous)	(4)
<b>CHOOSE THREE OF THE FOLLOWING 3-CREDIT ENVIRONMENTAL ENGINEERING DEPTH COURSES</b>		<b>9 HRS.</b>
CE 393	Hazardous Waste Engineering	

CE 413	Water Treatment Principles and Design
CE 4223	Wastewater Treatment Principles and Design
CE 403	Engineering Hydrology
or	
CE 4103	Water Resources and Water Power Engineering
or	
CE 4203	Water Distribution and Design of Sewers
CHE 4033	Air Dispersion Modeling
or	
CHE 4043	Air Environmental Control
CHE 453	Chemical Engineering Kinetics
CHE 4073	Biochemical Engineering
CHE 4083	Plant Management

# ELECTRICAL & COMPUTER ENGINEERING

The Department of Electrical and Computer Engineering offers the following degrees:

- ***Bachelor of Science in Electrical Engineering (EE)***
- ***Bachelor of Science in Computer Engineering (CpE)***

The electrical engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Modern electrical and computer engineers serve a broad spectrum of needs in engineering, science, business and education. The electrical and computer engineering curricula at Tri-State University are designed to provide paths of opportunity to professional positions in software design, hardware design, business applications, digital computers, instrumentation, signal processing, control systems, power generation, medical electronics, bioengineering, integrated circuits and teaching. Today, more than ever, electrical and computer engineers may apply their skills to many different challenging opportunities.

To perform the creative work required in these areas, the future electrical or computer engineer requires an undergraduate preparation with a foundation in mathematics and science, proper development in communication skills, an understanding of the relevance and impact of engineering and technology on society, and a sufficient amount of classroom study and "hands on" laboratory experience in electrical and computer engineering.

In addition to academic activities, engineering experience has become a major factor in acquiring a desired position upon graduation. A Cooperative Educational Program (co-op) is available to enhance the educational experience and provide necessary industrial experience; students are strongly encouraged to participate in this optional program.

## **MISSION**

Our Mission is to provide our electrical engineering (EE) and computer engineering (CpE) students with the nurturing environment of a small school accompanied by academically rigorous programs that prepare graduates for either immediate employment or entry to graduate school.

## **OBJECTIVES**

We provide programs that assure that our students shall:

- Be technically competent,
- Possess problem-solving skills;
- Possess communication and teaming skills,
- Possess awareness of the societal impacts of technology.

## **STUDENT LEARNING OUTCOMES**

### **Technical Competence** (Electrical Engineering Program)

Graduates shall be capable of using and choosing appropriate engineering models to communicate, design, analyze, measure, implement, manipulate and predict the function of electrical systems.

### **Technical Competence** (Computer Engineering Program)

Graduates shall be capable of using and choosing appropriate engineering models to communicate, design, analyze, measure, implement, manipulate and predict the function of desktop and embedded computer systems.

### **Problem Solving: Lifelong Learning**

Graduates shall demonstrate knowledge of the sources and demands for continued technical learning.

### **Communication and Teams: Reporting**

Graduates shall be able to deliver oral and written technical reports.

**Communication and Teams: Peer Communication**

Graduates shall demonstrate communication skills necessary for successful teamwork.

**Communication and Teams: Teamwork**

Graduates shall be able to work with team members from multiple disciplines to solve engineering problems collectively.

**Societal Awareness: Social Responsibilities**

Graduates shall recognize that professional practice necessarily entails social responsibilities; integrity is at the core of engineering practice.

**Societal Awareness: Diverse Perspectives**

Graduates shall recognize that engineers tend to approach projects with the biases of an engineering perspective, and that effort must be made to transcend this limitation in order to work successfully with and for people who have other perspectives.

**PURPOSES**

We of the Tri-State Electrical and Computer Engineering Department fulfill our Mission by providing a dedicated and enhanced learning environment featuring the following components:

- curriculum: rigorous, but carefully shaped to provide a path to success;
- faculty: committed to an excellent undergraduate learning experience;
- classrooms: sized and equipped to promote personal attention;
- laboratories: equipped to provide an excellent laboratory experience through many hands-on experiments with direct guidance from full-time faculty;
- mentoring: promoted at all levels – faculty to student and upperclassman to underclassman;
- peer interaction: fostered by team assignments in classes and membership in student organizations.

**THE CURRICULA**

Both the electrical and the computer engineering curricula require 132 hours of course work, including at least ten lab courses and at least three project courses. The typical schedule includes about fifteen hours in the classroom plus about three required hours in lab each week, earning about 16 or 17 credits most terms.

The two programs are very similar for the first four semesters, but diverge substantially in the last four semesters: the most common elective choices result in a difference of 22 of the 132 required credits.

Students will be required to provide out-of-course assessments of their learning, which may include surveys, exams, written work samples and sample working prototypes.

## **BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING**

The Electrical Engineering Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

### **PROGRAM REQUIREMENTS**

TSU GENERAL EDUCATION for EEs

### **REQUIRED HOURS**

**42 HRS.**

#### **WRITTEN COMMUNICATION**

**6 HRS.**

ENG 103

or

ENG 104      English Composition

(3-4)

ENG 133\*      Technical Communication

(3)

#### **ORAL COMMUNICATION**

**3 HRS.**

SP 203      Effective Speaking

(3)

#### **SOCIAL SCIENCE AND HUMANITIES**

**12 HRS.**

(Departmental and TSU General Education restrictions apply.)

(12)

#### **COMPUTER LITERACY**

**3 HRS.**

CS 163      Programming in "C"

(3)

#### **MATHEMATICS AND SCIENCE**

**18 HRS.**

MA 134      Calculus I

(4)

MA 164      Calculus II

(4)

MA 213      Calculus III

(3)

MA 233      Differential Equations

(3)

CH 104      General Chemistry I

or

CH 104H      General Chemistry I Honors

(4)

\*With permission, ENG 113 may substitute for ENG 133.

#### **GENERAL ENGINEERING**

**2 HRS.**

GE 101      Introduction to Engineering

(1)

GE 401      Professional Practice

(1)

#### **ELECTRICAL AND COMPUTER ENGINEERING COMMON CORE**

**39 HRS.**

ECE 112      Prototyping and Projects

(2)

ECE 223      Circuits I

(3)

ECE 221/224      Circuits II and Circuits Lab

(5)

ECE 291/293      Digital Systems I and Lab

(4)

ECE 331/333      Digital Signal Processing and Lab

(4)

ECE 323      Modeling and Analysis

(3)

ECE 343      Engineering Instrumentation

(3)

ECE 351/354      Electronics and Lab

(5)

ECE 391/393      Microcontrollers and Lab

(4)

ECE 491      Contemporary Issues for Engineers

(1)

ECE 492      Project Management

(2)

ECE 493      Design Project

(3)

<b>EE FURTHER MATHEMATICS AND SCIENCE</b>	<b>14 HRS.</b>
MA 393      Probability and Statistics	(3)
PH 124      University Physics I	(4)
PH 134      University Physics II	(4)
PH 323      Electromagnetism	(3)

<b>ELECTRICAL ENGINEERING CONCENTRATION</b>	<b>19 HRS.</b>
ECE 311/313    Analog Control Systems and Lab	(4)
ECE 382      Subsystem Design	(2)
Choose <b>at least one</b> of the following course-lab pairs to earn 4 credits	
ECE 361/363    Advanced Electronics	
or	
ECE 441 /443    Communication Systems	(4)
Choose <b>at least two</b> of the following courses for 6-7 credits.	
ECE 301/303    Digital Systems II and Lab	(4)
ECE 373      Energy Conversion	(3)
ECE 403      Special Topics (may be taken twice)	(3)
ECE 473      Dynamic Electromagnetic Fields	(3)

Choose one more course from the six immediately above to subtotal at least 19 hours.

**EE PROGRAM ELECTIVES** **16 HRS.**  
 Choose one technical elective from among all ECE courses, PH at the 300 or 400 level, MA 313 and above, or Computer Science courses with the direction of your advisor.

Choose two engineering science electives (excluding ES 253: Electrical Science).

Choose other technical or non-technical electives with your advisor's consent to reach 132 hours.

**TOTAL IN DEGREE PROGRAM** **132 HRS.**

## BACHELOR OF SCIENCE IN COMPUTER ENGINEERING

### PROGRAM REQUIREMENTS

#### TSU GENERAL EDUCATION for CpEs

### REQUIRED HOURS

**42 HRS.**

#### **WRITTEN COMMUNICATION**

**6 HRS.**

ENG 103

or

ENG 104 English Composition

(3-4)

ENG 133\* Technical Communication

(3)

#### **ORAL COMMUNICATION**

**3 HRS.**

SP 203 Effective Speaking

(3)

#### **SOCIAL SCIENCE AND HUMANITIES**

**12 HRS.**

(Departmental and TSU General Education restrictions apply.)

(12)

#### **COMPUTER LITERACY**

**3 HRS.**

CS 163 Programming in "C"

(3)

#### **MATHEMATICS AND SCIENCE**

**18 HRS.**

MA 134 Calculus I

(4)

MA 164 Calculus II

(4)

MA 213 Calculus III

(3)

MA 233 Differential Equations

(3)

CH 104 General Chemistry I

(4)

or

CH 104H General Chemistry I Honors

(4)

\*With permission, ENG 113 may substitute for ENG 133.

#### **GENERAL ENGINEERING**

**2 HRS.**

GE 101 Introduction to Engineering

(1)

GE 401 Professional Practice

(1)

#### **ELECTRICAL AND COMPUTER ENGINEERING COMMON CORE**

**39 HRS.**

ECE 112 Prototyping and Projects

(2)

ECE 223 Circuits I

(3)

ECE 221/224 Circuits II and Circuits Lab

(5)

ECE 291/293 Digital Systems I and Lab

(4)

ECE 331/333 Digital Signal Processing and Lab

(4)

ECE 323 Modeling and Analysis

(3)

ECE 343 Engineering Instrumentation

(3)

ECE 351/354 Electronics and Lab

(5)

ECE 391/393 Microcontrollers and Lab

(4)

ECE 491 Contemporary Issues for Engineers

(1)

ECE 492 Project Management

(2)

ECE 493 Design Project

(3)

#### **CpE FURTHER MATHEMATICS and SCIENCE**

**14 HRS.**

MA 393 Probability and Statistics

(3)

MA 473 Discrete Math

(3)

PH 124 University Physics I

(4)

PH 134 University Physics II

(4)

#### **COMPUTER ENGINEERING CONCENTRATION**

**17 HRS.**

ECE 263 C++ and Object-Oriented Design

(3)

ECE 301/303	Digital Systems II & Lab	(4)
ECE 383	Software Analysis & Design	(3)
ECE 411/413	Embedded Systems & Lab	(4)
ECE 423	Software Engineering	(3)

**CpE PROGRAM ELECTIVES**

**18 HRS.**

Choose two technical electives from among the ECE courses, MA 313 and above, or Computer Science courses with the direction of your advisor (to avoid partial repetition of material in ECE courses and negotiate prerequisites). We particularly recommend CS 253: Data Structures I.

Choose two engineering science electives (excluding ES 253: Electrical Science).

Choose other technical or non-technical electives with your advisor's consent to reach 132 hours.

***TOTAL IN DEGREE PROGRAM***

***132 HRS.***

# WADE DEPARTMENT OF MECHANICAL & AEROSPACE ENGINEERING

The Dr. Forrest V. Wade Department of Mechanical & Aerospace Engineering was named in honor of Dr. Forrest V. Wade, a 1930 mechanical engineering graduate. The department offers the following degrees:

- **Bachelor of Science in Mechanical Engineering**
- **Master of Engineering**

Mechanical engineering is, perhaps, the most diverse and general of all the engineering fields. Mechanical engineers can be found working in almost any company. Manufacturing, transportation, health care and insurance are some of the types of firms that employ mechanical engineers. No other field of engineering provides a better professional base for interdisciplinary activities.

Mechanical engineers design machines of all types, from paper clips to space shuttles. They plan, design and direct the manufacture, distribution and operation of these machines. Mechanical engineers also design the power sources needed to operate the machines and provide for the environment in which they function. In fact, mechanical engineering involves all phases of energy production and utilization: engines, power plants, electrical generation, heating, ventilating and air conditioning.

Those mechanical engineers who choose to specialize in the aerospace area are particularly suited for employment in vehicle design. They may be involved in the design of aircraft, spacecraft, missiles, automobiles, trucks, buses, trains, or ships. Their specialized knowledge of lightweight structures and efficient, low drag design take on added importance as fuel costs increase.

Other mechanical engineers may specialize in the area of metallurgy and focus on the relationships among the structure, properties, processing and performance of metals. These engineers will be involved in product design, process development, and equipment design in addition to material specification, failure analysis, and implementing manufacturing processes.

## **BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING**

Due to the diverse nature of the profession, the mechanical engineering education must provide a very broad base of studies. To be successful a mechanical engineer must be able to communicate his knowledge and ideas to others; thus communication skills are an important part of the engineer's preparation. Studies in the social sciences and humanities develop an understanding of the relevance and impact of engineering and technology on society. Mathematics provides the engineer with the tools needed to build on the scientific foundations of chemistry and physics. The engineering sciences, common to all engineering disciplines, provide a broad foundation for the design of both thermal and mechanical systems, which are at the core of mechanical engineering.

Engineering creativity cannot be developed by theory alone; an engineer learns by doing. Thus, the laboratory courses stress hands-on work and the project design courses involve real-world problems. Multidisciplinary teams, involving students from business, technology and other engineering programs in the senior design projects, prepare students for the team design approach common in industry. A cooperative education program, incorporating alternating periods of full-time work and full-time school, is available to enhance the education and provide valuable engineering experience. Students are encouraged to participate in this optional program.

The mechanical engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

## MISSION AND OBJECTIVES

The mission of the mechanical engineering program at Tri-State University is to enable students to become productive mechanical engineers, to advance to leadership roles in the profession, and to provide service to society. To meet these goals specific program objectives have been defined. The mechanical engineering graduate must have:

1. the ability to clearly and effectively communicate ideas in writing, orally, and graphically;
2. an awareness of the engineer's social responsibilities with an appreciation of human achievements and insight into human behavior and culture;
3. knowledge of multivariate calculus and differential equations and familiarity with linear algebra and statistics and the ability to apply this knowledge to the solution of engineering problems;
4. fundamental knowledge of natural phenomena and their quantitative expression in chemistry and physics;
5. knowledge of the engineering sciences, including electrical science, and the ability to creatively apply this knowledge;
6. the ability to work professionally in the areas of both thermal and mechanical systems design;
7. the ability to integrate technical knowledge through tradeoff studies leading to an engineering design;
8. knowledge of contemporary analytical, computational, and experimental practices; and
9. competence in experimental design, data collection, data analysis, and the use of computational tools.

## THE MECHANICAL ENGINEERING CURRICULUM

The first year of the mechanical engineering program is devoted to developing knowledge and skills in communication, mathematics, and the natural sciences. Students are introduced to the mechanical engineering profession through the team design work involved in the course "Introduction to Mechanical Engineering." In the second year the fundamental courses in the engineering sciences provide the foundation for engineering design. The design process is formalized in the junior year in the courses "Computer-Aided Machine Design" and "Thermo-Fluid Component Design." The other courses in the third year emphasize engineering analysis and design in the areas of thermal and mechanical systems. The yearlong senior design project integrates the previous studies into the design of a machine or system, often resulting in fabrication and testing of a prototype. A professional atmosphere is developed through multidisciplinary teams and industry originated projects in the senior design sequence.

In the following curriculum listing, an asterisk (\*) indicates that those courses satisfy the University General Education requirements.

### BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING 132 HRS.

#### PROGRAM REQUIREMENTS

#### REQUIRED HOURS

##### **Communication Skills**

**12 HRS.**

*ENG 103	English Composition I	(3)
*ENG 133	Technical Communication	(3)
EGR 143	Engineering Graphics	(3)
*SP 203	Effective Speaking	(3)

##### **\*Social Science/Humanities**

**12 HRS.**

*Students must choose courses that satisfy the University's General Education Requirements.*

*See page xxx*

##### **\*Mathematics**

**20 HRS.**

MA 134	Calculus I	(4)
MA 164	Calculus II	(4)
MA 213	Calculus III	(3)
MA 233	Differential Equations	(3)

MA 313	Linear Algebra	(3)
MA 393	Probability & Statistics	(3)

**\*Science** **12 HRS.**

CH 104	General Chemistry I	
or		
CH 104H	General Chemistry I Honors	(4)
PH 124	University Physics I	(4)
PH 134	University Physics II	(4)

**Engineering Science** **26 HRS.**

ES 213	Statics	(3)
ES 223	Dynamics	(3)
ES 233	Engineering Materials	(3)
ES 243	Solid Mechanics	(3)
ES 253	Electrical Science	(3)
ES 313	Thermodynamics	(3)
ES 323	Fluid Mechanics	(3)
ES 343	Heat Transfer	(3)
ES 382	Engineering Economics	(2)

**Mechanical Engineering Core** **24 HRS.**

MAE 103	Introduction to Mechanical Engineering	(3)
MAE 303	Mechanics of Machinery	(3)
MAE 323	Thermodynamics II	
or		
MAE 383	Metallurgical Thermodynamics	(3)
MAE 333	Fluid Mechanics II	
or		
MAE 393	Metallurgical Transport	(3)
MAE 343	Manufacturing Processes and Equipment	(3)
MAE 353	Machine Component Design	(3)
*MAE 373	Computer-Aided Machine Design	(3)
MAE 413	Thermo-Fluid Component Design	(3)

**Mechanical Engineering Stem** **15 HRS.**

*Students select Stem A, B, C, or D*

A – Aeronautical Systems

MAE 473	Applied Aerodynamics	(3)
MAE 483	Vehicle Structures	(3)
MAE 493	Aerodynamics Laboratory	(3)
MAE 4013	Aircraft Design I	(3)
MAE 4023	Aircraft Design II	(3)

B - Thermal Systems Design

MAE 423	Heating, Ventilating, and Air Conditioning	(3)
MAE 433	Thermal Sciences Laboratory	(3)
MAE 4123	Power Generation	(3)
MAE 4033	Thermal Systems Design I	(3)
MAE 4043	Thermal Systems Design II	(3)

C - Machine Design

MAE 443	Engineering Metallurgy	(3)
MAE 453	Mechanical Vibration	(3)
MAE 463	Mechanical Measurement Laboratory	(3)
MAE 4053	Mechanical Systems Design I	(3)
MAE 4063	Mechanical Systems Design II	(3)

D-Metallurgy

MAE 443	Engineering Metallurgy	(3)
MAE 4143	Physical Metallurgy	(3)
MAE 4193	Metal Casting	(3)
MAE 4053	Mechanical Systems Design I	(3)
MAE 4063	Mechanical Systems Design II	(3)

**Professional Development**

**2 HRS.**

GE 101	Introduction to Engineering	(1)
GE 401	Professional Practice	(1)

**Electives**

**9 HRS.**

	Mechanical Engineering Elective	(3)
	Unrestricted Electives	(6)

*TOTAL IN DEGREE PROGRAM:*

*132 HRS.*

## **MASTER OF ENGINEERING – MECHANICAL ENGINEERING MAJOR**

The rapid pace of technological advancement has resulted in a demand for engineers with advanced training. There is growing support for the concept that the Master's degree should be the first professional degree for the practice of engineering. Mechanical engineers with the skills necessary to lead the design of a complex system are highly sought by industry. By emphasizing advanced design skills rather than research, the Master of Engineering program addresses this need.

### **MISSION AND OBJECTIVES**

The mission of the mechanical engineering program at Tri-State University is to enable graduates to become productive engineers, to advance to leadership roles in the profession, and to provide service to society. To meet these goals the following objectives have been identified for the graduate program in mechanical engineering. A graduate of the Master of Engineering program with a Mechanical Engineering major must have:

1. the ability to work professionally, at a leadership level, in the areas of both thermal and mechanical systems design;
2. the ability to integrate technical knowledge, through trade-off studies, leading to a complex engineering design, with consideration of economic, manufacturability, sustainability, safety, and environmental concerns;
3. the ability to clearly and effectively communicate design ideas; and
4. the ability to evaluate and implement engineering design solutions.

### **ADMISSION REQUIREMENTS**

Well qualified high-school graduates may be admitted directly into a five-year mechanical engineering program. Upon completion of this program both the Bachelor of Science in Mechanical Engineering and the Master of Engineering degree will be awarded.

Students seeking the Master of Engineering degree only must have a BS degree in mechanical engineering, or a closely related discipline, with a grade point average of 2.8 or higher. Transfer credits from another institution will not normally be allowed and courses used to satisfy the requirements of a bachelor's degree cannot be applied toward the master's degree.

### **GRADUATION REQUIREMENTS**

The Master of Engineering degree requires 32 semester credits, which includes a design project having significant industrial application. A full-time student will normally complete the program in twelve months.

A grade point average of 2.8 is required in all courses applied toward the Master of Engineering degree. A student whose grade point average in graduate courses falls below 2.5 will be dismissed from the program.

### **CURRICULUM**

The Master of Engineering degree has a heavy design emphasis, as opposed to the research emphasis of the Master of Science degree. The degree requires 32 semester credits, which consist of 18 credits in mechanical engineering, three credits of mathematics, three credits of business related coursework, and an eight credit hour design project. The design project will ideally involve industrial sponsorship and employment.

## **MASTER OF ENGINEERING - MECHANICAL ENGINEERING MAJOR      32 HRS.**

### **PROGRAM REQUIREMENTS**

#### **MECHANICAL ENGINEERING CORE**

		<b><u>REQUIRED HOURS</u></b>
		<b>12 HRS.</b>
MAE 513	Thermal Systems Design and Optimization I	(3)
MAE 523	Thermal Systems Design and Optimization II	(3)
MAE 533	Mechanism Synthesis	(3)
MAE 543	Advanced Machine Design	(3)

<b>MECHANICAL ENGINEERING ELECTIVES</b>	<b>6 HRS.</b>
Two courses selected from the following list:	
MAE 553      Computer Integrated Manufacturing	(3)
MAE 563      Metallurgical Failure Analysis	(3)
MAE 573      System Dynamics and Control	(3)
MAE 583      Design of Experiments	(3)
<b>MATHEMATICS</b>	<b>3 HRS.</b>
Any 400 level mathematics course.	
<b>BUSINESS</b>	<b>3 HRS.</b>
One course selected from the following list:	
FIN 503      Financial Analysis for Decision Making	(3)
LAW 503      Public Policy and the Legal Environment	(3)
MGT 543      Operations Strategy and Management	(3)
<b>DESIGN PROJECT</b>	<b>8 HRS.</b>
MAE 608      Design Project	(8)
<i>TOTAL IN GRADUATE DEGREE PROGRAM:</i>	<i>32 HRS.</i>

# TECHNOLOGY

The Department of Technology offers the following degrees:

- **Master of Science in Engineering Technology**
- **Bachelor of Science in Design Engineering Technology**
- **Associate in Drafting & Design Technology**
- **Associate in Manufacturing Technology**

Modern society demands a variety of skills and educational achievements to cover a wide range of scientific and technological positions. The problems confronting business, industry and government require large numbers of technicians and technologists, as well as engineers and scientists.

The Department of Technology curricula emphasize many of the underlying principles of component design and the skills required to communicate with the engineer, scientist and production personnel. Elective course offerings within the academic programs provide the student with the opportunity to study selected areas.

## DRAFTING AND DESIGN TECHNOLOGY

This program is designed to provide the skills to assist the engineer in the solution of design problems and to enable the technician to carry out complex assignments in machine, tool and product design with a minimum of supervision. The program is approved and supported by industries in constant need of well-trained drafting and machine design personnel.

In the degree program descriptions that follow, an asterisk (\*) indicates that those courses satisfy the University's General Education Requirements.

### **ASSOCIATE IN DRAFTING AND DESIGN TECHNOLOGY**

**65 HRS.**

#### **PROGRAM REQUIREMENTS**

#### **REQUIRED HRS.**

##### **WRITTEN COMMUNICATION**

**6 HRS.**

- |          |                         |     |
|----------|-------------------------|-----|
| *ENG 103 | English Composition I   | (3) |
| *ENG 133 | Technical Communication | (3) |

##### **SOCIAL SCIENCES & HUMANITIES**

**8 HRS.**

- |           |                           |     |
|-----------|---------------------------|-----|
| *ECO 213  | Microeconomics            | (3) |
| *ARC 292  | Architecture Appreciation | (2) |
| Electives |                           | (3) |

(\*These hours must also be selected in accordance with the Social Sciences & Humanities section of the General Education Requirements found on page XXX.)

##### **COMPUTER LITERACY**

**3 HRS.**

- |         |                            |     |
|---------|----------------------------|-----|
| *CS 103 | Computers and Applications | (3) |
|---------|----------------------------|-----|

##### **MATHEMATICS & SCIENCE**

**17 HRS.**

- |         |                                    |     |
|---------|------------------------------------|-----|
| *MA 113 | College Algebra                    | (3) |
| MA 123  | Trigonometry                       | (3) |
| MA 173  | Applied Mathematics                | (3) |
| PH 114  | Introduction to Physics            | (4) |
| *CH 144 | Chemistry — Ideas and Applications | (4) |

##### **FRESHMAN STUDIES**

**1 HR.**

- |        |                       |     |
|--------|-----------------------|-----|
| UE 101 | University Experience | (1) |
|--------|-----------------------|-----|

##### **AREA OF CONCENTRATION**

**30 HRS.**

- |         |                         |     |
|---------|-------------------------|-----|
| ETD 103 | Basic Technical Drawing | (3) |
|---------|-------------------------|-----|

ETD 113	Geometric Dimensioning and Tolerancing	(3)
ETD 123	Manufacturing Materials and Processes	(3)
ETD 143	Descriptive Geometry	(3)
ETD 153	Engineering Documentation Systems and Procedures	(3)
ETD 173	Computer Aided 3-D Modeling	(3)
ETD 203	Basic Mechanisms	(3)
ETD 223	Computer Aided Product Design	(3)
ETD 243	Statics and Strength of Materials	(3)
ETD 253	Measurement Techniques	(3)
<b>TOTAL IN DEGREE PROGRAM:</b>		<b>65 Hrs.</b>

### **MANUFACTURING TECHNOLOGY**

The manufacturing technology program is designed to provide the student with preparation for employment as an engineering assistant or first-line supervisor. This program is ideally suited to the person who is capable of understanding theoretical principles, but who prefers to be involved with equipment. This program provides graduates with a foundation that will help them advance as experience is gained and further study undertaken.

### **ASSOCIATE IN MANUFACTURING TECHNOLOGY 69 HRS.**

#### **PROGRAM REQUIREMENTS REQUIRED HRS.**

#### **WRITTEN COMMUNICATION 6 HRS.**

*ENG 103	English Composition I	(3)
*ENG 133	Technical Communication	(3)

#### **SOCIAL SCIENCES & HUMANITIES 6 HRS.**

*ECO 213	Microeconomics	(3)
*ARC 292	Architecture Appreciation	(2)
	Electives	(1)

(\*This hour must also be selected in accordance with the Social Sciences & Humanities section of the University's General Education Requirements found on page **XXX**.)

#### **COMPUTER LITERACY 3 HRS.**

*CS 103	Computers and Applications	(3)
---------	----------------------------	-----

#### **MATHEMATICS & SCIENCE 17 HRS.**

*MA 113	College Algebra	(3)
MA 123	Trigonometry	(3)
MA 173	Applied Mathematics	(3)
PH 114	Introduction to Physics	(4)
*CH 144	Chemistry — Ideas and Applications	(4)

#### **FRESHMAN STUDIES 1 HR.**

UE 101	University Experience	(1)
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#### **AREA OF CONCENTRATION 33 HRS.**

ETD 103	Basic Technical Drawing	(3)
ETD 113	Geometric Dimensioning and Tolerancing	(3)
ETD 123	Manufacturing Materials and Processes	(3)
ETD 153	Engineering Documentation Systems and Procedures	(3)
ETD 163	Environmental Health and Safety	(3)
ETD 203	Basic Mechanisms	(3)
ETD 233	Methods, Time and Motion Study	(3)
ETD 243	Statics and Strength of Materials	(3)
ETD 253	Measurement Techniques	(3)
ETD 273	Electrical Fundamentals	(3)
	Concentration area elective	(3)

#### **MANAGEMENT 3 HRS.**

## COMPUTER AIDED DRAFTING AND DESIGN TECHNOLOGY CURRICULUM

The computer aided drafting and design technology curriculum is a continuation of the associate degree program with emphasis being placed on the advanced activities of the modern engineering department. The program provides the skills and knowledge to advance in industry to the upper levels of supervision. Knowledge of computers, management, advanced CAD, engineering specifications and applied engineering design are part of this program. The technologist trained in this area will be able to supervise and develop the technical communications necessary in the engineering and scientific professions. This program is approved and supported by industries in need of professionally trained technologists.

In the degree program descriptions that follow, an asterisk (\*) indicates that those courses satisfy the University's General Education Requirements.

### **BACHELOR OF SCIENCE IN DESIGN ENGINEERING TECHNOLOGY 126 HRS. COMPUTER AIDED DRAFTING AND DESIGN TECHNOLOGY MAJOR**

#### **PROGRAM REQUIREMENTS REQUIRED HRS.**

##### **WRITTEN COMMUNICATION 6 HRS.**

*ENG 103	English Composition I	(3)
*ENG 133	Technical Communication	(3)

##### **ORAL COMMUNICATION 3 HRS.**

*SP 203	Effective Speaking	(3)
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##### **SOCIAL SCIENCES & HUMANITIES 20 HRS.**

*ECO 213	Microeconomics	(3)
*ECO 223	Macroeconomics	(3)
*ARC 292	Architecture Appreciation	(2)
	Electives	(12)

(These hours must also be selected in accordance with the Social Sciences & Humanities section of the University's General Education Requirements found on page **XXX**.)

##### **COMPUTER LITERACY 3 HRS.**

*CS 103	Computers and Applications	(3)
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##### **MATHEMATICS & SCIENCE 27 HRS.**

*MA 113	College Algebra	(3)
*MA 123	Trigonometry	(3)
*MA 134	Calculus I	(4)
MA 173	Applied Mathematics	(3)
MA 253	Statistics	(3)
*PH 114	Introduction to Physics	(4)
*CH 144	Chemistry — Ideas and Applications	(4)
	Science electives	(3)

##### **FRESHMAN STUDIES 1 HR.**

UE 101	University Experience	(1)
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##### **AREA OF CONCENTRATION 51 HRS.**

ETD 103	Basic Technical Drawing	(3)
ETD 113	Geometric Dimensioning and Tolerancing	(3)
ETD 123	Manufacturing Materials and Processes	(3)
ETD 143	Descriptive Geometry	(3)
ETD 153	Engineering Documentation Systems and Procedures	(3)

ETD 173	Computer Aided 3-D Modeling	(3)
ETD 203	Basic Mechanisms	(3)
ETD 223	Computer Aided Product Design	(3)
ETD 243	Statics and Strength of Materials	(3)
ETD 253	Measurement Techniques	(3)
ETD 263	Elements of Machines	(3)
ETD 273	Electrical Fundamentals	(3)
ETD 353	Advanced CAD	(3)
ETD 413	Production Specifications and Techniques	(3)
ETD 423	Advanced Design Techniques	(3)
ETD 433	Computer Numerical Control Principles	(3)
	Technical Elective	(3)

**MANAGEMENT**

**9 HRS.**

MGT 363	Organizational Behavior	(3)
	Business electives	(6)

**ELECTIVES**

**6 HRS.**

Non-specified electives may be selected from any 300- or 400-level course offered with approval of the advisor.

*TOTAL IN DEGREE PROGRAM:* *126 Hrs.*

## **MASTER OF SCIENCE IN ENGINEERING TECHNOLOGY**

In the fall of 2002, Tri-State University was elevated to a graduate degree-granting institution (in addition to its undergraduate degree-granting status) and began its first graduate degree program, Master of Science in Engineering Technology. The program received full approval of the Higher Learning Commission of the North Central Association of Colleges and Schools, [www.ncahigherlearningcomission.org](http://www.ncahigherlearningcomission.org), telephone (312) 263-0456, in May, 2003.

### **CANDIDATES FOR THE PROGRAM**

As individuals in technological businesses and industries advance in their careers and take on positions of increased responsibility, there is a need to update skills. This master's degree program reflects current industry needs and provides the opportunity for advanced study in various areas of engineering technology that are needed by individuals who wish to take the next step in their professions.

Graduates of this program will emerge with an ability to simultaneously identify and examine conceptual and social dimensions of science and technology.

Achieving this capacity at the master's level enhances a range of undergraduate backgrounds or qualifies graduates for government and industry positions that require addressing and managing complex problems with both technical and non-technical aspects.

A minimum of 30 semester hours of credit is required. This flexible program permits a student to develop a program of study that meets his/her career goals. Potential areas of study include manufacturing engineering technology and computer aided design (CAD).

### **ADMISSION REQUIREMENTS**

The master of science in engineering technology program is open to persons holding bachelor's degrees from accredited colleges and universities and whose undergraduate work has been of sufficient quality and scope to enable them to successfully pursue graduate study. While an undergraduate degree in a technology discipline is not required, a background in a technical area is preferred. Students must satisfy prerequisites for all courses in the program by showing equivalent training or proficiency, or by taking prerequisite courses. (Prerequisite credits do not apply to the graduate program).

A candidate for the master's program must have the following:

- a bachelor of science degree (or equivalent) with a general education component from an accredited institution.
- a minimum composite undergraduate grade point average (GPA) of 2.75 on a 4.0 scale.
- three letters of recommendation from professional references; at least one of the letters should be from a former/present teacher.
- an official transcript showing a bachelor's degree awarded by an accredited college or university with an acceptable grade point average.
- capacity for independent study and the ability to pursue graduate level work.
- industrial experience beyond the completion of a baccalaureate degree is recommended.

Note: If the candidate is a non-native speaker of English, he/she must have a minimum score of 625 on the paper-based or a minimum score of 275 on the computer-based Test of English as a Foreign Language (TOEFL).

### **CONDITIONAL ADMISSION**

Upon the recommendation of the appropriate graduate program coordinator, graduate degree applicants whose admission requirements are incomplete may be granted conditional admission status for one semester if they have an acceptable GPA. Students with conditional status may enroll for one semester only for a maximum of nine (9) semester hours of graduate course work. After all admission standards have been met, the conditional student must submit a "change of status" form to be fully admitted to a graduate program. Conditional status does not ensure acceptance into a graduate degree program.

Admission information, as well as an online admission procedure, can be found on the Tri-State University website ([www.tristate.edu](http://www.tristate.edu)).

### **TRANSFER CREDIT**

It is imperative that master's degree candidates take all of their graduate coursework at Tri-State University. Therefore, credits will not be accepted from other graduate programs.

### **ACADEMIC PERFORMANCE**

Students who do not maintain a satisfactory academic standing will be separated from the program. Normally, a GPA less than 3.0 or the accumulation of one "F" grade, more than one "D" grade, or more than three "C" grades will result in separation.

### **TIME LIMITATION AND PROGRAM CONTINUITY**

Requirements for the degree of master of science in engineering technology must be completed within six years (twelve consecutive semesters) from the effective start of an approved graduate program of study. Once a program is initiated, the student must maintain contiguous enrollment through completion. Under certain circumstances, a student may be granted permission to interrupt his/her program by petitioning the department in writing and stating the mitigating circumstances. Program interruption without formal approval will constitute grounds for dismissal from the program. No course work over eight years old can be used.

### **FURTHER INFORMATION**

For more information about Tri-State University's master of science in engineering technology graduate program, contact the Department of Technology at (260) 665-4263 or [wagnerd@tristate.edu](mailto:wagnerd@tristate.edu).

### **MASTER OF SCIENCE IN ENGINEERING TECHNOLOGY**

**30 HRS.**

#### **CORE**

**12 HRS.**

ETD 513	CAD/CAM	(3)
ETD 523	Parametric Modeling	(3)
ETD 543	Computer Numerical Control	(3)
ETD 553	Statistical Process Control	(3)

#### **EMPHASIS**

**6 HRS.**

##### **CAD emphasis:**

ETD 533	Computer Aided Design Analysis	(3)
ETD 573	Computer Integrated Manufacturing	(3)

##### **Manufacturing emphasis:**

ETD 563	Computer Aided Numerical Control	(3)
ETD 573	Computer Integrated Manufacturing	(3)
or		
ETD 583	Metrology	(3)

#### **SUPPORT**

**6 HRS.**

Select two of the following three-hour courses:

FIN 503	Financial Analysis for Decision Making	(3)
LAW 503	Public Policy and the Legal Environment	(3)
MGT 523	Communications, Leadership, and Ethics	(3)
MGT 543	Operations Strategy and Management	(3)
MK 503	Strategic Marketing Management	(3)

#### **THESIS PROJECT**

**6 HRS.**

ETD 596	Applied Design Project	(6)
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Possible topics include: SPC/QS 9000, Design, Process, Research

**TOTAL IN GRADUATE DEGREE PROGRAM:**

**30 HRS.**

# FRANKS SCHOOL OF EDUCATION

Tri-State University's Franks School of Education includes this department:

- *Shevenaugh Department of Elementary Education*

Academic programs administered by the school are as follows:

- **Bachelor of Science**

## MAJORS

**ELEMENTARY EDUCATION**  
**ENGLISH EDUCATION**  
**HEALTH EDUCATION**  
**MATHEMATICS EDUCATION**  
**PHYSICAL EDUCATION**  
**SCIENCE EDUCATION**  
**SOCIAL STUDIES EDUCATION**

## SCHOOL OF EDUCATION

*Information presented here is subject to change at any time, depending on actions taken by the Indiana Department of Education/Division of Professional Standards. Students are responsible for meeting any requirements for licensure that are in effect at the time they seek to be licensed. The requirements may differ from what is presented in this document. Students should remain alert to changes in requirements. Updated information is available from the Franks School of Education.*

Established in 1884 by a group of Angola citizens, the University began as part of the normal school movement that spread throughout much of the United States during the last half of the nineteenth century. The initial course of study at Tri-State included **teacher education** and commerce. In 1921, Frances Kain Shevenaugh earned her "teaching certificate" at Tri-State College by completing a twelve-week course of study. In June, 2001, the University reorganized its basic structure to make education a visible component. To renew the tradition of serving the needs of public education in the service area and beyond, the School of Education was created.

All education programs are built upon three major components that are deemed necessary for effective and productive teachers - **content, communication, and caring**. Each is dependent upon the other, and together they describe the knowledge, dispositions, and performances of a **knowledgeable, reflective educator**.

## MISSION OF THE SCHOOL

The mission of the Franks School of Education at Tri-State University is to provide an educational atmosphere in which each teacher candidate is challenged to become the best educator he or she can be. Faculty members of the School are committed to helping each future educator achieve his or her potential as a knowledgeable, reflective educator who is committed to and able to provide for the growth of all learners.

## PROFESSIONAL COMMITMENTS AND DISPOSITIONS

The Franks School of Education at Tri-State University adopted the ten principles developed by the Interstate New Teacher Assessment and Support Consortium (INTASC) as program objectives and two additional objectives specific to the mission of the School.

1. The teacher candidate understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches, and can create learning experiences that make these aspects of subject matter meaningful for students.

2. The teacher candidate understands how children learn and develop, and can provide learning opportunities that support their intellectual, social, and personal development.
3. The teacher candidate understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.
4. The teacher candidate understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.
5. The teacher candidate uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.
6. The teacher candidate uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.
7. The teacher candidate plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.
8. The teacher candidate understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner.
9. The teacher candidate is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.
10. The teacher candidate fosters relationships with school, colleagues, parents, and agencies in the larger community to support students' learning and well-being.
11. The teacher candidate organizes and implements instruction for students based on an understanding of the caring ethic.
12. The teacher candidate understands and applies interpersonal communication skills that support the caring ethic.

### **AREAS OF LICENSURE**

Currently, courses are offered leading to licensure in the programs and school settings described in the chart on the following page. Programs offered by the Franks School of Education are accredited by the Indiana Department of Education/Division of Professional Standards and the National Council for Accreditation of Teacher Education. All Franks School of Education policies, programs, and procedures are described in detail in the **Franks School of Education Handbook**.

### **ADMISSION TO THE TEACHER EDUCATION PROGRAM**

Two courses, EDU 111, Freshman Practicum, and EDU 211, Sophomore Practicum, may be taken prior to official admission to teacher education. Other courses with EDU prefixes may be taken only after the candidate has applied to and has been accepted into teacher education. A candidate may apply for admission to teacher education (which allows her/him to pursue a teacher education degree in a selected major) after completing the following:

1. earned state of Indiana passing scores on reading, writing, and mathematics sections of Praxis I;
2. completed 12 semester hours of university credit with a cumulative GPA of 2.5 or higher;
3. submitted three positive letters of recommendation supporting the candidate's admission to teacher education;
4. submitted a limited criminal background check and a Zachary's Law check; and
5. submitted appropriate application forms.

Transfer students must meet similar requirements. The Franks School of Education should be contacted for further details.

Note to Carla (THIS PAGE SHOULD BE IN A CHART FORM all on one page)

PROGRAM	SCHOOL SETTING	APPLICABLE STANDARDS
Elementary Education (K-6)	Elementary Primary and Intermediate	INTASC IDOE Early Childhood IDOE Middle Childhood

		IDOE	NCATE	Elementary
English Education (9-12)	High School	Generalist		
English Education (5-12)	Middle School/Junior High and High School	Adolescent/Young Adult English/Language Arts		
Health Education (9-12)	High School	Generalist		
Health Education (5-12)	Middle School/Junior High and High School	Adolescent/Young Adult Health		
Mathematics Education (9-12)	High School	Generalist		
Mathematics Education (5-12)	Middle School/Junior High and High School	Adolescent/Young Adult Mathematics		
Physical Education (9-12)	High School	Generalist		
Physical Education (5-12)	Middle School/Junior High and High School	Adolescent/Young Adult PE		
Physical Education (K-12)	Elementary Primary and Intermediate Middle School/Junior High High School	Generalist Early Childhood Middle Childhood Early Adolescence		
Science Education (9-12)	High School	Generalist PE		
Science Education (5-12)	Middle School/Junior High and High School	Adolescent/Young Adult Physical Science or Life Science		
Social Studies Education (9-12)	High School	Generalist		
Social Studies Education (5-12)	Middle School/Junior High and High School	Adolescent/Young Adult Social Studies		

**REMAINING IN TEACHER EDUCATION**

Once officially admitted, retention in teacher education is contingent upon good academic standing and successful passing of Benchmark requirements. The GPA required for admission is 2.5 overall. Upon admission, if the candidate's GPA falls below 2.5, the candidate will be placed on probation. Education courses may be taken the next semester only with permission of the Teacher Education Committee. If the GPA remains below 2.5 at the completion of the probationary term, the candidate no longer is eligible to take EDU courses and may apply for readmission when a satisfactory GPA is achieved. The candidate must also pass portfolio reviews and panel interviews at various checkpoints (Benchmark #1, #2, #3, #4).

**TESTING REQUIREMENTS**

To be eligible for admission to teacher education, state of Indiana passing scores on Praxis I reading, writing, and mathematics tests must be submitted. To be eligible for student teaching, state of Indiana passing score(s) on required Praxis II content specialty test(s) must be submitted. Information about the PRAXIS Series is available in the Franks School of Education office or online at [www.ets.org](http://www.ets.org). The Franks School of Education should always be consulted before a test is taken to ensure most recent testing requirements are being met.

**STUDENT TEACHING**

Student teaching is completed in an area school, generally within 40 miles of the University, as assigned by the dean of the Franks School of Education. The student teacher participates in a classroom with a cooperating teacher for 10-11 full weeks. The GPA requirement for enrollment in student teaching is 2.5 overall, as well as 2.5 in all intended areas of licensure. To be eligible for licensure, the teacher candidate must have earned an overall GPA of 2.5 or higher, a GPA of 2.5 or higher in all areas of licensure, and must have successfully completed student teaching with a GPA of 2.5 or higher.

**LICENSING ADVISOR**

Tri-State University's licensing advisor is the dean of the Franks School of Education.

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE — ELEMENTARY EDUCATION (K-6) 124 Hrs.**

*To be eligible for licensure as an elementary teacher in grades K-6, the following program of study must be completed.*

<b><u>PROGRAM REQUIREMENTS</u></b>		<b><u>REQUIRED HOURS</u></b>
<b>WRITTEN COMMUNICATION</b>		<b>6 HRS.</b>
*ENG 103	English Composition I	(3)
*ENG 113	English Composition II	(3)
<b>ORAL COMMUNICATION</b>		<b>3 HRS.</b>
*SP 203	Effective Speaking	
or		
*COM 163	Interpersonal Communication	3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>		<b>31 HRS.</b>
*PSY 113	Principles of Psychology	(3)
*ENG 153	Introduction to Literature	(3)
*ECO 213	Microeconomics	
or		
*ECO 223	Macroeconomics	(3)
*GOV 113	Introduction to Government	(3)

*HIS 103	American History I	(3)
*HIS 113	American History II	(3)
*SOC 323	The Family	(3)
GEO 223	World Geography	(3)
GEO 303	Cultural Geography	(3)
*ART 252	Art Appreciation	(2)
*MUS 272	Music Appreciation	(2)

**MATHEMATICS & SCIENCE** **20 HRS.**

*MA 184	Math for Elementary Teachers I	(4)
*MA 194	Math for Elementary Teachers II	(4)
*BIO 104	General Biology	(4)
*PH 104	Physical Science	(4)
*AST 201	Astronomy Laboratory	(1)
*AST 203	Astronomy	(3)

**HEALTH, PHYSICAL EDUCATION, AND SPORT MANAGEMENT** **6 HRS.**

HPS 102	Lifetime Wellness	(2)
HPS 232	Physical Education for the Elementary Teacher	(2)
HPS 342	School and Community Health	(2)

**FRESHMAN STUDIES** **1 HR.**

UE 101	University Experience	(1)
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**PROFESSIONAL STUDIES REQUIREMENTS (GRADES K-6)** **51 HRS.**

EDU 111	Freshman Practicum	(1)
EDU 211	Sophomore Practicum	(1)
EDU 212	Introduction to Music Fundamentals	(2)
EDU 222	Educational Psychology for Early Childhood/Middle Childhood Teachers	(2)
EDU 301**	Introduction to Teaching Practicum	(1)
EDU 303**	Introduction to Teaching	(3)
EDU 311	Junior Practicum	(1)
EDU 312	Exceptional Children in the Schools	(2)
EDU 323	Foundations of Education	(3)
EDU 353	Children's Literature	(3)
EDU 441**	Teaching of Reading Practicum	(1)
EDU 445**	Teaching of Reading	(5)
EDU 452	Art for the Elementary Teacher	(2)
EDU 454**	Methods of Teaching Mathematics and Science	(4)
EDU 462**	Educational Measurement	(2)
*EDU 463	Educational Media and Technology	(3)
EDU 464**	Methods of Teaching Language Arts and Social Studies	(4)
EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)

**\*\*Course must be taken at TSU**

**ELECTIVES** **6 HRS.**

*TOTAL IN DEGREE PROGRAM* **124 HRS.**

In addition to the professional education courses taken to be eligible for licensure at the elementary level (K-6), the following courses must be completed to enable the elementary education student to be eligible for licensure at the middle school level (5-9).

EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
EDU 472**	Practicum in Teaching - Middle School	(2)

In addition to the courses taken to be eligible for licensure at the elementary level (K-6), the elementary education student must select one core content area listed below and complete the courses to be eligible for licensure at the middle school level (5-9).

<b>MATHEMATICS</b>		<b>25 HRS.</b>
MA 113	College Algebra	(3)
MA 123	Trigonometry	(3)
MA 134	Calculus I	(4)
MA 164	Calculus II	(4)
MA 184	Math for the Elementary Teacher I	(4)
MA 194	Math for the Elementary Teacher II	(4)
MA 253	Statistics	(3)

<b>SCIENCE</b>		<b>19 HRS.</b>
AST 201	Astronomy Laboratory	(1)
AST 203	Astronomy	(3)
BIO 104	General Biology	(4)
CH 144	Chemistry - Ideas and Applications	(4)
GEO 213	Physical Geography	
or		
GLY 273	Geology	(3)
PH 104	Physical Science	(4)

<b>SOCIAL STUDIES</b>		<b>18 HRS.</b>
GEO 213	Physical Geography	(3)
SOC 103	Principles of Sociology	(3)
HIS 203	World Civilization I	(3)
HIS 213	World Civilization II	(3)
HIS 103	American History I	(3)
HIS 113	American History II	(3)

<b>LANGUAGE ARTS</b>		<b>26 HRS.</b>
ENG 103	English Composition I	(3)
ENG 113	English Composition II	(3)
ENG 153	Introduction to Literature	(3)
EDU 353	Children's Literature	(3)
ENG 363	The English Language	(3)
SP 203	Effective Speaking	(3)
SP 212	Oral Interpretation	(2)
COM 163	Interpersonal Communication	(3)
COM 203	Media and Society	(3)

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

***BACHELOR OF SCIENCE —ENGLISH/LANGUAGE ARTS EDUCATION (9-12, 5-12)***  
**124 HRS.**

To be eligible for licensure as an English/language arts teacher in grades 9-12 or 5-12, the following program of study must be completed.

<b><u>PROGRAM REQUIREMENTS</u></b>		<b><u>REQUIRED HOURS</u></b>
<b><u>WRITTEN COMMUNICATION</u></b>		<b>6 HRS.</b>
*ENG 103	English Composition I	(3)
*ENG 113	English Composition II	(3)

<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203      Effective Speaking	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*PSY 113      Principles of Psychology	(3)
*ENG 153      Introduction to Literature	(3)
*HIS electives	(3)
*Social Sciences electives	(3)
*COM 233      Intercultural Communication	(3)
*Humanities electives	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>10 HRS.</b>
*MA 113      College Algebra	
or	
*MA 153      Elements of Mathematics	(3)
Lab Science electives	(4)
Science electives	(3)
<b>GENERAL EDUCATION ELECTIVES</b>	<b>2 HRS.</b>
*Humanities electives	(2)
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>
UE 101      University Experience	(1)
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>	<b>37 HRS.</b>
EDU 111      Freshman Practicum	(1)
EDU 211      Sophomore Practicum	(1)
EDU 232      Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**    Introduction to Teaching Practicum	(1)
EDU 303**    Introduction to Teaching	(3)
EDU 311      Junior Practicum	(1)
EDU 312      Exceptional Children in the Schools	(2)
EDU 323      Foundations of Education	(3)
EDU 333**    Reading in the Content Area	(3)
EDU 432**    Practicum in Teaching - Secondary	(2)
EDU 442**    Special Methods for the Secondary Teacher	(2)
EDU 462**    Educational Measurement	(2)
*EDU 463      Educational Media and Technology	(3)
EDU 470**    Supervised Student Teaching	(10)
EDU 471**    Student Teaching Seminar	(1)
<b>ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12)</b>	<b>6 HRS.</b>
EDU 412      The Middle School	(2)
EDU 422      Middle School Methods	(2)
EDU 472**    Practicum in Teaching - Middle School	(2)
<b>**Course must be taken at TSU</b>	
<b>ENGLISH AND COMMUNICATION REQUIREMENTS</b>	<b>40 HRS.</b>
*COM 163      Interpersonal Communication	(3)
*COM 203      Media and Communication	(3)
*ENG 204      British Literature	(4)
*ENG 214      American Literature	(4)
ENG 223      Introduction to English Studies	(3)
*ENG 253      Readings in World Literature	(3)
*ENG 263      Contemporary Themes in Literature	(3)
*ENG 363      The English Language	(3)
ENG 393      Teaching Composition	(3)

*ENG 433	Shakespeare and His Times	(3)
ENG 453	Advanced Composition	(3)
*ENG 463	Creative Writing	(3)
*SP 212	Oral Interpretation	(2)

**ELECTIVES**

Grades 9-12	Licensure	<b>7 HRS.</b>
Grades 5-12	Licensure	<b>1 HR.</b>

*TOTAL IN DEGREE PROGRAM* **124 HRS.**

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE —HEALTH EDUCATION (9-12, 5-12) **124 HRS.****

To be eligible for licensure as a health teacher in grades 9-12 or 5-12, the following program of study must be completed.

<u>PROGRAM REQUIREMENTS</u>	<u>REQUIRED HOURS</u>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103 English Composition I	(3)
*ENG 113 English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203 Effective Speaking	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*PSY 113 Principles of Psychology	(3)
*ENG 153 Introduction to Literature	(3)
*Social Sciences electives	(3)
*Humanities electives	(6)
Choose one of the following HIS courses:	(3)
*HIS 103 American History I	
*HIS 113 American History II	
*HIS 203 World Civilization I	
*HIS 213 World Civilization II	
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103 Computers and Applications	
or	
*CS 113 Business Computer Applications	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>11 HRS.</b>
*MA 113 College Algebra	
or	
*MA 153 Elements of Mathematics	(3)
*BIO 104 General Biology	(4)
*BIO 244 Human Anatomy and Physiology	(4)
<b>GENERAL EDUCATION ELECTIVES</b>	<b>2 HRS.</b>
*HPS 102 Lifetime Wellness	(2)
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>
HPS 101 University Experience for HPS Majors	(1)

<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>		<b>37 HRS.</b>
EDU 111	Freshman Practicum	(1)
EDU 211	Sophomore Practicum	(1)
EDU 232	Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**	Introduction to Teaching Practicum	(1)
EDU 303**	Introduction to Teaching	(3)
EDU 311	Junior Practicum	(1)
EDU 312	Exceptional Children in the Schools	(2)
EDU 323	Foundations of Education	(3)
EDU 333**	Reading in the Content Area	(3)
EDU 432**	Practicum in Teaching - Secondary	(2)
EDU 442**	Special Methods for the Secondary Teacher	(2)
EDU 462**	Educational Measurement	(2)
EDU 463	Educational Media and Technology	(3)
EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)

<b>ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12)</b>		<b>6 HRS.</b>
EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
EDU 472**	Practicum in Teaching - Middle School	(2)

**\*\*Course must be taken at TSU**

<b>HEALTH, PHYSICAL EDUCATION, AND SPORT SCIENCE REQUIREMENTS</b>		<b>26 HRS.</b>
HPS 131	First Aid	(1)
HPS 252	Consumer Health	(2)
HPS 253	Risk Management in Physical Education and Sport	(3)
HPS 273	Nutrition	(3)
HPS 332	Drug Education	(2)
HPS 342	School and Community Health	(2)
HPS 352	Family Life Education	(2)
HPS 373	Health Problems	(3)
HPS 383	School Health Education	(3)
HPS 433	Developing Health Promotion Programs for Adults	(3)
HPS 452	Developing Health Promotion Assessments	(2)

<b>HEALTH, PHYSICAL EDUCATION, AND SPORT MANAGEMENT ELECTIVES</b>		
Grades 9-12 Licensure		<b>17 HRS.</b>
Grades 5-12 Licensure		<b>11 HRS.</b>

**TOTAL IN DEGREE PROGRAM** **124 HRS.**

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE —PHYSICAL EDUCATION (9-12, 5-12) 124 HRS.**

To be eligible for licensure as a physical education teacher in grades 9-12 or 5-12, the following program of study must be completed.

<b>PROGRAM REQUIREMENTS</b>	<b>REQUIRED HOURS</b>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103 English Composition I	(3)
*ENG 113 English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203 Effective Speaking	(3)

**SOCIAL SCIENCES & HUMANITIES 18 HRS.**

*PSY 113	Principles of Psychology	(3)
*ENG 153	Introduction to Literature	(3)
*Social Sciences electives		(3)
*Humanities electives		(6)
Choose one of the following HIS courses:		(3)
*HIS 103	American History I	
*HIS 113	American History II	
*HIS 203	World Civilization I	
*HIS 213	World Civilization II	

**COMPUTER LITERACY****3 HRS.**

*CS 103	Computers and Applications	
or		
*CS 113	Business Computer Applications	(3)

**MATHEMATICS & SCIENCE****11 HRS.**

*MA 113	College Algebra	
Or		
*MA 153	Elements of Mathematics	(3)
*BIO 114	General Biology	(4)
*BIO 244	Human Anatomy and Physiology	(4)

**GENERAL EDUCATION ELECTIVES****2 HRS.**

*HPS 102	Lifetime Wellness	(2)
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**FRESHMAN STUDIES 1 HR.**

HPS 101	University Experience for HPS Majors	(1)
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**PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)****37 HRS.**

EDU 111	Freshman Practicum	(1)
EDU 211	Sophomore Practicum	(1)
EDU 232	Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**	Introduction to Teaching Practicum	(1)
EDU 303**	Introduction to Teaching	(3)
EDU 311	Junior Practicum	(1)
EDU 312	Exceptional Children in the Schools	(2)
EDU 323	Foundations of Education	(3)
EDU 333**	Reading in the Content Area	(3)
EDU 432**	Practicum in Teaching - Secondary	(2)
EDU 442**	Special Methods for the Secondary Teacher	(2)
EDU 462**	Educational Measurement	(2)
EDU 463	Educational Media and Technology	(3)
EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)

**ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12)****6 HRS.**

EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
EDU 472**	Practicum in Teaching - Middle School	(2)

**\*\*Course must be taken at TSU****HEALTH, PHYSICAL EDUCATION, AND SPORT SCIENCE REQUIREMENTS****27 HRS.**

HPS 103	Teaching Sport and Recreational Activities I	(3)
HPS 123	Teaching Sport and Recreational Activities II	(3)
HPS 202	Introduction to Adaptive Physical Education	(2)
HPS 212	Adaptive Physical Education	(2)

HPS 223	History of Physical Education and Sport	(3)
HPS 243	Athletic Training	(3)
HPS 333	Kinesiology	(3)
HPS 353	Exercise Physiology	(3)
HPS 362	Motor Learning	(2)
HPS 413	Organization and Administration of Physical Education and Athletics	(3)

**HEALTH, PHYSICAL EDUCATION, AND SPORT MANAGEMENT ELECTIVES**

Grades 9-12 Licensure	<b>16 HRS.</b>
Grades 5-12 Licensure	<b>10 HRS.</b>

*TOTAL IN DEGREE PROGRAM* **124 HRS.**

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE —PHYSICAL EDUCATION (K-12)** **124 HRS.**

To be eligible for licensure as a physical education teacher in grades K-12, the following program of study must be completed.

<u>PROGRAM REQUIREMENTS</u>	<u>REQUIRED HOURS</u>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103 English Composition I	(3)
*ENG 113 English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203 Effective Speaking	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*PSY 113 Principles of Psychology	(3)
*ENG 153 Introduction to Literature	(3)
*Social Sciences electives	(3)
*Humanities electives	(6)
Choose one of the following HIS courses:	(3)
*HIS 103 American History I	
*HIS 113 American History II	
*HIS 203 World Civilization I	
*HIS 213 World Civilization II	
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103 Computers and Applications	
or	
*CS 113 Business Computer Applications	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>11 HRS.</b>
*MA 113 College Algebra	
or	
*MA 153 Elements of Mathematics	(3)
*BIO 104 General Biology	(4)
*BIO 244 Human Anatomy and Physiology	(4)
<b>GENERAL EDUCATION ELECTIVES</b>	<b>2 HRS.</b>
*HPS 102 Lifetime Wellness	(2)

**FRESHMAN STUDIES 1 HR.**

HPS 101	University Experience for HPS Majors	(1)
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**PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12) 37 HRS.**

EDU 111	Freshman Practicum	(1)
EDU 211	Sophomore Practicum	(1)
EDU 222	Educational Psychology for the Elementary Teacher	(2)
EDU 232	Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**	Introduction to Teaching Practicum	(1)
EDU 303**	Introduction to Teaching	(3)
EDU 311	Junior Practicum	(1)
EDU 312	Exceptional Children in the Schools	(2)
EDU 323	Foundations of Education	(3)
EDU 333**	Reading in the Content Area	(3)
EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
EDU 432**	Practicum in Teaching - Secondary	(2)
EDU 442**	Special Methods for the Secondary Teacher	(2)
EDU 462**	Educational Measurement	(2)
EDU 463	Educational Media and Technology	(3)
EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)

**\*\*Course must be taken at TSU****HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT REQUIREMENTS 27 HRS.**

HPS 103	Teaching Sport and Recreational Activities I	(3)
HPS 123	Teaching Sport and Recreational Activities II	(3)
HPS 202	Introduction to Adaptive Physical Education	(2)
HPS 212	Adaptive Physical Education	(2)
HPS 223	History of Physical Education and Sport	(3)
HPS 243	Athletic Training	(3)
HPS 333	Kinesiology	(3)
HPS 353	Exercise Physiology	(3)
HPS 362	Motor Learning	(2)
HPS 413	Organization and Administration of Physical Education and Athletics	(3)

**ADDITIONAL CONTENT FOR K-12 LICENSURE (Grades K-12) 10 HRS.**

HPS 232	Physical Education for the Elementary Teacher	(2)
EDU 212	Introduction to Music Fundamentals	(2)
EDU 222	Educational Psychology for the Elementary Teacher	(2)
EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)

**HEALTH, PHYSICAL EDUCATION, AND SPORT MANAGEMENT ELECTIVES**

Grades K-12 Licensure	<b>6 HRS.</b>
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<i>TOTAL IN DEGREE PROGRAM</i>	<b>124 HRS.</b>
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In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

***BACHELOR OF SCIENCE —PHYSICAL EDUCATION, HEALTH EDUCATION (9-12)  
134 HRS.***

To be eligible for licensure as a physical education and health teacher in grades 9-12, the following program of study must be completed.

<u><b>PROGRAM REQUIREMENTS</b></u>	<u><b>REQUIRED HOURS</b></u>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103      English Composition I	(3)
*ENG 113      English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203      Effective Speaking	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*PSY 113      Principles of Psychology	(3)
*ENG 153      Introduction to Literature	(3)
*Social Sciences electives	(3)
*Humanities electives	(6)
Choose one of the following HIS courses:	(3)
*HIS 103      American History I	
*HIS 113      American History II	
*HIS 203      World Civilization I	
*HIS 213      World Civilization II	
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103      Computers and Applications	
or	
*CS 113      Business Computer Applications	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>11 HRS.</b>
*MA 113      College Algebra	
or	
*MA 153      Elements of Mathematics	(3)
*BIO 104      General Biology	(4)
*BIO 244      Human Anatomy and Physiology	(4)
<b>GENERAL EDUCATION ELECTIVES</b>	<b>2 HRS.</b>
*HPS 102      Lifetime Wellness	(2)
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>
HPS 101      University Experience for HPS Majors	(1)
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>	<b>37 HRS.</b>
EDU 111      Freshman Practicum	(1)
EDU 211      Sophomore Practicum	(1)
EDU 232      Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**    Introduction to Teaching Practicum	(1)
EDU 303**    Introduction to Teaching	(3)
EDU 311      Junior Practicum	(1)
EDU 312      Exceptional Children in the Schools	(2)
EDU 323      Foundations of Education	(3)
EDU 333**    Reading in the Content Area	(3)
EDU 432**    Practicum in Teaching - Secondary	(2)

EDU 442**	Special Methods for the Secondary Teacher	(2)
EDU 462**	Educational Measurement	(2)
EDU 463	Educational Media and Technology	(3)
EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)

**\*\*Course must be taken at TSU**

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE REQUIREMENTS 53 HRS.**

**Physical Education**

HPS 103	Teaching Sport and Recreational Activities I	(3)
HPS 123	Teaching Sport and Recreational Activities II	(3)
HPS 202	Introduction to Adaptive Physical Education	(2)
HPS 212	Adaptive Physical Education	(2)
HPS 223	History of Physical Education and Sport	(3)
HPS 243	Athletic Training	(3)
HPS 333	Kinesiology	(3)
HPS 353	Exercise Physiology	(3)
HPS 362	Motor Learning	(2)
HPS 413	Organization and Administration of Physical Education and Athletics	(3)

**Health**

HPS 131	First Aid	(1)
HPS 252	Consumer Health	(2)
HPS 253	Risk Management in Physical Education and Sport	(3)
HPS 273	Nutrition	(3)
HPS 332	Drug Education	(2)
HPS 342	School and Community Health	(2)
HPS 352	Family Life Education	(2)
HPS 373	Health Problems	(3)
HPS 383	School Health Education	(3)
HPS 433	Developing Health Promotion Programs for Adults	(3)
HPS 452	Developing Health Promotion Assessments	(2)

**TOTAL IN DEGREE PROGRAM 134 HRS.**

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE – PHYSICAL EDUCATION, HEALTH EDUCATION (5-12)  
138 HRS.**

To be eligible for licensure as a physical education and health teacher in grades 5-12, the following program of study must be completed

<u>PROGRAM REQUIREMENTS</u>	<u>REQUIRED HOURS</u>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103 English Composition I	(3)
*ENG 113 English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203 Effective Speaking	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*PSY 113 Principles of Psychology	(3)
*ENG 153 Introduction to Literature	(3)
*Social Sciences electives	(3)

*Humanities electives	(6)
Choose one of the following HIS courses:	(3)
*HIS 103 American History I	
*HIS 113 American History II	
*HIS 203 World Civilization I	
*HIS 213 World Civilization II	
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103 Computers and Applications	
or	
*CS 113 Business Computer Applications	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>11 HRS.</b>
*MA 113 College Algebra	
or	
*MA 153 Elements of Mathematics	(3)
*BIO 104 General Biology	(4)
*BIO 244 Human Anatomy and Physiology	(4)
<b>GENERAL EDUCATION ELECTIVES</b>	<b>2 HRS.</b>
HPS 102 Lifetime Wellness	(2)
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>
HPS 101 University Experience for HPS Majors	(1)
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>	<b>41 HRS.</b>
EDU 111 Freshman Practicum	(1)
EDU 211 Sophomore Practicum	(1)
EDU 232 Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301** Introduction to Teaching Practicum	(1)
EDU 303** Introduction to Teaching	(3)
EDU 311 Junior Practicum	(1)
EDU 312 Exceptional Children in the Schools	(2)
EDU 323 Foundations of Education	(3)
EDU 333** Reading in the Content Area	(3)
EDU 412 The Middle School	(2)
EDU 422 Middle School Methods	(2)
EDU 432** Practicum in Teaching - Secondary	(2)
EDU 442** Special Methods for the Secondary Teacher	(2)
EDU 462** Educational Measurement	(2)
EDU 463 Educational Media and Technology	(3)
EDU 470** Supervised Student Teaching	(10)
EDU 471** Student Teaching Seminar	(1)
<b>**Course must be taken at TSU</b>	
<b>HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE REQUIREMENTS</b>	<b>53 HRS.</b>
<b>Physical Education</b>	
HPS 103 Teaching Sport and Recreational Activities I	(3)
HPS 123 Teaching Sport and Recreational Activities II	(3)
HPS 202 Introduction to Adaptive Physical Education	(2)
HPS 212 Adaptive Physical Education	(2)
HPS 223 History of Physical Education and Sport	(3)
HPS 243 Athletic Training	(3)
HPS 333 Kinesiology	(3)
HPS 353 Exercise Physiology	(3)
HPS 362 Motor Learning	(2)
HPS 413 Organization and Administration of Physical Education and Athletics	(3)
<b>Health</b>	

HPS 131	First Aid	(1)
HPS 252	Consumer Health	(2)
HPS 253	Risk Management in Physical Education and Sport	(3)
HPS 273	Nutrition	(3)
HPS 332	rug Education	(2)
HPS 342	School and Community Health	(2)
HPS 352	Family Life Education	(2)
HPS 373	Health Problems	(3)
HPS 383	School Health Education	(3)
HPS 433	Developing Health Promotion Programs for Adults	(3)
HPS 452	Developing Health Promotion Assessments	(2)
<b>ADDITIONAL CONTENT FOR 5-12 LICENSURE (Grades 5-12)</b>		<b>4 HRS.</b>
EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
<i>TOTAL IN DEGREE PROGRAM</i>		<i>138 HRS.</i>

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE—MATHEMATICS EDUCATION (9-12, 5-12) 124 HRS.**

To be eligible for licensure as a mathematics teacher in grades 9-12 or 5-12, the following program of study must be completed.

<u>PROGRAM REQUIREMENTS</u>	<u>REQUIRED HOURS</u>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103 English Composition I	(3)
*ENG 113 English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203 Effective Speaking	
or	
*COM 163 Interpersonal Communication	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*PSY 113 Principles of Psychology	(3)
*ENG 153 Introduction to Literature	(3)
*HIS electives	(3)
*Social Sciences electives	(3)
*Humanities electives	(6)
<b>COMPUTER LITERACY</b>	<b>2-3 HRS.</b>
*CS 132 Visual Basic Programming	
or	
*CS 163 Programming in "C"	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>10 HRS.</b>
*MA 312 Historical Aspects of Mathematics	(2)
Lab Science electives	(4)
Lab Science electives	(4)
<b>GENERAL EDUCATION ELECTIVES</b>	<b>3 HRS.</b>
*HPS 102 Lifetime Wellness	(2)
1 hour elective chosen from categories above	(1)

<b>FRESHMAN STUDIES</b>		<b>1 HR.</b>
UE 101	University Experience	(1)
<b>SOCIAL SCIENCES OR HUMANITIES ELECTIVES</b>		<b>6 HRS.</b>
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>		<b>37 HRS.</b>
EDU 111	Freshman Practicum	(1)
EDU 211	Sophomore Practicum	(1)
EDU 232	Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**	Introduction to Teaching Practicum	(1)
EDU 303**	Introduction to Teaching	(3)
EDU 311	Junior Practicum	(1)
EDU 312	Exceptional Children in the Schools	(2)
EDU 323	Foundations of Education	(3)
EDU 333**	Reading in the Content Area	(3)
EDU 432**	Practicum in Teaching - Secondary	(2)
EDU 442**	Special Methods for the Secondary Teacher	(2)
EDU 462**	Educational Measurement	(2)
EDU 463	Educational Media and Technology	(3)
EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)
<b>ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12)</b>		<b>6 HRS.</b>
EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
EDU 472**	Practicum in Teaching - Middle School	(2)
<b>**Course must be taken at TSU</b>		
<b>MATHEMATICS REQUIREMENTS</b>		<b>32 HRS.</b>
*MA 134	Calculus I	(4)
*MA 164	Calculus II	(4)
MA 213	Calculus III	(3)
MA 233	Differential Equations	(3)
MA 303	College Geometry	(3)
MA 313	Linear Algebra	(3)
MA 343	Sets and Logic	(3)
MA 373	Abstract Algebra	(3)
MA 393	Probability and Statistics	(3)
MA 473	Discrete Mathematics	(3)
<b>ELECTIVES</b>		
<b>GRADES 9-12 LICENSURE</b>		<b>6 HRS.</b>
<b>GRADES 5-12 LICENSURE</b>		<b>0 HRS.</b>
<i>TOTAL IN DEGREE PROGRAM</i>		<i>124 HRS.</i>

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE —SCIENCE EDUCATION/LIFE SCIENCES (BIOLOGY)**  
**(9-12, 5-12) 124 to 130 HRS.**

To be eligible for licensure as a life sciences (biology) teacher in grades 9-12 or 5-12, the following program of study must be completed.

<b><u>PROGRAM REQUIREMENTS</u></b>	<b><u>REQUIRED HOURS</u></b>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103      English Composition I	(3)
*ENG 113      English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203      Effective Speaking	
or	
*COM 163      Interpersonal Communication	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*ENG 153      Introduction to Literature	(3)
*PSY 113      Principles of Psychology	(3)
*History elective	(3)
*Humanities electives	(6)
*Social Sciences electives	(3)
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103      Computers and Applications	
<b>MATHEMATICS &amp; SCIENCE</b>	<b>10 HRS.</b>
*BIO 114      Principles of Biology	(4)
*BIO 143      Conservation	(3)
*MA 113      College Algebra	(3)
<b>HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT</b>	<b>2 HRS.</b>
*HPS 102      Lifetime Wellness	(2)
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>
UE 101      University Experience	(1)
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>	<b>37 HRS.</b>
EDU 111      Freshman Practicum	(1)
EDU 211      Sophomore Practicum	(1)
EDU 232      Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**      Introduction to Teaching Practicum	(1)
EDU 303**      Introduction to Teaching	(3)
EDU 311      Junior Practicum	(1)
EDU 312      Exceptional Children in the Schools	(2)
EDU 323      Foundations of Education	(3)
EDU 333**      Reading in the Content Area	(3)
EDU 432**      Practicum in Teaching - Secondary	(2)
EDU 442**      Special Methods for the Secondary Teacher	(2)
EDU 462**      Educational Measurement	(2)
EDU 463      Educational Media and Technology	(3)
EDU 470**      Supervised Student Teaching	(10)
EDU 471**      Student Teaching Seminar	(1)

<b>ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12)</b>	<b>6 HRS.</b>
EDU 412      The Middle School	(2)
EDU 422      Middle School Methods	(2)
EDU 472**    Practicum in Teaching - Middle School	(2)

**\*\*Course must be taken at TSU**

<b>SCIENCE REQUIREMENTS</b>	<b>44 HRS.</b>
BIO 254      Human Anatomy	(4)
BIO 304      Plant Biology	(4)
BIO 314      Animal Biology	(4)
BIO 324      Microbiology	(4)
BIO 333      Environmental Biology	(3)
BIO 354      Animal Physiology	(4)
BIO 414      Genetics	(4)
CH 104      General Chemistry I	(4)
CH 114      General Chemistry II	(4)
MA 123      Trigonometry	(3)
PH 144      Introduction to Physics	(4)
SC 412      Senior Research Seminar	(2)

*TOTAL IN DEGREE PROGRAM*

<i>Grades 9-12 Licensure</i>	<i>124 HRS.</i>
<i>Grades 5-12 Licensure</i>	<i>130 HRS.</i>

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE —SCIENCE EDUCATION/CHEMISTRY (9-12, 5-12) 124 to 130 HRS.**

To be eligible for licensure as a chemistry teacher in grades 9-12 or 5-12, the following program of study must be completed.

<b><u>PROGRAM REQUIREMENTS</u></b>	<b><u>REQUIRED HOURS</u></b>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103      English Composition I	(3)
*ENG 113      English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203      Effective Speaking	
or	
*COM 163      Interpersonal Communication	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*ENG 153      Introduction to Literature	(3)
*PSY 113      Principles of Psychology	(3)
*History elective	(3)
*Humanities electives	(6)
*Social Sciences electives	(3)
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103      Computers and Applications	
<b>MATHEMATICS &amp; SCIENCE</b>	<b>10 HRS.</b>
*CH 104      General Chemistry I	
OR	
*CH 104H      General Chemistry I Honors	(4)

*BIO 143	Conservation	(3)
*MA 113	College Algebra	3)
<b>HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT</b>		<b>2 HRS.</b>
*HPS 102	Lifetime Wellness	(2)
<b>FRESHMAN STUDIES</b>		<b>1 HR.</b>
UE 101	University Experience	(1)
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>		<b>37 HRS.</b>
EDU 111	Freshman Practicum	(1)
EDU 211	Sophomore Practicum	(1)
EDU 232	Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**	Introduction to Teaching Practicum	(1)
EDU 303**	Introduction to Teaching	(3)
EDU 311	Junior Practicum	(1)
EDU 312	Exceptional Children in the Schools	(2)
EDU 323	Foundations of Education	(3)
EDU 333**	Reading in the Content Area	(3)
EDU 432**	Practicum in Teaching - Secondary	(2)
EDU 442**	Special Methods for the Secondary Teacher	(2)
EDU 462**	Educational Measurement	(2)
EDU 463	Educational Media and Technology	(3)
EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)
<b>ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12)</b>		<b>6 HRS.</b>
EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
EDU 472**	Practicum in Teaching - Middle School	(2)
<b>**Course must be taken at TSU</b>		
<b>SCIENCE REQUIREMENTS</b>		<b>44-46 HRS.</b>
CH 114	General Chemistry II	(4)
OR		
CH 114H	General Chemistry II Honors	(4)
CH 203	Organic Chemistry I	(3)
CH 211	Organic Chemistry I Lab	(1)
CH 213	Organic Chemistry II	(3)
CH 221	Organic Chemistry II Lab	(1)
CH 232	Quantitative Analysis	(2)
CH 351	Physical Chemistry I Lab	(1)
CH 354	Physical Chemistry I	(4)
MA 134	Calculus I	(4)
MA 164	Calculus II	(4)
MA 213	Calculus III	(3)
PH 124	University Physics	(4)
PH 134	University Physics II	(4)
SC 412	Senior Research Seminar	(2)
At least one of the following courses for a total of 44 or more hours:		
40 + 4 = 44 OR 40 + 3 + 3 = 46		
CH 323	Instrumental Analysis	(3)
CH 363	Physical Chemistry II	(3)
CH 434	Biochemistry	(4)
<b>TOTAL IN DEGREE PROGRAM</b>		
Grades 9-12 Licensure		124-126 HRS.
Grades 5-12 Licensure		130-132 HRS.

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE —SCIENCE EDUCATION/PHYSICS (9-12, 5-12)  
124 to 130 HRS.**

To be eligible for licensure as a physics teacher in grades 9-12 or 5-12, the following program of study must be completed.

<b><u>PROGRAM REQUIREMENTS</u></b>	<b><u>REQUIRED HOURS</u></b>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103      English Composition I	(3)
*ENG 113      English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203      Effective Speaking	
or	
*COM 163      Interpersonal Communication	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*ENG 153      Introduction to Literature	(3)
*PSY 113      Principles of Psychology	(3)
*History elective	(3)
*Humanities electives	(6)
*Social Sciences electives	(3)
<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103      Computers and Applications	
<b>MATHEMATICS &amp; SCIENCE</b>	<b>10 HRS.</b>
*CH 104      General Chemistry I	
OR	
*CH 104H      General Chemistry I Honors	(4)
*BIO 143      Conservation	(3)
*MA 113      College Algebra	(3)
<b>HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT</b>	<b>2 HRS.</b>
*HPS 102      Lifetime Wellness	(2)
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>
UE 101      University Experience	(1)
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>	<b>37 HRS.</b>
EDU 111      Freshman Practicum	(1)
EDU 211      Sophomore Practicum	(1)
EDU 232      Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301**      Introduction to Teaching Practicum	(1)
EDU 303**      Introduction to Teaching	(3)
EDU 311      Junior Practicum	(1)
EDU 312      Exceptional Children in the Schools	(2)
EDU 323      Foundations of Education	(3)
EDU 333**      Reading in the Content Area	(3)
EDU 432**      Practicum in Teaching - Secondary	(2)
EDU 442**      Special Methods for the Secondary Teacher	(2)
EDU 462**      Educational Measurement	(2)
EDU 463      Educational Media and Technology	(3)

EDU 470**	Supervised Student Teaching	(10)
EDU 471**	Student Teaching Seminar	(1)

**ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12) 6 HRS.**

EDU 412	The Middle School	(2)
EDU 422	Middle School Methods	(2)
EDU 472**	Practicum in Teaching - Middle School	(2)

**\*\*Course must be taken at TSU**

**SCIENCE REQUIREMENTS 47 HRS.**

CH 114	General Chemistry II	(4)
OR		
CH 114H	General Chemistry II Honors	(4)
MA 134	Calculus I	(4)
MA 164	Calculus II	(4)
MA 213	Calculus III	(3)
MA 233	Differential Equations	(3)
PH 124	University Physics I	(4)
PH 134	University Physics II	(4)
PH 303	Modern Physics	(3)
PH 323	Electromagnetism	(3)
PH 333	Mechanics	(3)
PH 343	Mathematical Methods	(3)
SC 412	Senior Research Seminar	(2)
One of the following: ECE 221/ECE 223 Circuits I or PH 4004 Special Topics in Physics		(4)

**TOTAL IN DEGREE PROGRAM**

<i>Grades 9-12 Licensure</i>	<b>124 HRS.</b>
<i>Grades 5-12 Licensure</i>	<b>130 HRS.</b>

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE-SOCIAL STUDIES EDUCATION (9-12, 5-12) 129 to 138 HRS.**

To be eligible for licensure as a social studies teacher in grades 9-12 or 5-12, the following program of study must be completed.

<b><u>PROGRAM REQUIREMENTS</u></b>	<b><u>REQUIRED HOURS</u></b>
<b>WRITTEN COMMUNICATION</b>	<b>6 HRS.</b>
*ENG 103 English Composition I	(3)
*ENG 113 English Composition II	(3)
<b>ORAL COMMUNICATION</b>	<b>3 HRS.</b>
*SP 203 Effective Speaking	
or	
*COM 163 Interpersonal Communication	(3)
<b>SOCIAL SCIENCES &amp; HUMANITIES</b>	<b>18 HRS.</b>
*PSY 113 Principles of Psychology	(3)
*ENG 153 Introduction to Literature	(3)
*HIS 103 American History I	(3)
*HIS 203 World Civilization I	(3)
*Humanities electives	(6)

<b>COMPUTER LITERACY</b>	<b>3 HRS.</b>
*CS 103 Computers and Applications	
or	
*CS 113 Business Computer Applications	(3)
<b>MATHEMATICS &amp; SCIENCE</b>	<b>10 HRS.</b>
*MA 113 College Algebra	
or	
*MA 153 Elements of Mathematics	(3)
*GEO 213	(3)
*Lab Science electives	(4)
<b>GENERAL EDUCATION ELECTIVES</b>	<b>1 HR.</b>
1 hour elective chosen from categories above	
<b>FRESHMAN STUDIES</b>	<b>1 HR.</b>
UE 101 University Experience	(1)
<b>PROFESSIONAL STUDIES REQUIREMENTS (GRADES 9-12)</b>	<b>37 HRS.</b>
EDU 111 Freshman Practicum	(1)
EDU 211 Sophomore Practicum	(1)
EDU 232 Educational Psychology for Middle Grade and Secondary Teachers	(2)
EDU 301** Introduction to Teaching Practicum	(1)
EDU 303** Introduction to Teaching	(3)
EDU 311 Junior Practicum	(1)
EDU 312 Exceptional Children in the Schools	(2)
EDU 323 Foundations of Education	(3)
EDU 333** Reading in the Content Area	(3)
EDU 432** Practicum in Teaching - Secondary	(2)
EDU 442** Special Methods for the Secondary Teacher	(2)
EDU 462** Educational Measurement	(2)
EDU 463 Educational Media and Technology	(3)
EDU 470** Supervised Student Teaching	(10)
EDU 471** Student Teaching Seminar	(1)
<b>ADDITIONAL PROFESSIONAL STUDIES REQUIREMENTS (GRADES 5-12)</b>	<b>6 HRS.</b>
EDU 412 The Middle School	(2)
EDU 422 Middle School Methods	(2)
EDU 472** Practicum in Teaching - Middle School	(2)
<b>**Course must be taken at TSU</b>	
<b>SOCIAL STUDIES REQUIREMENTS</b>	<b>51-54 HRS.</b>
<b>BREADTH (TAKE ALL OF THESE COURSES.)</b>	<b>15 HRS.</b>
GOV 113 Introduction of Government	(3)
HIS 113 American History II	(3)
HIS 213 World Civilization II	(3)
ECO 223 Macroeconomics	(3)
SOC 103 Principles of Sociology	(3)
<b>DEPTH (CHOOSE THREE OF THE FOLLOWING CONCENTRATIONS.)</b>	<b>12 Hrs.</b>
<b>Economics</b>	
ECO 213 Principles of Microeconomics	(3)
ECO 363 Comparative Economic Systems	(3)
ECO 393 Economic History of the United States	(3)
Directed electives in economics	(3)

**Geographical Perspectives** **12 Hrs.**  
GEO 223 World Geography (3)  
GEO 303 Human Geography (3)  
GEO 313 Geography of North America (3)  
Directed electives in geography (3)

**Government and Citizenship** **12 Hrs.**  
GOV 313 Comparative Governments  
or  
GOV 323 The Contemporary World (3)  
GOV 333 State and Local Government (3)  
GOV 403 American Constitutional Development (3)  
Directed electives in government (3)

**Historical Perspectives** **15 Hrs.**  
A 300 or 400 level course in American history to 1877 (3)  
A 300 or 400 level course in American history since 1877 (3)  
A 300 or 400 level course in an American history topic (3)  
Directed electives in world history (6)

**Psychology** **12 Hrs.**  
PSY 323 Abnormal Psychology (3)  
PSY 333 Psychology of Personality (3)  
PSY 353 Child and Adolescent Psychology (3)  
Directed electives in psychology (3)

*TOTAL IN DEGREE PROGRAM*  
*Grades 9-12 Licensure 129-132 HRS.*  
*Grades 5-12 Licensure 135-138 HRS.*

# JANNEN SCHOOL OF ARTS & SCIENCES

Tri-State University's Jannen School of Arts & Sciences includes these departments:

- Department of Criminal Justice, Psychology and Social Sciences
- Department of English and Communication
- Department of Health, Physical Education and Sport Management
- Department of Mathematics and Computer Science
- Department of Science

Academic programs administered by the school are as follows:

- ***Bachelor of Arts***

## **MAJORS**

**COMMUNICATION  
ENGLISH  
PSYCHOLOGY  
SOCIAL SCIENCES**

- ***Bachelor of Science***

## **MAJORS**

**BIOLOGY  
CHEMISTRY  
CRIMINAL JUSTICE  
ENVIRONMENTAL SCIENCE  
FORENSIC SCIENCE  
HEALTH PROMOTION AND RECREATIONAL PROGRAMMING  
MATHEMATICS  
PHYSICAL SCIENCE  
PRE-MED  
PSYCHOLOGY**

- ***Bachelor of Science in Computer Science***
- ***Bachelor of Science in Criminal Justice***
- ***Bachelor of Science in Sport Management***
- ***Associate in Arts***
- ***Associate in Computer Technology***
- ***Associate in Criminal Justice***
- ***Associate in Science***
- ***Minor in Athletic Training***
- ***Minor in Biology***
- ***Minor in Chemistry***
- ***Minor in Communication***
- ***Minor in Computer Science***
- ***Minor in Criminal Justice***
- ***Minor in Economics***
- ***Minor in English***
- ***Minor in History***
- ***Minor in Mathematics***
- ***Minor in Psychology***

## **THE SCHOOL**

While Tri-State University is recognized for its long-standing and highly regarded programs in engineering, business and teacher education, the Jannen School of Arts and Sciences is becoming known for its career-oriented, challenging, competitive programs in five departments. These quality programs prepare graduates to be successful in their careers and to pursue graduate and professional studies.

The Jannen School of Arts and Sciences has a special relationship with the Franks School of Education through secondary education majors in English, health education, mathematics, physical education, science and social studies. Dedicated faculty in the Jannen School of Arts

and Sciences teach the content areas as well as the general education component for secondary education majors.

Faculty members in the School of Arts and Sciences are committed to providing an excellent background for all Tri-State University students in the areas of written and oral communication; social, historical, and global studies; the humanities; the natural sciences; and the mathematical and computational sciences. Student learning in these disciplines provides the knowledge basis for the University's general education component that complements the professional program courses for all Tri-State students.

## **DEPARTMENT OF CRIMINAL JUSTICE, PSYCHOLOGY & SOCIAL SCIENCES**

The Department of Criminal Justice, Psychology & Social Sciences offers a variety of degrees, each with its own special merits and opportunities. All programs are designed to meet curriculum and career goals, to foster creative and critical thinking skills, and to promote positive human relations so necessary in today's complex global society.

The curriculum has been designed to acquaint students who are majoring outside the social sciences with the political, economic and cultural complexities of the world of today and yesterday; to provide a solid foundation in the social sciences for students interested in graduate and professional schools; and to prepare students for active roles of responsible citizenship. Students will be prepared to assume careers in governmental agencies, private industry, and independent professional practice.

The Department of Criminal Justice, Psychology & Social Sciences offers the following degrees and minors:

- ***Bachelor of Science in Criminal Justice***
- ***Associate in Criminal Justice***
- ***Bachelor of Science***
  - MAJORS**
  - CRIMINAL JUSTICE**
  - PSYCHOLOGY**
- ***Bachelor of Arts***
  - MAJORS**
  - PSYCHOLOGY**
  - SOCIAL SCIENCES**
- ***Minor in Criminal Justice***
- ***Minor in Economics***
- ***Minor in History***
- ***Minor in Psychology***

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

### ***BACHELOR OF SCIENCE IN CRIMINAL JUSTICE 124 HRS.***

#### **PROGRAM REQUIREMENTS**

#### **REQUIRED HOURS**

#### **WRITTEN COMMUNICATION 6 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)

#### **ORAL COMMUNICATION 3 HRS.**

- \*SP 203 Effective Speaking
- or
- \*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES & HUMANITIES 24 HRS.**

\*ECO 213 Microeconomics

or

\*ECO 223 Macroeconomics (3)

\*ENG 153 Introduction to Literature (3)

\*GOV 113 Introduction to Government(3)

\*HIS 103 American History I and

\*HIS 113 American History II

or

\*HIS 203 World Civilization I and

\*HIS 213 World Civilization II (6)

\*PSY 113 Principles of Psychology

or

\*SOC 103 Principles of Sociology (3)

\*Humanities electives (6)

**COMPUTER LITERACY****3 HRS.**

\*CS 103 Computers and Applications

(3)

**MATHEMATICS & SCIENCE****11 HRS.**

\*MA 113 College Algebra

or

\*MA 153 Elements of Mathematics (3)

\*BIO 104 General Biology

(4)

\*BIO 244 Human Anatomy and Physiology (4)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE****2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**CRIMINAL JUSTICE SUBJECT MATTER CONCENTRATION  
GOVERNMENT****46HRS.**

GOV 333 State and Local Government (3)

GOV 403 American Constitutional Development (3)

**LAW ENFORCEMENT**

LE 153 Juvenile Justice (3)

LE 253 Probation, Parole & Community Corrections (3)

LE 263 Introduction to Criminal Law and Justice (3)

LE 273 Criminal Procedures and Evidence (3)

LE 343 Criminalistics and Crime Scene Investigations I (3)

LE 473 Law Enforcement Practicum I (3)

**PSYCHOLOGY**

PSY 383 Forensic Psychology (3)

**SCIENCE**

CH 144 Chemistry—Ideas and Applications (4)

Select one of the four 15-credit options below: (15)

**OPTION A — LAW ENFORCEMENT**

LE 353 Criminalistics and Crime Scene Investigations II  
LE 423 Criminal Justice Agency Administration  
PSY 323 Abnormal Psychology  
PSY 443 Advanced Forensic Psychology  
SOC 323 The Family

**OPTION B — FORENSIC AND CORRECTIONAL PSYCHOLOGY**

LE 363 Institutional Corrections and Correctional Law  
PSY 323 Abnormal Psychology  
PSY 413 The Psychology of Addiction  
PSY 423 Counseling Theories and Practices  
PSY 443 Advanced Forensic Psychology

**OPTION C — AGENCY ADMINISTRATION**

BA 123 Introduction to Business  
LE 363 Institutional Corrections and Correctional Law  
LE 423 Criminal Justice Agency Administration  
MGT 313 Human Resources Management  
MGT 363 Organizational Behavior

**OPTION D — PSYCHOLOGY**

PSY 323 Abnormal Psychology  
PSY 333 Psychology of Personality  
PSY 343 Social Psychology  
PSY 353 Child and Adolescent Psychology  
PSY 423 Counseling Theories and Practices

**ELECTIVES 28 HRS.**

*TOTAL IN DEGREE PROGRAM: 124 Hrs.*

In the degree program descriptions that follow, an asterisk(\*) indicates courses that satisfy the university's General Education Requirements.

**ASSOCIATE IN CRIMINAL JUSTICE 66 HRS.**

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 9 HRS.**

\*ENG 103 English Composition I (3)  
\*ENG 113 English Composition II (3)  
COM 213 Business Communication (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking  
or  
\*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES & HUMANITIES 15 HRS.**

\*ENG 153 Introduction to Literature (3)  
  
\*ECO 213 Microeconomics  
or  
\*ECO 223 Macroeconomics (3)

*GOV 113	Introduction to Government	(3)
*PSY 113	Principles of Psychology	(3)
*3 hours of humanities electives		(3)
<b>COMPUTER LITERACY</b>		<b>3 HRS.</b>
*CS 103	Computers and Applications	(3)
<b>MATHEMATICS &amp; SCIENCE</b>		<b>11 HRS.</b>
*MA 113	College Algebra	
or		
*MA 153	Elements of Mathematics	(3)
*BIO 104	General Biology	(4)
*BIO 244	Human Anatomy and Physiology	(4)
<b>LAW ENFORCEMENT</b>		<b>12 HRS.</b>
LE 253	Probation, Parole & Community Corrections	(3)
LE 263	Introduction to Criminal Law and Justice	(3)
LE 273	Criminal Procedures and Evidence	(3)
LE 343	Criminalistics and Crime Scene Investigations I (3)	
<b>ADDITIONAL SOCIAL SCIENCES COURSES</b>		<b>12 HRS.</b>
GOV 333	State and Local Government	(3)
GOV 403	American Constitutional Development	(3)
PSY 323	Abnormal Psychology	(3)
PSY 383	Forensic Psychology	(3)
<b>FRESHMAN STUDIES</b>		<b>1 HR.</b>
UE 101	University Experience	(1)
<i>TOTAL IN ASSOCIATE DEGREE PROGRAM:</i>		<i>66 Hrs.</i>
<b>CRIMINAL JUSTICE MINOR (for a student with another major)</b>		<b>27 HRS.</b>
LE 253	Probation, Parole & Community Corrections (3)	
LE 263	Introduction to Criminal Law and Justice (3)	
LE 273	Criminal Procedures and Evidence (3)	
LE 343	Criminalistics and Crime Scene Investigations I(3)	
PSY 383	Forensic Psychology (3)	
Law enforcement and/or psychology electives (12)		
<i>TOTAL IN MINOR PROGRAM: 27 HRS.</i>		

In the degree program descriptions that follow, an asterisk(\*) indicates courses that satisfy the university's General Education Requirements.

**BACHELOR OF SCIENCE–CRIMINAL JUSTICE MAJOR 124 HRS.**

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)

**ORAL COMMUNICATION 3 HRS.**

- \*SP 203 Effective Speaking
- or
- \*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES & HUMANITIES 24 HRS.**

\*ECO 213 Microeconomics

or

\*ECO 223 Macroeconomics (3)

\*ENG 153 Introduction to Literature (3)

\*GOV 113 Introduction to Government (3)

\*HIS 103 American History I and

\*HIS 113 American History II

or

\*HIS 203 World Civilization I and

\*HIS 213 World Civilization II (6)

\*PSY 113 Principles of Psychology

or

\*SOC 103 Principles of Sociology (3)

\*Humanities electives (6)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS & SCIENCE 11 HRS.**

\*MA 113 College Algebra

or

\*MA 153 Elements of Mathematics (3)

\*BIO 104 General Biology (4)

\*BIO 244 Human Anatomy and Physiology (4)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**CRIMINAL JUSTICE SUBJECT MATTER CONCENTRATION 46 HRS.****GOVERNMENT**

GOV 333 State and Local Government (3)

GOV 403 American Constitutional Development (3)

**LAW ENFORCEMENT**

LE 153 Juvenile Justice (3)

LE 253 Probation, Parole & Community Corrections (3)

LE 263 Introduction to Criminal Law and Justice (3)

LE 273 Criminal Procedures and Evidence (3)

LE 343 Criminalistics and Crime Scene Investigations I (3)

LE 473 Law Enforcement Practicum I (3)

**PSYCHOLOGY**

PSY 383 Forensic Psychology (3)

**SCIENCE**

CH 144 Chemistry—Ideas and Applications (4)

Select one of the four 15-credit options below: (15)

**OPTION A — LAW ENFORCEMENT**

BA 123 Introduction to Business  
 LE 423 Criminal Justice Agency Administration  
 PSY 323 Abnormal Psychology  
 PSY 443 Advanced Forensic Psychology  
 SOC 323 The Family

**OPTION B — FORENSIC AND CORRECTIONAL PSYCHOLOGY**

LE 363 Institutional Corrections and Correctional Law  
 PSY 323 Abnormal Psychology  
 PSY 413 The Psychology of Addiction  
 PSY 423 Counseling Theories and Practices  
 PSY 443 Advanced Forensic Psychology

**OPTION C — AGENCY ADMINISTRATION**

LE 353 Criminalistics and Crime Scene Investigations II  
 LE 363 Institutional Corrections and Correctional Law  
 LE 423 Criminal Justice Agency Administration  
 MGT 313 Human Resources Management  
 MGT 363 Organizational Behavior

**OPTION D — PSYCHOLOGY**

PSY 323 Abnormal Psychology  
 PSY 333 Psychology of Personality  
 PSY 343 Social Psychology  
 PSY 353 Child and Adolescent Psychology  
 PSY 423 Counseling Theories and Practices

**ELECTIVES****28 HRS.***TOTAL IN DEGREE PROGRAM:**124 Hrs.*

In the degree program descriptions that follow, an asterisk(\*) indicates courses that satisfy the university's General Education Requirements.

***BACHELOR OF SCIENCE—PSYCHOLOGY MAJOR 124 HRS.*****PROGRAM REQUIREMENTS****REQUIRED HOURS****WRITTEN COMMUNICATION****6 HRS.**

\*ENG 103 English Composition I  
 \*ENG 113 English Composition II

(3)

(3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking  
 or  
 \*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES & HUMANITIES****22 HRS.**

\*ECO 213 Microeconomics

or

\*ECO 223 Macroeconomics

(3)

\*GOV 113 Introduction to Government

(3)

\*HIS 103 American History I and

\*HIS 113 American History II

or		
*HIS 203	World Civilization I and	
*HIS 213	World Civilization II	(6)
*PSY 113	Principles of Psychology	
or		
*SOC 103	Principles of Sociology	(3)
*Humanities electives		(7)
<b>COMPUTER LITERACY</b>		<b>3 HRS.</b>
*CS 103	Computers and Applications	(3)
<b>MATHEMATICS &amp; SCIENCE</b>		<b>14 HRS.</b>
*MA 113	College Algebra	
or		
*MA 153	Elements of Mathematics	(3)
*BIO 104	General Biology	(4)
*BIO 244	Human Anatomy and Physiology	(4)
*Additional Science or Mathematics course		(3)
<b>HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE</b>		<b>2 HRS.</b>
*HPS 102	Lifetime Wellness	(2)
<b>FRESHMAN STUDIES</b>		<b>1 HR.</b>
UE 101	University Experience	(1)
<b>PSYCHOLOGY SUBJECT MATTER CONCENTRATION</b>		<b>39 HRS.</b>
<b>Primary Core</b>		
PSY 113	Principles of Psychology	(3)
PSY 303	Research Methods in Psychology	(3)
<b>Choose two of the following 3-hour clinical courses</b>		<b>(6)</b>
PSY 323	Abnormal Psychology	
PSY 403	Human Sexuality	
PSY 413	The Psychology of Addiction	
PSY 423	Counseling Theories and Practices	
<b>Choose two of the following 3-hour social core courses</b>		<b>(6)</b>
PSY 333	Psychology of Personality	
PSY 343	Social Psychology	
PSY 373	Political Psychology	
SOC 313	Topics in Sociology	
<b>Choose one of the following 3-hour developmental core courses</b>		<b>(3)</b>
PSY 353	Child and Adolescent Psychology	
SOC 323	The Family	
Choose 18 hours from any 300 level or higher psychology courses or SOC 313, SOC 323, SOC 343 excluding subject area concentration courses chosen above.		(18)

**ELECTIVES 34 HRS.**

Students wishing to pursue graduate training in psychology should take MA 113 College Algebra, MA 173 Applied Mathematics, and MA 253 Statistics, as well as PSY 453 Clinical Practicum I.

**TOTAL IN DEGREE PROGRAM: 124 HRS.**

<b>PSYCHOLOGY MINOR</b>	<b>27 HRS.</b>
PSY 113 Principles of Psychology	(3)
Any 300 level or higher psychology courses or SOC 313, SOC 323, SOC 343, LE 153, or LE 453.	(24)
<b>TOTAL IN MINOR PROGRAM:</b>	<b>27 HRS.</b>

**BACHELOR OF ARTS—PSYCHOLOGY MAJOR** **124 HRS.**

**PROGRAM REQUIREMENTS** **REQUIRED HOURS**

**WRITTEN COMMUNICATION** **6 HRS.**

*ENG 103	English Composition I	(3)
*ENG 113	English Composition II	(3)

**ORAL COMMUNICATION** **3 HRS.**

*SP 203	Effective Speaking	
or		
*COM 163	Interpersonal Communication	(3)

**SOCIAL SCIENCES & HUMANITIES** **25 HRS.**

*ECO 213	Microeconomics	
or		
*ECO 223	Macroeconomics	(3)

*ENG 153	Introduction to Literature	(3)
*GOV 113	Introduction to Government	(3)

*HIS 103	American History I and	
*HIS 113	American History II	
or		
*HIS 203	World Civilization I and	
*HIS 213	World Civilization II	(6)

*PSY 113	Principles of Psychology	
or		
*SOC 103	Principles of Sociology	(3)

\*Humanities electives (7)

**COMPUTER LITERACY** **3 HRS.**

*CS 103	Computers and Applications	(3)
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**MATHEMATICS & SCIENCE** **11 HRS.**

*MA 113	College Algebra	
or		
*MA 153	Elements of Mathematics	(3)

*BIO 104	General Biology	(4)
*BIO 244	Human Anatomy and Physiology	(4)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE** **2 HRS.**

*HPS 102	Lifetime Wellness	(2)
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**FRESHMAN STUDIES** **1 HR.**

UE 101	University Experience	(1)
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**PSYCHOLOGY SUBJECT MATTER CONCENTRATION** **39 HRS.**

**Primary Core**

PSY 113 Principles of Psychology (3)  
PSY 303 Research Methods in Psychology (3)

**Choose two of the following 3-hour clinical courses** **(6)**

PSY 323 Abnormal Psychology  
PSY 403 Human Sexuality  
PSY 413 The Psychology of Addiction  
PSY 423 Counseling Theories and Practices

**Choose two of the following 3-hour social core courses** **(6)**

PSY 333 Psychology of Personality  
PSY 343 Social Psychology  
PSY 373 Political Psychology  
SOC 313 Topics in Sociology

**Choose one of the following 3-hour developmental core courses** **(3)**

PSY 353 Child and Adolescent Psychology  
SOC 323 The Family

Choose 18 hours from any 300 level or higher psychology courses or SOC 313, SOC 323, SOC 343 excluding subject area concentration courses chosen above. (18)

**ELECTIVES** **34 HRS.**

Students wishing to pursue graduate training in psychology should take MA 113 College Algebra, MA 173 Applied Mathematics, and MA 253 Statistics, as well as PSY 453 Clinical Practicum I.

**TOTAL IN DEGREE PROGRAM:** **124 HRS.**

**BACHELOR OF ARTS—SOCIAL SCIENCES MAJOR****124 HRS.****PROGRAM REQUIREMENTS****REQUIRED HOURS****WRITTEN COMMUNICATION****6 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)

**ORAL COMMUNICATION****3 HRS.**

- \*SP 203 Effective Speaking
- or
- \*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES & HUMANITIES****25 HRS.**

- \*ECO 213 Microeconomics
- or
- \*ECO 223 Macroeconomics (3)
- \*ENG 153 Introduction to Literature (3)
- \*GOV 113 Introduction to Government (3)
- \*HIS 103 American History I and
- \*HIS 113 American History II
- or
- \*HIS 203 World Civilization I and
- \*HIS 213 World Civilization II (6)
- \*PSY 113 Principles of Psychology
- or
- \*SOC 103 Principles of Sociology (3)
- \*Humanities electives (7)

**COMPUTER LITERACY****3 HRS.**

- \*CS 103 Computers and Applications (3)

**MATHEMATICS & SCIENCE****14 HRS.**

- \*MA 113 College Algebra
- or
- \*MA 153 Elements of Mathematics (3)

- \*Two science classes (at least one a lab science) (7)
- \*One additional science or mathematics class (4)

**HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT****2 HRS.**

- \*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES****1 HR.**

- UE 101 University Experience (1)

**SOCIAL STUDIES SUBJECT MATTER CONCENTRATION 45 HRS.**

Students must take 15 hours from each of three of the following areas: economics, geography, government, American history, world civilizations and psychology.

**ELECTIVES 25 HRS.****TOTAL IN DEGREE PROGRAM: 124 HRS.**

***ECONOMICS MINOR 27 HRS.***

ECO 213 Microeconomics (3)  
ECO 223 Macroeconomics (3)  
ECO 323 Money and Banking (3)  
Economics and/or finance electives (18)

***TOTAL IN MINOR PROGRAM: 27 Hrs.***

***HISTORY MINOR 27 HRS.***

HIS 103 American History I (3)  
HIS 113 American History II (3)  
HIS 203 World Civilization I (3)  
HIS 213 World Civilization II (3)  
History electives (15)

***TOTAL IN MINOR PROGRAM: 27 HRS.***

***PRE-LAW***

Admission to an accredited school of law normally requires a bachelor's degree. The Association of American Law Schools does not recommend a specific major, but students will be expected to have a broad academic preparation, a good scholastic record, and acceptable scores on the law school admission test. Usually that type of preparation is more beneficial for a prospective law student than is the specialized study of subjects closely related to law.

Any degree program that stresses the ability to communicate both verbally and in writing, encourages an understanding of human values, promotes understanding, reasoning, and critical thinking, and fosters creativity is an excellent program for a student planning to pursue a law degree after graduation.

The Department of Criminal Justice, Psychology and Social Sciences recommends a degree in social sciences or communication. The Department stresses that pre-law students should seek frequent, regular advice from their advisors.

***PRE-SOCIAL WORK***

Those interested in preparing for admission to a graduate school for social work are advised to obtain a bachelor's degree in social sciences. In selecting electives, it is recommended that the pre-social work major should emphasize courses that stress communication skills, computers, statistics, ethics and contemporary language. For more detailed advice, see the chair of the Department of Criminal Justice, Psychology and Social Sciences.

## DEPARTMENT OF ENGLISH & COMMUNICATION

The Department of English & Communication offers the following degrees and minors:

- ***Bachelor of Arts***  
    **MAJORS**  
        **COMMUNICATION**  
        **ENGLISH**
- ***Associate in Arts***
- ***Minor in Communication***
- ***Minor in English***

A major in English or Communication provides well-rounded preparation for a successful career in a variety of professions, including public relations, management, corporate communication, publishing, law, technical communication, and public service. Skills in oral and written communication, critical thinking, and logical reasoning are central to our professional, civic, and personal relationships and cultivated through study of these two disciplines.

Over the past 30 years, numerous scientific studies have confirmed the long-understood central, pragmatic importance of these skills. A study by the Indiana Commission on Higher Education found that Indiana employers ranked communication first among employability skills of college graduates applying for positions in professional, technical, management, sales, clerical, and various other occupational categories and second for many other positions. Similarly, in a study conducted by the Midwest College Placement Association 83 percent of employers ranked oral communication first among the “very important skills and qualities” considered in hiring, with eight of the remaining ten involving other communication and reasoning skills. A survey published in the *ADE Bulletin* revealed that graduates from an engineering-oriented university identified writing and critical thinking as the most important workplace skills they had acquired as English majors. Such studies reinforce the practical importance Greek and Roman thinkers and statesmen attributed to communication and reasoning skills more than 2600 years ago.

Whether learned aesthetically from works of literature or conceptually in theories of communication, knowledge and understanding of the dynamics of human experience enhance an individual’s adaptability in a rapidly changing, increasingly diverse, and technologically demanding global economy. The study of English and Communication fosters such adaptability in preparation for an exciting future.

### MISSION STATEMENT

The Department of English and Communication delivers quality teaching in career-oriented English and communication programs and in the University’s requirements for general education in oral and written communication and in the arts and humanities. The department offers individual attention to foster learning. The department helps students to develop an understanding of the human condition, to sharpen their reasoning and critical thinking skills, and to recognize how to apply these skills effectively in a variety of written and oral communication contexts, thereby enabling students to be productive early in their professional careers.

### OBJECTIVES OF THE COMMUNICATION PROGRAM

Graduates of the Communication program should have developed the following:

1. Skill to write effective discourse in various genres and lengths;
2. Skill to effectively and productively communicate verbally and nonverbally in a variety of speech contexts;
3. Skill in applying research, problem-solving, and decision-making strategies related to professional communication situations;
4. Skill in deductive, inductive, and analogical reasoning;

5. Broad knowledge of theories, principles, and concepts in communication contexts;
6. Knowledge of empirical and humanistic research techniques in solving problems;
7. Understanding of practices in the communication professions of public relations, corporate communication, journalism, and broadcasting.

In the degree program descriptions that follow, an asterisk (\*) indicates those courses that satisfy the University's General Education Requirements.

***BACHELOR OF ARTS—COMMUNICATION MAJOR 124 HRS.***

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)

**ORAL COMMUNICATION 3 HRS.**

- \*SP 203 Effective Speaking (3)

**SOCIAL SCIENCES & HUMANITIES 12 HRS.**

- \*PSY 113 Principles of Psychology (3)
- \*PSY 343 Social Psychology (3)

\*ECO 213 Microeconomics

or

\*ECO 223 Macroeconomics

or

\*GOV 113 Introduction to Government (3)

\*ENG 153 Introduction to Literature (3)

**COMPUTER LITERACY 3 HRS.**

- \*CS 103 Computers and Applications
- or
- \*CS 113 Advanced Computer Applications (3)

**MATHEMATICS & SCIENCE 10 HRS.**

(Ten hours must include a minimum of 3 hours of science and 3 hours of mathematics; MA 253 Statistics is recommended for students with the math prerequisites.)

**GENERAL EDUCATION ELECTIVES (May include HPS 102) 8 HRS.**

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**ADDITIONAL PROGRAM REQUIREMENTS 8 HRS. (Choose from the following)**

- \*ENG 133 Technical Communication (3)
- \*ENG 253 Readings in World Literature (3)
- \*SP 102 Introduction to Theater (2)
- \*PHL 313 Ethics (3)

**COMMUNICATION—SUBJECT MATTER CONCENTRATION 44 HRS.**

- \*SP 212 Oral Interpretation (2)
- \*FLM 202 Film Appreciation (2)
- \*COM 163 Interpersonal Communication (3)
- \*COM 203 Media and Communication (3)
- COM 213 Business Communication (3)

COM 223 Theories and Practices in Communication (3)  
\*COM 233 Intercultural Communication (3)  
COM 413 Team & Organizational Communication (3)  
COM 323 Broadcasting and Electronic Communication (3)  
\*COM 363 Persuasion and Argumentation (3)  
COM 383 Journalism (3)  
COM 463 Public Relations (3)  
Choose the two 2-credit courses or the one 4-credit course (4)  
COM 4282 Senior Communication Project Proposal

COM 4292 Senior Communication Project  
or  
COM 4014 Senior Capstone Internship in Communication

ENG 453 Advanced Composition  
or  
\*ENG 463 Creative Writing (3)

PSY 303 Research Methods in Psychology (3)

**COMMUNICATION-RELATED ELECTIVES 6 HRS.**

*Choose at least 6 hours from among the courses listed below:*

BA 123 Introduction to Business  
COM 373 Topics in Communication  
COM 3001 Directed Activities in Communication  
COM 400X Internship in Communication  
COM 410X Independent Studies in Communication  
\*CS 113 Advanced Computer Applications  
\*ENG 133 Technical Communication  
\*ENG 363 The English Language  
HPS 313 Principles of Sport and Recreation Management  
\*MA 253 Statistics  
MGT 313 Human Resources Management  
MGT 363 Organizational Behavior  
MK 303 Marketing  
MK 323 Integrated Marketing Communications  
MK 423 Personal Selling  
\*PHL 343 Logic  
\*PSY 373 Political Psychology

**ELECTIVES 23 HRS.**

Communication majors are encouraged to minor in a communication-related field such as English, psychology, business, marketing, management, accounting, finance, or management information systems, or to develop a coherent set of communication-related electives in consultation with their advisor.

*TOTAL IN DEGREE PROGRAM: 124 HRS.*

**COMMUNICATION MINOR (for a student with another major) 24 HRS.**

\*COM 163 Interpersonal Communication (3)  
\*SP 203 Effective Speaking (3)  
Electives in COM, FLM, SP courses, or ENG 133 with at least 6 hours at the 300-level or above.  
(18)

***TOTAL IN MINOR PROGRAM: 24 HRS.***

## **OBJECTIVES OF THE ENGLISH PROGRAM**

**Core Objectives**—Graduates of all concentrations of the English program should have developed the following:

1. Knowledge and skills that demonstrate significant command of both written and spoken language;
2. Knowledge of a broad spectrum of significant works of literature—classic and modern, American and world—in various genres;
3. Knowledge and understanding of the relationship between literature, culture, self, and others;
4. Understanding and fundamental skill in literary analysis;
5. The knowledge, skills, and wisdom to effectively apply classroom learning in an advanced project such as a senior project, an internship, or a major academic paper suitable for presentation to a professional conference.

**Corporate English Concentration Objective**—Graduates of the English program with a concentration in Corporate English should have developed the following:

Knowledge of and skill in preparing and communicating worthy and persuasive written and oral discourse, including proposals grounded in research, planning, and problem-solving that are designed to solve business and communication problems or to enhance business and communication opportunities.

**Literature Concentration Objectives**—Graduates of the English program with a concentration in Literature should have developed the following:

1. An understanding of the value of imagination in (re)creating worlds and of how residing briefly in these virtual worlds may be good "real world" training;
2. The personal growth, knowledge, and wisdom attendant upon substantial reading across cultures and eras—broadly speaking, a better understanding of the human condition.

**Professional Writing Concentration Objective**—Graduates of the English program with a concentration in Professional Writing should have developed the following:

Knowledge of and skill in effectively writing and interpreting a variety of informative and persuasive discourse for a variety of professional settings: correspondence, resumés, technical and business reports, essays, research papers, articles, news reports, news releases, and proposals.

In the degree program descriptions that follow, an asterisk (\*) indicates those courses that satisfy the University's General Education Requirements.

### ***BACHELOR OF ARTS—ENGLISH MAJOR 124 HRS.***

#### **PROGRAM REQUIREMENTS**

#### **REQUIRED HOURS**

##### **WRITTEN COMMUNICATION 6 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)

##### **ORAL COMMUNICATION 3 HRS.**

- \*SP 203 Effective Speaking (3)

##### **SOCIAL SCIENCES & HUMANITIES 12 HRS.**

- \*ENG 153 Introduction to Literature (3)
- \*Social Sciences elective (3)
- \*American Humanities or Social Sciences elective (3)
- \*Global Humanities or Social Sciences elective (3)

##### **COMPUTER LITERACY 3 HRS.**

- \*CS 103 Computers and Applications
- or
- \*CS 113 Advanced Computer Applications (3)

**MATHEMATICS & SCIENCE 10 HRS.**

(Ten hours must include a minimum of 3 hours of science and 3 hours of mathematics)

**GENERAL EDUCATION ELECTIVES (May include HPS 102) 8 HRS.**

Include one of the following:

\*FLM 202 Film Appreciation

or

\*SP 102 Introduction to Theater

or

\*SP 212 Oral Interpretation (2)

Six hours of General Education electives (6)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**ENGLISH CORE 27 HRS.**

\*ENG 204 British Literature (4)

\*ENG 214 American Literature (4)

ENG 223 Introduction to English Studies (3)

\*ENG 253 Readings in World Literature (3)

\*ENG 363 The English Language (3)

ENG 453 Advanced Composition

or

\*ENG 463 Creative Writing (3)

\*COM 363 Persuasion and Argumentation (3)

Choose the two two-credit courses or one of the four-credit courses:

COM 4282 Senior Communication Project Proposal

COM 4292 Senior Communication Project

or

ENG 4014 Capstone Study in English

or

COM 4014 Senior Capstone Internship in Communication (4)

Choose one of the three 21-credit concentrations listed below:

**21 HRS.**

**Corporate English Concentration**

AC 203 Accounting I

BA 123 Introduction to Business

COM 213 Business Communication

COM 413 Team & Organizational Communication

COM 463 Public Relations

Choose 2 of the following courses:

MGT 313 Human Resources Management

MGT 363 Organizational Behavior

MK 303 Marketing

MK 323 Integrated Marketing Communications

MK 423 Personal Selling

MK 473 E-Marketing

[Marketing, Management, Business, Accounting, MIS, Communication, & Psychology are recommended minors]

**Literature Concentration**

\*ENG 212 Mythology

\*ENG 433 Shakespeare and His Times

Choose at least 16 hours from the following:

\*ENG 263 Contemporary Themes in Literature  
\*ENG 323 Restoration and Eighteenth-Century Literature  
\*ENG 333 Studies in Literature  
ENG 393 Teaching Composition  
\*ENG 403 British and American Novels I  
\*ENG 413 British and American Novels II  
\*ENG 423 Drama  
\*ENG 443 Poetry  
ENG 4001-3 Directed Studies in English  
\*HNR 401 Humanities Honors Seminar

**Professional Writing Concentration**

COM 213 Business Communication  
COM 413 Team & Organizational Communication  
COM 383 Journalism  
COM 463 Public Relations  
\*ENG 133 Technical Communication  
ENG 393 Teaching Composition  
ENG 453 Advanced Composition

[Students planning a technical writing career should minor in Biology, Chemistry, Computer Science, Environmental Engineering, MIS or Physics.]

***TOTAL IN DEGREE PROGRAM: 124 HRS.***

***ENGLISH MINOR (for students with another major) 24 HRS.***

\*ENG 204 British Literature (4)  
\*ENG 214 American Literature (4)  
\*ENG 253 Readings in World Literature (3)  
Electives from 200 level or above ENG or HNR courses (13)

***TOTAL IN DEGREE PROGRAM: 24 HRS.***

***ASSOCIATE IN ARTS 65 HRS.***

**PROGRAM REQUIREMENTS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)  
\*ENG 113 English Composition II (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

**SOCIAL SCIENCES & HUMANITIES 12 HRS.**

\*ENG 153 Introduction to Literature (3)  
\*Humanities (3)  
\*Social sciences (6)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications  
or  
\*CS 113 Advanced Computer Applications (3)

**MATHEMATICS & SCIENCE 7 HRS.**

\*100 level or higher math (3 or 4)  
\*Science elective(s) (4 or 3)

**REQUIRED HOURS**

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**ASSOCIATE IN ARTS CORE 8 HRS.**

\*ENG 253 Readings in World Literature (3)

COM 213 Business Communication (3)

\*FLM 202 Film Appreciation

or

\*SP 102 Introduction to Theater

or

\*SP 212 Oral Interpretation (2)

Choose one of the two following fifteen-credit concentrations:

**COMMUNICATION CONCENTRATION 15 HRS.**

\*COM 163 Interpersonal Communication (3)

\*COM 203 Media and Communication (3)

COM 223 Theories and Practices in Communication (3)

\*COM 233 Intercultural Communication (3)

3 additional hours in COM, FLM, SP, or writing/language

ENG courses (\*ENG 133, \*ENG 363, ENG 453, & \*ENG 463) (3)

**ENGLISH & HUMANITIES CONCENTRATION 15 HRS.**

\*ENG 204 British Literature (4)

\*ENG 214 American Literature (4)

ENG 223 Introduction to English Studies (3)

4 additional hrs. of English or Humanities electives

(ENG, ARC, ART, FLM, GER, HNR, MUS, PHL, SP, SPL, \*HIS 253, \*COM 163, \*COM 203,

\*COM 233, and \*COM 363) (4)

**GENERAL ELECTIVES 10 HRS.**

*TOTAL IN DEGREE PROGRAM: 65 HRS.*

## **DEPARTMENT OF HEALTH, PHYSICAL EDUCATION & SPORT MANAGEMENT**

The Department of Health, Physical Education & Sport Management offers the following degree and minors:

- ***Bachelor of Science***

- MAJORS**

- HEALTH PROMOTION AND RECREATIONAL PROGRAMMING**

- ***Bachelor of Science in Sport Management***
- ***Minor in Athletic Training***

### ***ATHLETIC TRAINING MINOR 25 HRS.***

This minor enables students to gain experiences in athletic training and prepares them for potential certification as a trainer. The student desiring certification must meet the requirements of the NATA, which entails additional course work and training. Tri-State University does not certify athletic trainers.

HPS 243 Athletic Training (3)

HPS 332 Drug Education (2)

HPS 343 Sport Psychology (3)

HPS 393 Advanced Athletic Training (3)

HPS 403 Remedial Exercise & Rehabilitation (3)

HPS 423 Evaluation of Athletic Injuries (3)

HPS 443 Therapeutic Modalities (3)

HPS 462 Organization & Administration of Athletic Training (2)

HPS 483 Internship in Sports Medicine (3)

### ***TOTAL IN MINOR PROGRAM: 25 HRS.***

In the degree program descriptions that follow, an asterisk (\*) indicates those courses that satisfy the University's General Education Requirements.

## ***BACHELOR OF SCIENCE—HEALTH PROMOTION & RECREATIONAL PROGRAMMING MAJOR 124 HRS.***

### **PROGRAM REQUIREMENTS**

### **REQUIRED HOURS**

#### **WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II (3)

#### **ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or

\*COM 163 Interpersonal Communication (3)

#### **SOCIAL SCIENCES & HUMANITIES 18 HRS.**

\*ENG 153 Introduction to Literature (3)

\*GOV 113 Introduction to Government (3)

\*PSY 113 Principles of Psychology (3)

\*ECO 213 Microeconomics

or

\*ECO 223 Macroeconomics (3)

\*HIS 103 American History I and

\*HIS 113 American History II  
or  
\*HIS 203 World Civilization I and  
\*HIS 213 World Civilization II (6)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS & SCIENCE 11 HRS.**

\*MA 113 College Algebra  
or  
\*MA 153 Elements of Mathematics (3)

\*BIO 104 General Biology (4)  
\*BIO 244 Human Anatomy and Physiology (4)

**FRESHMAN STUDIES 1 HR.**

HPS 101 University Experience for HPS Majors (1)

**ADDITIONAL REQUIREMENTS**

**BUSINESS COURSES 9 HRS.**

BA 123 Introduction to Business (3)  
MGT 363 Organizational Behavior (3)  
MK 303 Marketing (3)

**HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT 53 HRS.**

\*HPS 102 Lifetime Wellness (2)  
HPS 103 Teaching Sport & Recreational Activities I (3)  
HPS 123 Teaching Sport & Recreational Activities II (3)  
HPS 131 First Aid (1)  
HPS 221 Officiating (1)  
HPS 243 Athletic Training (3)  
HPS 253 Risk Management in Physical Education and Sport (3)  
HPS 273 Nutrition (3)  
HPS 313 Principles of Sport & Recreational Management (3)  
HPS 323 Leadership in Sport and Recreation (3)  
HPS 333 Kinesiology (3)  
HPS 342 School & Community Health (2)  
HPS 353 Exercise Physiology (3)  
HPS 362 Motor Learning (2)  
HPS 373 Health Problems (3)  
HPS 412 Business Planning in Sport & Recreation (2)  
HPS 433 Developing Health Promotion Programs for Adults (3)  
HPS 452 Developing Health Promotion Assessments (2)  
HPS 464 Internship in Sport I (4)  
HPS 474 Internship in Sport II (4)

**ELECTIVES (determined in consultation with advisor) 20 HRS.**

**TOTAL IN DEGREE PROGRAM: 124 HRS.**

In the degree program descriptions that follow, an asterisk (\*) indicates those courses that satisfy the University's General Education Requirements.

***BACHELOR OF SCIENCE IN SPORT MANAGEMENT 124 HRS.***

The bachelor of science in sport management degree program was developed to meet the growing demand in collegiate and professional sports for business professionals who possess an extensive knowledge of sports and an understanding of the concerns and needs of athletes. Graduates of this program will work with personnel and marketing professionals to promote, regulate and administer collegiate and professional sport programs.

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 9 HRS.**

\*ENG 103 English Composition I (3)  
\*ENG 113 English Composition II (3)  
COM 213 Business Communication (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking (3)

**SOCIAL SCIENCES & HUMANITIES 15 HRS.**

\*ECO 213 Microeconomics (3)  
\*ECO 223 Macroeconomics (3)  
\*GOV 113 Introduction to Government (3)  
\*PSY 113 Principles of Psychology (3)  
\*Humanities electives (3)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS & SCIENCE 13 HRS.**

\*MA 103 Business Algebra (3)  
\*MA 173 Applied Mathematics (3)  
\*MA 253 Statistics (3)  
\*BIO 104 General Biology (4)

**HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

HPS 101 University Experience for HPS Majors (1)

**BUSINESS 40 HRS.**

AC 203 Accounting I (3)  
AC 213 Accounting II (3)  
BA 123 Introduction to Business (3)  
BA 343 International Business (3)  
BA 401 Professional Development and Strategies (1)  
FIN 303 Managerial Finance (3)  
LAW 203 Business Law I (3)  
LAW 303 Business Law II (3)  
MGT 353 Management of Operations (3)  
MGT 363 Organizational Behavior (3)  
MGT 453 Strategic Management (3)  
MK 303 Principles of Marketing (3)  
MK 323 Integrated Marketing Communications (3)  
Business electives (3)

**HEALTH, PHYSICAL EDUCATION & SPORT MANAGEMENT 38 HRS.**

HPS 223 History of Physical Education and Sport (3)

HPS 253 Risk Management in Physical Education and Sport (3)

HPS 263 Philosophy of Sport and Recreational Management (3)

HPS 313 Principles of Sport and Recreation Management (3)

HPS 323 Leadership in Sport and Recreation (3)

HPS 343 Sport Psychology (3)

HPS 363 Contemporary Issues in Sport (3)

HPS 404 Advanced Topics in Sport Management (4)

HPS 412 Business Planning in Sport and Recreation (2)

HPS 416 Internship in Sport Management (6)

HPS or business electives (5)

***TOTAL IN DEGREE PROGRAM: 124 HRS.***

## DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

The Department of Mathematics & Computer Science offers the following degrees and minors:

- ***Bachelor of Science***

**MAJOR**

**MATHEMATICS**

- ***Bachelor of Science in Computer Science***
- ***Associate in Computer Technology***
- ***Minor in Computer Science***
- ***Minor in Mathematics***

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

### ***BACHELOR OF SCIENCE—MATHEMATICS MAJOR 124 HRS.***

The mathematics curriculum is a broad-based program designed to advance mathematical reasoning and to develop communication skills. Recent graduates of the mathematics program have pursued graduate degrees while others have found employment as secondary school teachers, computer analysts, actuaries, statisticians with government agencies, quality-control engineers, mathematics consultants for education research companies, and supervisors in industrial plants.

#### **PROGRAM REQUIREMENTS**

#### **REQUIRED HOURS**

##### **WRITTEN COMMUNICATION 6 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)

##### **ORAL COMMUNICATION 3 HRS.**

- \*SP 203 Effective Speaking
- or
- \*COM 163 Interpersonal Communication (3)

##### **SOCIAL SCIENCES AND HUMANITIES 18 HRS.**

- \*ENG 153 Introduction to Literature (3)
- \*PSY 113 Principles of Psychology (3)
- \*History elective (3)
- Social Sciences elective (3)
- Humanities electives (6)

##### **COMPUTER LITERACY 2 HRS.**

- \*CS 132 Visual Basic Programming
- or
- \*CS 163 Programming in "C" (3)

##### **MATHEMATICS & SCIENCE 10 HRS.**

- \*MA 312 Historical Aspects of Mathematics (2)
- Laboratory Science electives (8)

##### **OTHER 1 HR.**

(Courses must be chosen from the above categories.)

##### **HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT 2 HRS.**

- \*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**SOCIAL SCIENCES OR HUMANITIES ELECTIVES 6 HRS.**

**MATHEMATICS CORE 38 HRS.**

MA 134 Calculus I (4)

MA 164 Calculus II (4)

MA 213 Calculus III (3)

MA 233 Differential Equations (3)

MA 303 College Geometry (3)

MA 313 Linear Algebra (3)

MA 403 Advanced Calculus (3)

Mathematics electives (15)

**DIRECTED ELECTIVES 37 HRS.**

Technical electives (any technical field approved by advisor) (22-25)

Non-Technical electives (12-15)

***TOTAL IN DEGREE PROGRAM: 124 Hrs.***

***MATHEMATICS MINOR (for students with another major) 25 HRS.***

MA 134 Calculus I (4)

MA 164 Calculus II (4)

MA 213 Calculus III (3)

MA 233 Differential Equations (3)

MA 313 Linear Algebra

or

MA 373 Abstract Algebra (3)

Plus 8 or more hrs. in mathematics electives at the 300-400 level (8)

and grades of C or higher in all 25 hrs. of mathematics.

***TOTAL IN MINOR PROGRAM: 25 HRS.***

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

***BACHELOR OF SCIENCE IN COMPUTER SCIENCE 128 HRS.***

The bachelor of science in computer science curriculum is designed not only to advance computer expertise and analytical skills but also to develop written and oral communication skills. Positions of recent graduates from this program include programmer, programmer analyst, systems engineer, systems manager, data base manager and network installer/manager. Students who transfer into the computer science program are expected to successfully complete a minimum of nine credit hours of computer science courses at Tri-State University.

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or  
\*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES & HUMANITIES 12 HRS.**

\*ENG 153 Introduction to Literature (3)  
\*Social Sciences electives (6)  
\*Humanities elective (3)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications  
or  
\*CS 113 Business Advanced Computer Applications (3)

**MATHEMATICS & SCIENCE 11 HRS.**

Mathematics elective (3)  
Laboratory Science electives (8)

**OTHER 5 HRS.**

(Courses must be chosen from the above categories.)

**HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**SOCIAL SCIENCES OR HUMANITIES ELECTIVES 6 HRS.**

**MATHEMATICS 20 HRS.**

MA 134 Calculus I (4)  
MA 164 Calculus II (4)  
MA 213 Calculus III (3)

Choose three of the following 3-hour courses: (9)

MA 313 Linear Algebra  
MA 333 Number Theory  
MA 343 Sets & Logic  
MA 393 Probability & Statistics  
MA 443 Numerical Analysis  
MA 473 Discrete Mathematics

**COMPUTER SCIENCE CORE 39 HRS.**

CS 163 Programming in "C" (3)  
CS 203 Systems Analysis (3)  
CS 233 Computer Organization (3)  
CS 253 Data Structures I (3)  
CS 263 Data Base Management (3)

CS 293 Operating Systems  
or  
CS 303 System Management (3)

CS 343 Computer Architecture (3)  
CS 353 Data Structures II (3)  
CS 423 Management Information Systems (3)  
Computer Science electives (12)

**DIRECTED TECHNICAL ELECTIVES 15 HRS.**

These courses may be selected from any technical program with the approval of the academic advisor.

**NON-TECHNICAL ELECTIVES 5 HRS.**

***TOTAL IN DEGREE PROGRAM: 128 HRS.***

***COMPUTER SCIENCE MINOR (for students with another major) 26 HRS.***

CS 103 Computers and Applications (3)  
CS 132 Visual Basic Programming (2)  
CS 163 Programming in "C" (3)  
CS 203 Systems Analysis (3)  
CS 233 Computer Organization (3)  
CS 263 Data Base Management (3)  
CS 253 Data Structures I (3)  
CS 303 System Management (3)  
Plus 3 additional CS credits at the 300 or 400 level (3)  
and grades of C or higher in all 26 hours of computer science.

***TOTAL IN MINOR PROGRAM: 26 HRS.***

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**ASSOCIATE IN COMPUTER TECHNOLOGY 65 HRS.**

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)  
\*ENG 113 English Composition II (3)

**ORAL COMMUNICATION 3 HRS.**

SP 203 Effective Speaking (3)

**SOCIAL SCIENCES & HUMANITIES 6 HRS.**

\*ECO 213 Microeconomics  
or  
\*ECO 233 Macroeconomics (3)

\*Humanities (These hours must be selected in accordance with the Social Science & Humanities section of the General Education Requirements found on page XXX.) (3)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS & SCIENCE 7 HRS.**

\*MA 113 College Algebra (3)  
\*Biology, chemistry, or physics (with the prefix BIO, CH, or PH) (4)

**HEALTH, PHYSICAL EDUCATION AND SPORT MANAGEMENT 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**COMPUTER SCIENCE 22 HRS.**

Choose two of the following three courses (4-5)

CS 132 Visual Basic (2)

CS 163 Programming in "C" (3)

CS 222 Programming in COBOL (2)

CS 203 Systems Analysis (3)

CS 233 Computer Organization (3)

CS 263 Data Base Management (3)

CS 303 System Management (3)

Computer science electives (5-6)

**MATHEMATICS 6 HRS.**

MA 173 Applied Mathematics (3)

MA 253 Statistics (3)

**BUSINESS 9 HRS.**

AC 203 Accounting I (3)

AC 213 Accounting II (3)

Business elective (3)

**TOTAL IN DEGREE PROGRAM: 65 HRS.**

## DEPARTMENT OF SCIENCE

The Department of Science offers the following degrees and minors:

- *Bachelor of Science*
  - MAJORS**
  - BIOLOGY**
  - CHEMISTRY**
  - ENVIRONMENTAL SCIENCE**
  - FORENSIC SCIENCE**
  - PRE-MED**
  - PHYSICAL SCIENCE**
- *Associate in Science*
- *Minor in Biology*
- *Minor in Chemistry*

The Department of Science provides a rigorous yet pertinent and meaningful education. It strives to provide the student with a thorough understanding and comprehension of the principles of science. Its programs have been designed to prepare students for careers in education, business, industry and the medical/health related fields.

Students who transfer into the Department of Science are expected to take at least two 300- or 400-level courses in their science major or primary teaching area in addition to SC 412 Senior Research Seminar and SC 422 Senior Research Project or SC 4004 Science Internship.

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

### **BACHELOR OF SCIENCE— BIOLOGY MAJOR 124 HRS.**

#### **PROGRAM REQUIREMENTS**

#### **REQUIRED HOURS**

#### **WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II

or

\*ENG 133 Technical Communication (3)

#### **ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or

\*COM 163 Interpersonal Communication (3)

#### **SOCIAL SCIENCES AND HUMANITIES 18 HRS.**

\*ENG 153 Introduction to Literature (3)

\*PSY 113 Principles of Psychology (3)

\*History elective (3)

\*Social sciences elective (3)

\*Humanities electives (6)

#### **COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS AND SCIENCE 10 HRS.**

\*CH 104 General Chemistry I

or

\*CH 104H General Chemistry I Honors (4)

\*MA 113 College Algebra (3)

\*MA 253 Statistics (3)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**SUBJECT AREA REQUIREMENTS 48 HRS.**

CH 114 General Chemistry II

or

CH 114H General Chemistry II Honors (4)

BIO 114 Principles of Biology (4)

BIO 254 Human Anatomy (4)

BIO 304 Plant Biology (4)

BIO 314 Animal Biology (4)

BIO 324 Microbiology (4)

BIO 333 Environmental Biology (3)

BIO 354 Animal Physiology (4)

BIO 414 Genetics (4)

Biology electives (9)

Choose either the two 2-credit senior research classes or the 4-credit internship (4)

SC 412 Senior Research Seminar

SC 422 Senior Research Project

or

SC 4004 Science Internship

**ELECTIVES 33 HRS.**

(Electives are determined in consultation with an advisor and based on student career objectives.)

**TOTAL IN DEGREE PROGRAM: 124 HRS.**

**BIOLOGY MINOR (for a non-education student with another major) 24 HRS.**

BIO 114 Principles of Biology (4)

BIO 304 Plant Biology (4)

BIO 314 Animal Biology (4)

BIO 324 Microbiology (4)

CH 104 General Chemistry I

or

CH 104H General Chemistry I Honors (4)

Biology-directed electives (4)

**TOTAL IN MINOR PROGRAM: 24 Hrs.**

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

## **BACHELOR OF SCIENCE—CHEMISTRY MAJOR 124 HRS.**

### **PROGRAM REQUIREMENTS**

### **REQUIRED HOURS**

#### **WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II

or

\*ENG 133 Technical Communication (3)

#### **ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or

\*COM 163 Interpersonal Communication (3)

#### **SOCIAL SCIENCES AND HUMANITIES 18 HRS.**

\*ENG 153 Introduction to Literature (3)

\*PSY 113 Principles of Psychology (3)

\*History elective (3)

\*Social sciences elective (3)

\*Humanities electives (6)

#### **COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

#### **MATHEMATICS AND SCIENCE 10 HRS.**

\*CH 104 General Chemistry I

or

\*CH 104H General Chemistry I Honors (4)

\*MA 113 College Algebra (3)

\*MA 123 Trigonometry (3)

#### **HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

#### **FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

#### **SUBJECT AREA REQUIREMENTS 53 HRS.**

CH 114 General Chemistry II

or

CH 114H General Chemistry II Honors (4)

CH 203 Organic Chemistry I (3)

CH 211 Organic Chemistry I Laboratory (1)

CH 213 Organic Chemistry II (3)

CH 221 Organic Chemistry II Laboratory (1)

CH 232 Quantitative Analysis (2)

CH 323 Instrumental Analysis (3)

CH 351 Physical Chemistry I Laboratory (1)

CH 354 Physical Chemistry I (4)

CH 361 Physical Chemistry II Laboratory (1)

CH 363 Physical Chemistry II (3)

CH 434 Biochemistry (4)  
MA 134 Calculus I (4)  
MA 164 Calculus II (4)  
MA 213 Calculus III (3)  
PH 124 University Physics I (4)  
PH 134 University Physics II (4)

Choose either the two 2-credit research classes or the 4-credit internship (4)  
SC 412 Senior Research Seminar

SC 422 Senior Research Project  
or  
SC 4004 Science Internship

**ELECTIVES 28 HRS.**

(Electives are determined in consultation with an advisor and based on student career objectives.)

**TOTAL IN DEGREE PROGRAM: 124 HRS.**

**CHEMISTRY MINOR (for non-education students with another major) 24 HRS.**

CH 104 General Chemistry I  
or  
\*CH 104H General Chemistry I Honors (4)

CH 114 General Chemistry II  
or  
CH 114H General Chemistry II Honors (4)

CH 232 Quantitative Analysis (2)  
Chemistry electives (14)

**TOTAL IN MINOR PROGRAM: 24 HRS.**

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

**BACHELOR OF SCIENCE—ENVIRONMENTAL SCIENCE MAJOR 124 HRS.**

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II

or

\*ENG 133 Technical Communication (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or

\*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES AND HUMANITIES 18 HRS.**

\*ENG 153 Introduction to Literature (3)

\*PSY 113 Principles of Psychology (3)

\*History elective (3)

\*Social sciences elective (3)

\*Humanities electives (6)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS AND SCIENCE 10 HRS.**

\*CH 104 General Chemistry I

or

\*CH 104H General Chemistry I Honors (4)

\*MA 113 College Algebra (3)

\*MA 253 Statistics (3)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**SUBJECT AREA REQUIREMENTS 48 HRS.**

CH 114 General Chemistry II

or

CH 114H General Chemistry II Honors (4)

CH 203 Organic Chemistry I (3)

CH 211 Organic Chemistry I Laboratory (1)

CH 213 Organic Chemistry II (3)

CH 232 Quantitative Analysis (2)

CH 323 Instrumental Analysis (3)

BIO 114 Principles of Biology (4)

BIO 143 Conservation (3)

BIO 203 Oceanography (3)

BIO 324 Microbiology (4)

BIO 333 Environmental Biology (3)

BIO 364 Toxicology (4)

BIO 423 Environmental Toxicology (3)

CH 434 Biochemistry

or

CH 4004 Special Assignments in Chemistry

or

BIO 4004 Special Assignments in Biological Sciences(4)

Choose the two 2-credit senior research classes or the 4-credit internship (4)

SC 412 Senior Research Seminar and

SC 422 Senior Research Project

or

SC 4004 Science Internship

**ELECTIVES 33 HRS.**

(Electives are determined in consultation with an advisor and based on student career objectives.)

**TOTAL IN DEGREE PROGRAM: 124 HRS.**

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

***BACHELOR OF SCIENCE—FORENSIC SCIENCE MAJOR 124 HRS.***

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II

or

\*ENG 133 Technical Communication (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or

\*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES AND HUMANITIES 18 HRS.**

\*ENG 153 Introduction to Literature (3)

\*PSY 113 Principles of Psychology (3)

\*History elective (3)

\*Social sciences elective (3)

\*Humanities electives (6)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS AND SCIENCE 10 HRS.**

\*CH 104 General Chemistry I

or

\*CH 104H General Chemistry I Honors (4)

\*MA 113 College Algebra (3)

\*MA 123 Trigonometry (3)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**SUBJECT AREA REQUIREMENTS 59 HRS.**

CH 114 General Chemistry II

or

CH 114H General Chemistry II Honors (4)

CH 203 Organic Chemistry I (3)

CH 211 Organic Chemistry I Laboratory (1)

CH 213 Organic Chemistry II (3)

CH 221 Organic Chemistry II Laboratory (1)

CH 232 Quantitative Analysis (2)

CH 323 Instrumental Analysis (3)

BIO 114 Principles of Biology (4)

BIO 254 Human Anatomy (4)

BIO 354 Animal Physiology (4)

BIO 364 Toxicology (4)

BIO 434 Biochemistry (4)

PH 114 Introduction to Physics (4)  
LE 263 Introduction to Criminal Law and Justice (3)  
LE 273 Criminal Procedures and Evidence (3)  
FS 343 Criminalistics and Crime Scene Investigations I (3)  
FS 353 Criminalistics and Crime Scene Investigations II (3)  
FS 351 Criminalistics and Crime Scene Laboratory (1)  
FS 371 Forensic Comparative Science Laboratory (1)

Choose the two 2-credit senior research classes or the 4-credit internship (4)  
SC 412 Senior Research Seminar and  
SC 422 Senior Research Project  
or  
SC 4004 Science Internship

**ELECTIVES 22 HRS.**

(Electives are determined in consultation with an advisor and based on student career objectives.)

***TOTAL IN DEGREE PROGRAM: 124 HRS.***

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

***BACHELOR OF SCIENCE—PRE-MED MAJOR 124 HRS.***

**PROGRAM REQUIREMENTS REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II

or

\*ENG 133 Technical Communication (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or

\*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES AND HUMANITIES 18 HRS.**

\*ENG 153 Introduction to Literature (3)

\*PSY 113 Principles of Psychology (3)

\*History elective (3)

\*Social sciences elective (3)

\*Humanities electives (6)

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS AND SCIENCE 10 HRS.**

\*CH 104 General Chemistry I

or

CH104H General Chemistry I Honors (4)

\*MA 113 College Algebra (3)

\*MA 123 Trigonometry (3)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE 2 HRS.**

\*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**SUBJECT AREA REQUIREMENTS 66 HRS.**

CH 114 General Chemistry II

or

CH114 H General Chemistry II Honors (4)

CH 203 Organic Chemistry I (3)

CH 211 Organic Chemistry I Laboratory (1)

CH 213 Organic Chemistry II (3)

CH 221 Organic Chemistry II Laboratory (1)

CH 232 Quantitative Analysis (2)

CH 434 Biochemistry (4)

BIO 114 Principles of Biology (4)

BIO 254 Human Anatomy (4)

BIO 314 Animal Biology (4)

BIO 324 Microbiology (4)

BIO 354 Animal Physiology (4)

BIO 404 Embryology (4)

BIO 414 Genetics (4)

MA 134 Calculus I (4)

MA 164 Calculus II (4)

PH 124 University Physics I (4)

PH 134 University Physics II (4)

Choose the two 2-credit senior research classes or the 4-credit internship (4)

SC 412 Senior Research Seminar and

SC 422 Senior Research Project

or

SC 4004 Science Internship

**ELECTIVES 15 HRS.**

(Electives are determined in consultation with an advisor and based on student career objectives.)

***TOTAL IN DEGREE PROGRAM: 124 HRS.***

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

***BACHELOR OF SCIENCE—PHYSICAL SCIENCE MAJOR 124 HRS.***

**PROGRAM REQUIREMENTS REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II

or

\*ENG 133 Technical Communication (3)

**ORAL COMMUNICATION 3 HRS.**

\*SP 203 Effective Speaking

or

\*COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES AND HUMANITIES 18 HRS.**

- \*ENG 153 Introduction to Literature (3)
- \*PSY 113 Principles of Psychology (3)
- \*History elective (3)
- \*Social sciences elective (3)
- \*Humanities electives (6)

**COMPUTER LITERACY 3 HRS.**

- \*CS 103 Computers and Applications (3)

**MATHEMATICS AND SCIENCE 10 HRS.**

- \*MA 113 College Algebra (3)
- Science or mathematics electives (7)

**HEALTH, PHYSICAL EDUCATION AND SPORT SCIENCE 2 HRS.**

- \*HPS 102 Lifetime Wellness (2)

**FRESHMAN STUDIES 1 HR.**

- UE 101 University Experience (1)

**SUBJECT AREA REQUIREMENTS 48 HRS.**

- Two disciplines from biology, chemistry, or physics (16 hrs. each) (32)

Additional courses in biology, chemistry, or physics (12)

Choose either the two 2-credit senior research classes or the 4-credit internship (4)

SC 412 Senior Research Seminar and

SC 422 Senior Research Project

or

SC 4004 Science Internship

**ELECTIVES 33 HRS.**

(Electives are determined in consultation with an advisor and based on student career objectives.)

***TOTAL IN DEGREE PROGRAM: 124 HRS.***

In the degree program descriptions that follow, an asterisk (\*) indicates courses that satisfy the University's General Education Requirements.

***ASSOCIATE IN SCIENCE 65 HRS.***

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)

**ORAL COMMUNICATION 3 HRS.**

SP 203 Effective Speaking

or

COM 163 Interpersonal Communication (3)

**SOCIAL SCIENCES & HUMANITIES 12 HRS.**

- \*ENG 153 Introduction to Literature (3)

\*Social Sciences or Humanities electives (9)

Note: Of the 12 hours in Social Sciences & Humanities, 6 hours must be in Social Sciences and 6 hours must be in Humanities.

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications (3)

**MATHEMATICS & SCIENCE 10 HRS.**

\*MA 113 College Algebra (3)

Two science classes, one a lab science (7)

**ADDITIONAL MATHEMATICS OR SCIENCE COURSES 13 HRS.**

The student must complete an area of emphasis which includes 20 total hours in either a science discipline or mathematics.

**FRESHMAN STUDIES 1 HR.**

UE 101 University Experience (1)

**GENERAL ELECTIVES 17 HRS.**

***TOTAL IN ASSOCIATE PROGRAM:***

**65 HRS.**

# KETNER SCHOOL OF BUSINESS

The Ketner School of Business administers these academic programs:

- *Bachelor of Science in Business Administration*

## MAJORS

ACCOUNTING  
FINANCE  
MANAGEMENT INFORMATION SYSTEMS  
MANAGEMENT  
MARKETING  
GOLF MANAGEMENT

- *Associate in Accounting*
- *Associate in Business Administration*
- *Minor in Business\**
- *Minor in Accounting*
- *Minor in Finance*
- *Minor in Management Information Systems*
- *Minor in Management*
- *Minor in Marketing*
- *Minor in Golf Management*
- *Minor in Turf Grass Management*

\*For students who are not business majors.

## THE SCHOOL

Tri-State University's Ketner School of Business was named in honor of Dr. Ralph W. Ketner, a distinguished alumnus and friend of the University. Dr. Ketner is a co-founder of Food Lion, one of the US's largest supermarket chains.

Courses in accounting and business law at Tri-State date from when the school first opened its doors on June 17, 1884, making the business program the school's oldest continuous course of study.

The Ketner School of Business at Tri-State University is a Candidate for Accreditation by the Association of Collegiate Business Schools and Programs (ACBSP). Program accreditation indicates that Ketner School of Business pursues excellence and continuous improvement in the development and delivery of its business programs. ACBSP accreditation criteria are based on the Malcolm Baldrige National Quality Award, a program promoting excellence in industry, services, healthcare, and education.

## MISSION

The mission of the Tri-State University Ketner School of Business is to prepare students for professional careers in business and related fields and to assist them in personal and professional development.

## COURSES OF STUDY

The Ketner School of Business offers the programs of study listed at the beginning of this section. In addition, students may earn minors shown in the programs of study list. A 2.0 cumulative grade point average for all courses in the minor program is required for a minor to be awarded. For transfer students, at least 15 hours of the courses toward a minor must be taken at Tri-State. Internship credit of up to six hours can be applied toward a minor, but the internship cannot be double counted (i.e. the hours can be applied to either a major or a minor, but not both).

In cooperation with the School of Engineering, the Ketner School of Business offers a minor in Entrepreneurship. The Entrepreneurship minor is designed for students who have an interest in owning a business at some point in the future. The Entrepreneurship minor is available for all TSU students regardless of major. Information regarding the Entrepreneurship minor is found on page **XXX** of this catalog.

## **DEGREE REQUIREMENTS**

Each of the bachelor degrees in the Ketner School of Business requires 120 semester hours. Associate degrees in the School of Business require 64 semester hours.

The requirements for both the bachelor degrees and associate degrees involve the following:

- 1) A liberal arts and sciences curriculum which serves to enrich the academic program so that it constitutes a basic cultural education. Courses in written and oral communication, humanities, social sciences, natural sciences and mathematics provide basic tools needed for applying knowledge in business administration toward worthwhile goals. The foundation of this curriculum is the General Education Requirements.
- 2) A business curriculum that provides the fundamentals through which the entire business enterprise operates.
- 3) A business specialty curriculum that supplements the business curriculum and allows students to develop a deeper understanding in a specialized area.
- 4) Business electives that provide for program flexibility and allow students to complement the required credits.

In developing an academic program, each student shall have the assistance of a faculty advisor. The student, however, has the ultimate responsibility for meeting specific degree requirements. Prerequisites for individual courses must be carefully observed.

## **DOUBLE MAJORS**

Ketner School of Business students may receive double majors. To receive a double major (e.g., Management and Finance), a student must meet all requirements in both majors and have a minimum of 135 semester hours of credit. Business electives may count in only one major; a single business elective cannot meet the elective requirements for two business majors. However, a required course in one major can count as an elective in another major.

## **INTERNSHIPS**

The Ketner School of Business encourages every business student to enter into an internship during his/her course of study at Tri-State University.

The value of an internship to the student, to the sponsoring entity, and to the University/School of Business is considerable.

- The intern gains by actual work experience in a real-world capacity, thus clearly establishing true expectations of the job and profession;
- the company gains by being exposed early to potential employees and by having a chance to evaluate them; and
- the University gains by brokering potential employees and employers and assisting the community.

Internships are quickly becoming a requirement before a student can be considered for a permanent position by many companies.

The Ketner School of Business requires internships for its golf management programs (major or minor). The Ketner School of Business recommends internships for other programs. A maximum of six semester credit hours can be earned toward degree requirements with a maximum of three hours in any one work session. (Golf Management internships are taken for six semester hours.) Internships can take place during any semester but are especially encouraged during the summer. Prerequisites include a 2.5 GPA or higher, sophomore or above class standing, and recommendation and approval by the Dean of the Ketner School of Business.

## **CURRICULUM**

A specified number of credit hours must be taken in each section described below. Prerequisites as shown in the course description section of this catalog must be carefully observed. Excess credit hours in a section may not ordinarily be counted toward requirements in another section; excess credit hours may be counted under the non-specified electives category.

It is anticipated that courses which satisfy the University's General Education Requirements will be integrated with the business administration courses in the student's schedule so that some of

these offerings are included in each year of study at the University. Detailed information on how to set up a schedule is available from academic advisors.

### ***BUSINESS CORE AND GENERAL EDUCATION COMPONENTS***

For all four-year business degrees, students must fulfill the General Education requirements and the Business Core. Those requirements are presented below. An asterisk (\*) indicates courses that fulfill the University's General Education requirements.

#### **PROGRAM REQUIREMENTS**

#### **REQUIRED HOURS**

##### **WRITTEN COMMUNICATION 9 HRS.**

- \*ENG 103 English Composition I (3)
- \*ENG 113 English Composition II (3)
- COM 213 Business Communication (3)

##### **ORAL COMMUNICATION 3 HRS.**

- \*SP 203 Effective Speaking (3)

##### **SOCIAL SCIENCES & HUMANITIES 12 HRS.**

Must include a minimum of two hours in social sciences and two hours in humanities, selected in accordance with the Social Sciences & Humanities section of the General Education Requirements found on page XXX.

- \*ECO 213 Microeconomics (3)
- \*ECO 223 Macroeconomics (3)
- \*PSY 113 Principles of Psychology (3)
- \*Humanities Elective (3)

##### **COMPUTER LITERACY 3 HRS.**

- \*CS 113 Business Computer Applications (3)

##### **MATHEMATICS & SCIENCE 12-13 HRS.**

Must include a minimum of 3 hours of science and 3 hours of mathematics.

- \*MA 103 Business Algebra (3)
- \*MA 173 Applied Mathematics (3)
- \*MA 253 Statistics (3)
- \*Science Elective (3-4)

##### **GENERAL EDUCATION ELECTIVES 3 HRS.**

##### **ADDITIONAL PROGRAM REQUIREMENTS 5 HRS.**

- UE 101 University Experience (1)
- BA 123 Introduction to Business (required for all incoming freshmen) (3)
- BA 401 Professional Development and Strategies (1)

##### **FREE ELECTIVES 12-13 HRS.**

In addition, business students must take an additional 12-13 hours of electives. These courses may be chosen from among all offerings in the University catalog.

For golf management majors a total of 10-11 free elective hours is required.

##### **BUSINESS CORE 27 HRS.**

- AC 203 Accounting I (3)
- AC 213 Accounting II (3)
- BA 343 International Business (3)
- FIN 303 Managerial Finance (3)
- LAW 203 Business Law I (3)
- MGT 353 Designing Operations (3)
- MGT 363 Organizational Behavior (3)
- MGT 453 Strategic Management (3)

MK 303 Marketing (3)

*TOTAL BUSINESS CORE AND GENERAL EDUCATION CREDITS: 87 HRS. (85 HRS. FOR GOLF MANAGEMENT)*

**BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION**

The bachelor of science in business administration degree prepares capable students for responsible positions in business, industry and public service.

A student selects a major in either accounting, finance, management information systems, management, marketing, or golf management. Students who have not decided on a course of study will be enrolled in General Business studies until a major is declared.

**BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION—ACCOUNTING MAJOR 120 HRS.**

In the dynamic and increasingly complex business world, students need to acquire a broad education in addition to specialized skills and knowledge of the profession. Accounting education provides the technical skills necessary to function in today's business environment and provides an understanding of all aspects of business.

**UNIFORM CERTIFIED PUBLIC ACCOUNTING EXAMINATION CANDIDATES**

The state of Indiana and many other states require that a first time Uniform Certified Public Accounting (CPA) Examination candidate must have at least 150 semester hours of college education, including a baccalaureate or higher degree, with an accounting concentration or its equivalent. An accounting major wishing to meet this requirement should plan an individualized program with his or her advisor.

**BUSINESS CORE AND GENERAL EDUCATION REQUIREMENTS 87 HRS.**

**ACCOUNTING and FINANCE 33 HRS.**

FIN 313 Corporate Finance (3)

FIN 353 Personal Finance (3)

FIN 343 International Finance (3)

AC 303 Cost Accounting (3)

AC 423 Income Tax (3)

AC 373 Accounting Information Systems (3)

AC 323 Intermediate Accounting I (3)

AC 333 Intermediate Accounting II (3)

AC 403 Advanced Accounting (3)

AC 463 Auditing (3)

Electives from 300- or 400-level courses prefixed by AC, BA, ENT, CS, FIN, LAW, MGT, MK (3)

*TOTAL IN DEGREE PROGRAM: 120 HRS.*

**MINOR IN ACCOUNTING 24 HRS.**

FIN 313 Corporate Finance (3)

AC 303 Cost Accounting (3)

FIN 353 Personal Finance (3)

FIN 343 International Finance (3)

AC 323 Intermediate Accounting I (3)

AC 333 Intermediate Accounting II (3)

AC 373 Accounting Information Systems (3)

AC 423 Income Tax (3)

***TOTAL IN MINOR PROGRAM: 24 HRS.***

***BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION—FINANCE MAJOR 120 HRS.***

The finance major provides students with a working understanding of the financial decision-making process, how financial markets function, and the acquisition and management of capital. Students may elect course concentrations in investment analysis and portfolio management, financial institutions and services, or corporate financial management. Students will be prepared for a variety of careers in business and in the government sector in areas such as financial analysis, capital budgeting, banking, mergers and acquisitions, cash management, financial planning, investment analysis and portfolio management, brokerage, real estate and insurance. A major in finance is also excellent preparation for graduate study in finance, business administration, or corporate and securities law.

**BUSINESS CORE AND GENERAL EDUCATION REQUIREMENTS 87 HRS.**

**FINANCE and ACCOUNTING: 33 HRS.**

FIN 313 Corporate Finance (3)

FIN 353 Personal Finance (3)

FIN 343 International Finance (3)

AC 303 Cost Accounting (3)

AC 423 Income Tax (3)

FIN 373 Finance Technologies (3)

FIN 323 Money and Banking (3)

FIN 403 Investments (3)

Finance electives (6)

Choose any 300- and 400-level courses prefixed by AC, BA, CS, ENT, FIN, LAW, MGT or MK (3)

***TOTAL IN DEGREE PROGRAM: 120 HRS***

***FINANCE MINOR 24 HRS.***

FIN 313 Corporate Finance (3)

FIN 353 Personal Finance (3)

FIN 343 International Finance (3)

AC 303 Cost Accounting (3)

AC 423 Income Tax (3)

FIN 373 Finance Technologies (3)

FIN 323 Money and Banking (3)

FIN 403 Investments (3)

***TOTAL IN MINOR PROGRAM: 24 HRS.***

***BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION—MANAGEMENT INFORMATION SYSTEMS MAJOR 120 HRS.***

This major enables students to combine a business core of courses with computer science. Thus the student develops two parallel areas of competence that are important in business today. This preparation qualifies the student for a decision-making position in management that requires knowledge of computer applications and capabilities.

**BUSINESS CORE AND GENERAL EDUCATION REQUIREMENTS 87 HRS.**

**MANAGEMENT INFORMATION SYSTEMS 33 HRS.**

CS 132 Visual Basic Programming (2)

or

CS 163 Programming in "C" (3)

CS 203 Systems Analysis (3)

CS 222 Programming in COBOL (2)

CS 233 Computer Organization (3)  
CS 263 Database Management (3)  
CS 303 System Management (3)  
CS 371 Microcomputer Laboratory (1)  
CS 373 Microcomputers (3)  
CS 423 Management Information Systems (3)  
Computer science electives (3-4)  
Any 300- and 400-level courses prefixed by AC, BA, CS, ENT, FIN, LAW, MGT or MK (6)

**TOTAL IN DEGREE PROGRAM: 120 HRS.**

**MINOR IN MANAGEMENT INFORMATION SYSTEMS 25 HRS.**

To receive a minor in management information systems, a student must complete these courses:

CS 132 Visual Basic Programming (2)  
CS 163 Programming in "C" (3)  
CS 203 Systems Analysis (3)  
CS 222 Programming in COBOL (2)  
CS 233 Computer Organization (3)  
CS 263 Database Management (3)  
CS 303 System Management (3)  
CS 373 Microcomputers (3)  
CS 423 Management Information Systems (3)

**TOTAL IN MINOR PROGRAM: 25 HRS.**

**BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION—MANAGEMENT MAJOR 120 HRS.**

Management pervades all facets of a business organization. Operations management studies the manufacturing and service processes where many new quantitative techniques are applied. Human resources involves the study of the human factor in business organizations. Students who select this major are preparing themselves for positions in firms regardless of size or organizational structure.

**BUSINESS CORE AND GENERAL EDUCATION REQUIREMENTS 87 HRS.**

**MANAGEMENT 33 HRS.**

ENT 303 Entrepreneurial Leadership (3)  
BA 403 Business and Public Policy (3)  
MK 423 Personal Selling (3)  
MK 333 Buyer Behavior (3)  
MGT 313 Human Resources Management (3)  
MGT 343 Human Resource Development (3)  
MGT 443 Managing Operations (3)  
MGT 413 Management of Quality (3)  
Management electives (3)  
Any 300- and 400-level courses prefixed by AC, BA, CS, ENT, FIN, LAW, MGT or MK (6)

**TOTAL IN DEGREE PROGRAM: 120 HRS.**

**MINOR IN MANAGEMENT 24 HRS.**

ENT 303 Entrepreneurial Leadership (3)  
BA 403 Business and Public Policy (3)  
MK 423 Personal Selling (3)  
MK 333 Buyer Behavior (3)  
MGT 313 Human Resources Management (3)

MGT 413 Management of Quality (3)  
Management electives (6)

**TOTAL IN MINOR PROGRAM: 24 HRS.**

**BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION—MARKETING MAJOR 120 HRS.**

Marketing encompasses the functions of creating and satisfying the demands of consumers. It is the study of the organizations and systems involved in the rendering of personal services to the consumer and the physical distribution of goods from the producer to the consumer. The marketing major will discover career opportunities in the fields of sales management, advertising, market research, retailing, brand/product management, merchandising, and marketing management.

**BUSINESS CORE AND GENERAL EDUCATION REQUIREMENTS 87 HRS.**

**MARKETING 33 HRS.**

ENT 303 Entrepreneurial Leadership (3)  
BA 403 Business and Public Policy (3)  
MK 423 Personal Selling (3)  
MK 333 Buyer Behavior (3)  
MK 323 Integrated Marketing Communications (3)  
MK 433 Marketing Management (3)  
MK 463 Marketing Research (3)  
MK 483 Senior Seminar in Marketing (3)  
Marketing electives (6)  
Com 463 Public Relations may be used as a marketing elective.  
Any 300- and 400-level courses prefixed by AC, BA, CS, ENT, FIN, LAW, MGT or MK (3)

**TOTAL IN DEGREE PROGRAM: 120 HRS.**

**MINOR IN MARKETING 24 HRS.**

ENT 303 Entrepreneurial Leadership (3)  
BA 403 Business and Public Policy (3)  
MK 423 Personal Selling (3)  
MK 333 Buyer Behavior (3)  
MK 323 Integrated Marketing Communications (3)  
MK 433 Marketing Management (3)  
MK 483 Senior Seminar in Marketing (3)  
Marketing electives (3)

**TOTAL IN MINOR PROGRAM: 24 HRS.**

**BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION—GOLF MANAGEMENT MAJOR 120 HRS.**

The bachelor of science in business administration – golf management major prepares students to become trained professionals ready for immediate employment in the expanding golfing industry. The program incorporates a business administration core with a concentration in golf management course work, including golf course promotion, turf management and marketing strategies.

In addition to the University entrance requirements, a student who wishes to major in golf management must demonstrate his or her ability to play golf by EITHER producing a sanctioned

handicap of 9 or better, OR by demonstrating playing proficiency during an interview with a member of the golf management staff.

A student must also have earned a minimum cumulative high school grade point average (GPA) of 2.5 on a 4.0 scale. To remain in the program, a student must maintain a GPA of 2.5 in his or her major field.

**BUSINESS CORE AND GENERAL EDUCATION REQUIREMENTS 85 HRS.**

**GOLF MANAGEMENT 35 HRS.**

ENT 303 Entrepreneurial Leadership (3)  
BA 403 Business and Public Policy (3)  
MK 423 Personal Selling (3)  
MK 333 Buyer Behavior (3)  
GM 101 Introduction to Golf Management (1)  
GM 203 Golf Shop Management (3)  
GM 213 Club Design, Repair and Fitting (3)  
GM 223 Promotion/Marketing of Golf Facilities (3)  
GM 302 Teaching the Short Game (2)  
GM 323 Teaching the Golf Swing (3)  
GM 411 Food and Beverage Management (1)  
GM 436 Internship (6)  
GM 201 Golf Course Architecture (1)

***TOTAL IN DEGREE PROGRAM: 120 HRS.***

***MINOR IN GOLF MANAGEMENT 24 HRS.***

**REQUIRED COURSES 24 HRS.**

GM 101 Introduction to Golf Management (1)  
GM 201 Golf Course Architecture (1)  
GM 203 Golf Shop Management (3)  
GM 223 Promotion/Marketing of Golf Facilities (3)  
GM 213 Golf Club Design, Repair and Fitting (3)  
GM 302 Teaching the Short Game (2)  
GM 323 Teaching the Golf Swing (3)  
GM 411 Food and Beverage Management (1)  
Internship (3)  
One skills development course (golf, bowling, tennis, etc.) (1)  
MK 333 Buyer Behavior or MK 423 Personal Selling (3)

***TOTAL IN MINOR PROGRAM 24 HRS.***

***ASSOCIATE IN ACCOUNTING 64 HRS.***

The associate in accounting program is designed to prepare students for immediate entry into the accounting field. It combines a concentration in accounting and computer science with business, economics and general education subjects. This program is especially appropriate for positions in businesses that require a small but knowledgeable accounting staff. As all of the credits are fully transferable to the four-year accounting major at Tri-State, it also serves as an excellent program for students who subsequently plan to seek a bachelor of science degree with an accounting major.

A specified number of credit hours must be taken in each section described below. Prerequisites as shown in the Catalog Descriptions section of this catalog must be carefully observed. Excess credit hours in a section may not ordinarily be counted toward requirements in another section. In the degree program descriptions that follow, an asterisk (\*) indicates courses that fulfill the University's General Education Requirements.

**PROGRAM REQUIREMENTS****REQUIRED HOURS****WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II (3)

**HUMANITIES 2 HRS.**

\*Any of the humanities courses listed in the General Education Requirements found on page XXX.

**MATHEMATICS & SCIENCE 7 HRS.**

\*Must include a minimum of 3 hours of science and a minimum of 3 hours of mathematics for a combined minimum of 7 hours.

MA 103 Business Algebra (3)

Science elective

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications

or

\*CS 113 Business Computer Applications (3)

**PROGRAM REQUIREMENTS 10 HRS.**

UE 101 University Experience (1)

COM 213 Business Communication (3)

\*ECO 213 Microeconomics (3)

\*ECO 223 Macroeconomics (3)

**ASSOCIATE BUSINESS CORE 18 HRS.**

AC 203 Accounting I (3)

AC 213 Accounting II (3)

BA 123 Introduction to Business (3)

LAW 203 Business Law I (3)

MK 303 Marketing (3)

MGT 363 Organizational Behavior (3)

**REQUIRED ACCOUNTING COURSES 15 HRS.**

AC 303 Cost Accounting I (3)

AC 323 Intermediate Accounting I (3)

AC 333 Intermediate Accounting II (3)

AC 373 Accounting Information Systems (3)

AC 423 Income Tax (3)

**BUSINESS ELECTIVES 3 HRS.**

Students, with approval from their advisors, must select a minimum of 3 credit hours of electives from courses prefixed by AC, BA, CS, ENT, ECO, FIN, LAW, MGT or MK.

***TOTAL IN DEGREE PROGRAM: 64HRS.******ASSOCIATE IN BUSINESS ADMINISTRATION 64 HRS.***

The associate in business administration degree program is designed to prepare a person for entry into business with a broad understanding of various business activities and their interrelationships. It combines course work in accounting, finance, marketing, business law and management.

Courses in economics, psychology, mathematics, computer science and communication are all part of this curriculum. Both traditional and non-traditional students will find this program of interest. All credits are transferable to a Tri-State four-year business administration degree for those who choose to continue their education.

A specified number of credit hours must be taken in each of the following sections. Prerequisites as shown in the Course Descriptions section of this catalog must be carefully observed. Excess credit hours in a section may not ordinarily be counted toward requirements in another section. In the degree program descriptions that follow, an asterisk (\*) indicates courses that fulfill the University's General Education Requirements.

**PROGRAM REQUIREMENTS**

**REQUIRED HOURS**

**WRITTEN COMMUNICATION 6 HRS.**

\*ENG 103 English Composition I (3)

\*ENG 113 English Composition II (3)

**SOCIAL SCIENCES & HUMANITIES 2 HRS.**

\*Any of the humanities courses listed in the General Education Requirements found on page XXX.

**COMPUTER LITERACY 3 HRS.**

\*CS 103 Computers and Applications

or

\*CS 113 Business Computer Applications (3)

**MATHEMATICS AND SCIENCE ELECTIVES 7 HRS.**

\*Must include a minimum of 3 hours of science and a minimum of 3 hours of mathematics for a combined minimum of 7 hours.

MA 103 Business Algebra (3)

Science elective

**PROGRAM REQUIREMENTS 10 HRS.**

UE 101 University Experience (1)

COM 213 Business Communication (3)

\*ECO 213 Microeconomics (3)

\*ECO 223 Macroeconomics (3)

**ASSOCIATE BUSINESS CORE 18 HRS.**

AC 203 Accounting I (3)

AC 213 Accounting II (3)

BA 123 Introduction to Business (3)

LAW 203 Business Law I (3)

MK 303 Marketing (3)

MGT 363 Organizational Behavior (3)

**BUSINESS ELECTIVES 18 HRS.**

Students, with approval from their advisors, must select a minimum of 18 hours of electives from courses in business administration, computer science and economics prefixed by AC, BA, CS, ENT, ECO, FIN, LAW, MGT or MK.

***TOTAL IN DEGREE PROGRAM: 64 HRS.***

***TURF GRASS MANAGEMENT MINOR 24 HRS.***

The turf grass industry is growing rapidly nationwide and the demand for college graduates with a degree in turf grass management is strong. A turf grass manager is responsible for the maintenance and performance of turf grass for areas such as golf courses, home lawns, athletic fields, commercial lawns, parks, recreation areas, sod farms and other areas where turf grasses are grown.

TGM 101 Introduction to Turf Grass Studies (1)

TGM 103 Turf Grass Pests, Identification, and Control (3)  
TGM 201 Turf Grass Architecture (1)  
TGM 214 Turf Maintenance (4)  
TGM 223 Turf Ecology (3)  
TGM 241 Independent Study in Turf Grass (1)  
BIO 304 Plant Biology (4)  
BIO 114 General Biology (4)  
BIO 143 Conservation (3)

**TOTAL IN MINOR PROGRAM: 24 HRS.**

**BUSINESS MINOR 24 HRS.**

The business minor is designed for students in a degree program outside of the Ketner School of Business. Prerequisites as shown in the Course Descriptions section of this catalog must be carefully observed.

**PROGRAM REQUIREMENTS 21 HRS.**

AC 203 Accounting I (3)  
AC 213 Accounting II (3)  
BA 123 Introduction to Business (3)  
LAW 203 Business Law I (3)  
MGT 363 Organizational Behavior (3)  
MK 303 Marketing (3)  
FIN 303 Managerial Finance (3)

**ELECTIVES 3 HRS.**

Choose courses prefixed by AC, BA, ENT, FIN, LAW, MGT and/or MK

*Note: With careful planning, the majority of requirements for admission to most MBA programs may be met with this minor.*

**TOTAL IN MINOR PROGRAM: 24 HRS.**

**PREPARATION PROGRAM FOR NON-BUSINESS MAJORS WHO WISH TO PURSUE A MASTER'S OF BUSINESS ADMINISTRATION (MBA)**

Students who would like to enter an MBA program after graduation should consider taking the following courses. Prerequisites as shown in the Course Description section of this catalog must be carefully observed.

AC 203 Accounting I (3)  
AC 213 Accounting II (3)  
BA 343 International Business (3)  
FIN 303 Managerial Finance (3)  
LAW 203 Business Law I (3)  
ECO 213 Microeconomics (3)  
ECO 223 Macroeconomics (3)  
MA 253 Statistics (3)  
MGT 353 Designing Operations (3)  
MGT 363 Organizational Behavior (3)  
MK 303 Marketing (3)

# **COURSE DESCRIPTIONS**

## **KEY TO COURSE PREFIXES**

AC Accounting  
ARC Architecture  
ART Art  
AST Astronomy  
BA Business Administration  
BIO Biology  
CE Civil Engineering  
CH Chemistry  
CHE Chemical Engineering  
CO Cooperative Employment  
COM Communication  
COV Community Volunteer  
CS Computer Science  
EAS Earth Science  
ECE Electrical & Computer Engineering  
ECO Economics  
EDU Education  
EGR Engineering Graphics  
ENG English  
ES Engineering Science  
ETD Engineering Technology  
FIN Finance  
FLM Film  
GE General Engineering  
GEO Geography  
GER German  
GLY Geology  
GM Golf Management  
GOV Government  
HIS History  
HNR Honors Seminar  
HPS Health, Physical Education & Sport Science  
LAW Law  
LE Law Enforcement  
MA Mathematics  
MAE Mechanical & Aerospace Engineering  
MGT Management  
MK Marketing  
MUS Music  
PH Physics  
PHL Philosophy  
PSY Psychology  
SC Science  
SOC Sociology  
SP Speech  
SPL Spanish  
TGM Turf Grass Management  
UE University Experience

## **COURSE NUMBERING SYSTEM**

Course numbers are found at the beginning of the course description immediately following the course prefix.

Courses numbered 000: preparatory, non-credit

Courses numbered 100: freshman-level courses  
Courses numbered 200: sophomore-level courses  
Courses numbered 300: junior-level courses  
Courses numbered 400: senior-level courses  
Courses numbered 500: graduate-level courses

**EXAMPLE OF COURSE PREFIX AND NUMBER**

CE 314: This course prefix and number means that this is a Civil Engineering junior level course.

**COURSE TITLE**

The course title follows the course prefix and number.

**SERIES OF THREE NUMBERS FOLLOWING THE COURSE TITLE**

First digit: indicates the number of class hours per week.

Second digit: indicates the number of laboratory hours per week.

Third digit: indicates the number of semester hours of credit.

Thus, a course name followed by 3-4-5 indicates three class hours each week, four laboratory hours each week, and five semester hours of credit.

**COURSE LEVEL REQUIREMENTS**

Courses at the 100 level within the student's major may not be taken in the senior year without permission of the department chair of the student's major.

# COURSE DESCRIPTIONS

## ACCOUNTING

### **AC 203 ACCOUNTING I 3-0-3**

This course is a study of the accounting process and the use of accounting information in business decisions. Topics include the processing of accounting information, income measurement, accrual accounting and accounting for assets, liabilities and equity in the corporate environment. The complete accounting cycle for a service and merchandising business and software applications are included. **Prerequisites: CS 103 (or a CS equivalent), MA 103, or permission of the instructor**

### **AC 213 ACCOUNTING II 3-0-3**

This course includes the accumulation and use of accounting information by management in planning, control and decision-making. Topics include product costing, budgeting, cost-volume-profit relationships, variable costing and statement of cash flows. Software applications are included. **Prerequisite: AC 203**

### **AC 303 COST ACCOUNTING 3-0-3**

Managerial accounting concepts, objectives, techniques and systems are examined to provide information about financial and non-financial performance measurement. Cost accumulation, allocation, and variance analysis are studied in the context of performance evaluation and responsibility accounting in an organization. Emerging cost concepts and systems are also examined. The course uses computer applications. **Prerequisite: AC 213**

### **AC 323 INTERMEDIATE ACCOUNTING I 3-0-3**

This course introduces comprehensive accounting theory and practice with emphasis on financial statement preparation and analysis. Current problems of corporate accounting and reporting are thoroughly covered, including cash, inventories, fixed assets, intangible assets, and marketable securities. The course uses computer applications. **Prerequisite: AC 213**

### **AC 333 INTERMEDIATE ACCOUNTING II 3-0-3**

This is a continuation of Intermediate Accounting I. Areas covered include contingent liabilities, capital structure, leases, revenue recognition, earnings per share, pensions, and income taxes. This course uses computer applications. **Prerequisite: AC 323**

### **AC 373 ACCOUNTING INFORMATION SYSTEMS 3-0-3**

This course is designed to provide a working knowledge of accounting information system concepts. The course will emphasize designing and/or evaluating accounting systems in terms of both system controls and meeting internal control objectives. The course uses computer applications. **Prerequisites: CS 113, FIN 303**

### **AC 403 ADVANCED ACCOUNTING 3-0-3**

This course covers specialized topics in accounting including branches, segment reporting, business combinations, consolidated financial statement preparation and accounting for partnerships. This course uses computer applications. **Prerequisite: AC 333**

### **AC 413 GOVERNMENTAL AND NOT-FOR-PROFIT ACCOUNTING 3-0-3**

This course introduces fund accounting and covers the theory and accounting process for governmental and not-for-profit organizations. The accounting for estates and trusts is also included. This course uses computer applications. **Prerequisite: AC 333**

### **AC 423 INCOME TAX 3-0-3**

This course introduces basic concepts of tax law with the emphasis on the underlying concepts common to all entities as they relate to everyday economic life. Special emphasis is placed on

taxation of individuals and corporations. Computerized income tax preparation and research are included. **Prerequisite: AC 213**

### **AC 433 ADVANCED INCOME TAX 3-0-3**

This course includes specialized topics including taxation of partnerships and other conduit entities. Property transactions, specialized topics and tax research are covered. Computerized preparation of tax returns for various entities is included. **Prerequisite: AC 423**

### **AC 463 AUDITING 3-0-3**

Auditing theory, objectives, and procedures leading to the auditor's opinion on the financial statements are studied. Internal control and its evaluation, auditing standards, and the use of statistical sampling in the audit process are covered in depth. This course uses auditing software applications. **Prerequisite: AC 323**

### **AC 473 CPA TOPICS 3-0-3**

This course is designed for those accounting majors planning to sit for the CPA exam. It includes the solving of practical accounting problems, advanced topics such as current statements of the Financial Accounting Standards Board, current statements on auditing procedures, and tax topics. This course uses software applications. **Prerequisite: AC 333**

### **AC 48X AUDITING INTERNSHIP VARIED (1-6 HRS.)**

This course is open to a limited number of accounting majors. The course involves paid employment as an internship employee with a cooperating certified public accounting firm. Normally this employment will be during the spring semester. The student will prepare a comprehensive written report concerning the experience and sit for an oral examination by the accounting instructors upon his/her return. A written report will also be submitted by the cooperating accounting firm. **Prerequisite: AC 333 and the permission of the student's advisor.**

### **AC 493 SELECTED TOPICS IN ACCOUNTING 3-0-3**

This course treats specific or current accounting issues and problems in depth. **Prerequisite: Permission of the instructor**

## **ARCHITECTURE**

### **ARC 292 ARCHITECTURE APPRECIATION 2-0-2**

An introduction to the built environment, this course focuses on public, reverential, commercial and residential architecture. Students will be introduced to terminology, some construction techniques, socio-legal implications of high-rise structures, and architectural styles from ancient to postmodern. Structures from around the world will be viewed and discussed.

## **ART**

### **ART 252 ART APPRECIATION 2-0-2**

Designed as an introduction to the arts, this course develops aesthetic-critical responses and seeks to enhance the enjoyment of works of art. Painting, sculpture, architecture and other types of art are analyzed in terms of the elements of art, subject, function, medium, organization, style and aesthetic response.

## **ASTRONOMY**

### **AST 201 ASTRONOMY LABORATORY 0-1-1**

An introductory laboratory study of basic observational astronomy and the tools of astronomy as students explore the sky. The stars, the planets and the universe of galaxies are observed and measured by observation or computer simulation. **Corequisite or Prerequisite: AST 203**

### **AST 203 ASTRONOMY 3-0-3**

An introduction to the field of astronomy, this course is a study of the planets and the stars and their formation and life cycles. The history of the Milky Way Galaxy and the history of the cosmos are studied, with an emphasis on the solar system and methods of observation and measurement.

## **BUSINESS ADMINISTRATION**

### **BA 123 INTRODUCTION TO BUSINESS 3-0-3**

A survey course designed to introduce the student to business issues and practices in the United States. All major functions of business are included (management, marketing, law, finance, economics, operations, accounting, information technology) as well as issues facing the business person (ethics, globalization, motivation, etc.) Suitable for students considering a career in business as well as for non-business majors who will interact with the business enterprises (e.g., educators, engineers). Planning for a business career through the creation of a portfolio is initiated. A major focus of this course is on career planning, beginning at the student's current career stage. A career plan is required for completion of the course.

### **BA 303 QUANTITATIVE ANALYSIS IN BUSINESS 3-0-3**

This course builds on Designing Operations and applies quantitative techniques to common business problems, preparing the student to make data-driven decisions. Topics include decision theory, Bayesian analysis, forecasting, linear programming, dynamic programming, game theory, transportation models, assignment and scheduling modeling, simulations, and queuing theory.

**Prerequisites: MA 253, MGT 353 (Same as ECO 303)**

### **BA 313 INSURANCE 3-0-3**

This course includes the fundamental principles and practices as they relate to life, compensation, fire, marine and automobile insurance. **Prerequisites: LAW 203, MK 303 or permission of the instructor.**

### **BA 323 REAL ESTATE 3-0-3**

This course is the study of problems of buying and leasing real property for residence or investment purposes, including the principal commercial and financial transactions involved.

**Prerequisites: LAW 303, MK 303, or permission of the instructor**

### **BA 343 INTERNATIONAL BUSINESS 3-0-3**

This course discusses economic principles of trade as applied to international business, world international trade environment and trends, world geography and culture as it impacts international trade, knowledge of the operation of importing and exporting, aspects of manufacturing and marketing in foreign markets, and the application of the functions of business to an international business operation. **Prerequisites: ECO 213, ECO 223 or concurrent with ECO 223**

### **BA 401 PROFESSIONAL DEVELOPMENT & STRATEGIES 1-0-1**

This is a practical course to assist the student in the development of a professional job search portfolio (i.e. resume, cover letter, follow-up letters). The course includes self-appraisal and career goal setting, job interview techniques, and familiarization with employment resources. Professional strategies are emphasized in the areas of business attire, etiquette and protocol, ethics, human relations and corporate culture. **Prerequisites: Business major, junior or senior standing or permission of the instructor**

### **BA 403 BUSINESS AND PUBLIC POLICY 3-0-3**

This course includes an analysis of the legal, political and economic framework that has shaped public policy toward business in the United States. It will include the methods as to how public policy is created and its implications for management decision making. The issues that this course will be concerned with are: how public policy is related to societal, community, employee, consumer, and environmental concerns and their implication for business. (same as ECO 453)

**Prerequisites: MGT 363, ECO 223, LAW 203, MK 303, or permission of the instructor**

### **BA 423 ENTREPRENEURSHIP 3-0-3**

This course focuses on entrepreneurship and small business management. Through case studies, simulations, guest lectures, reading and business plan development, students become aware of the unique challenges facing small business owners and entrepreneurs. Students become familiar with the resources available to small business owners, by developing and presenting a business start-up plan. **Prerequisites: MGT 353, MGT 363, MK 303, Senior business major or permission of the instructor**

### **BA 311X BUSINESS INTERNSHIP VARIED (1-3 HRS.)**

The course involves a meaningful work experience related to the student's field of study or other functional areas of business in an approved company. The assignment and company must be approved by the School of Business Internship Coordinator. A maximum of 6 semester credit hours can be counted toward degree requirements, with a maximum of 3 credit hours for any one work session. **Prerequisites: Business major, 2.5 GPA, sophomore or above class standing, adhering to the guidelines set by the School of Business Internship Coordinator, and permission of the advisor**

### **BA 371X FULL-TIME BUSINESS INTERNSHIP VARIED (1-3 HRS.)**

The course involves a meaningful work experience related to the student's field of study or other functional areas of business in an approved company. The assignment and company must be approved by the School of Business Internship Coordinator. Employment is full-time during a fall or spring semester. While enrolled in this course, the student is considered a full-time student of Tri-State University. A maximum of 6 semester hours can be applied toward degree requirements, with a maximum of 3 hours for any one work session. (The total internship credit hours a student may earn toward a business degree is 6 hours by enrolling in BA 311X, BA 371X or some combination of the two courses.) **Prerequisites: Business major, 2.5 GPA, sophomore or above class standing, adherence to the guidelines set by the School of Business Internship Coordinator and permission of the advisor**

### **BA 400X INDEPENDENT RESEARCH IN BUSINESS VARIED (1-3 HRS.)**

Independent research under the direction of an individual instructor can be taken. A research paper is required. (Research may be done in any business major.) **Prerequisites: Senior standing, permission of the instructor and the Dean of the Ketner School of Business**

## **BIOLOGY**

### **BIO 104 GENERAL BIOLOGY 3-2-4**

An introduction to the basic principles of biology with an emphasis on: biological chemistry, cell biology, metabolism, genetics, diversity of organisms, evolution, and ecology. A background in high school chemistry is strongly recommended. Open to non-science majors only. This course cannot be substituted for BIO 114 for either science or engineering majors.

### **BIO 114 PRINCIPLES OF BIOLOGY 3-2-4**

Five basic topics are discussed in some detail: the chemical logic of living systems, structure and function at the sub-cellular and cellular levels, cell energetics, cell division, genetics and evolution. Laboratory exercises designed to introduce the student to scientific investigation and the structure and function of biological systems are an essential part of the course.

### **BIO 143 CONSERVATION 2-2-3**

The study of the mineral, air, water, soil and biological resources and how they relate to the use of the environment. Methods used in management of these resources evaluated on long-range productivity needs and pollution side effects. Economic, ecological and sociological criteria are considered. **(Same as EAS 143)**

### **BIO 203 OCEANOGRAPHY 2-2-3**

A description of the oceans and their relation to humans. The principles of physical, chemical, geological, and biological oceanography are used to explain the ocean environment. Society's

effect on the oceans and problems and potentials of utilizing the natural resources of the sea. **Prerequisites: A laboratory science and MA 113 (Same as EAS 203 and GEO 203)**

**BIO 244 HUMAN ANATOMY AND PHYSIOLOGY 3-2-4**

The anatomical and physiological features of each organ system are identified. Microstructure observation and detailed dissection in the laboratory. **Prerequisite: BIO 104 or BIO 114**

**BIO 254 HUMAN ANATOMY 3-2-4**

The anatomical features of each organ system are identified. Microstructure observation and detailed dissection in the laboratory. **Prerequisite: BIO 114**

**BIO 304 PLANT BIOLOGY 3-3-4**

The structure and function of the major plant phyla are studied. Methods of classification are illustrated. The physiology and evolutionary relationships are explained. **Prerequisite: BIO 114**

**BIO 314 ANIMAL BIOLOGY 3-2-4**

The structure and function of the major animal phyla are studied. Methods of classification are illustrated. The behavioral, physiological, and evolutionary relationships are explained. **Prerequisite: BIO 114**

**BIO 324 MICROBIOLOGY 3-2-4**

The isolation, growth, structure, function, heredity and identification of microorganisms with emphasis on their relationship to humans. **Prerequisite: BIO 254 or CH 114**

**BIO 333 ENVIRONMENTAL BIOLOGY 2-2-3**

The study of population, communities, and ecosystems used to explain structural and functional aspects of environment. Field studies and laboratory experiments used to illustrate methods of solving environmental problems. **Prerequisite: 10 hours of laboratory science**

**BIO 354 ANIMAL PHYSIOLOGY 3-2-4**

The fundamental physical chemical bases of osmoregulation, circulation, respiration (both at organism and cell levels), nerve and muscle function, nutrition and endocrine function are studied. Laboratories include electromechanical studies of isolated muscle and nerve preparations, osmoregulation in decapods, metabolic activity comparisons in chordates and arthropods, and the electrical activity of the heart. **Prerequisites: BIO 254, CH 114**

**BIO 364 TOXICOLOGY 3-3-4**

The methods and design of both acute and chronic toxicity tests will be surveyed. Probits of percent mortality versus log dose and other appropriate statistical methods of toxin analysis are applied to laboratory data. Emphasis will be given to mechanisms of action and metabolic detoxification and elimination. Federal regulations involving manufacture, use categories and proper disposal are reviewed. **Prerequisites: BIO 114, CH 114**

**BIO 404 EMBRYOLOGY 3-3-4**

Study of structural, physiological, and molecular levels of development processes. A descriptive and experimental analysis of developing systems with emphasis on chordates. **Prerequisite: BIO 314**

**BIO 413 ENTOMOLOGY 2-2-3**

Integrated studies of the principal morphological, physiological, ecological and systematic relationships of insects. **Prerequisite: BIO 114**

**BIO 414 GENETICS 3-3-4**

The molecular basis of genetic control is used to explain Mendelian principles and evolutionary mechanisms. These basic principles illustrate techniques and problems related to DNA recombination and human genetics.

**Prerequisite: BIO 114**

#### **BIO 423 ENVIRONMENTAL TOXICOLOGY 2-2-3**

How biological and chemical mechanisms are related to risk assessment of heavy metals, pesticides, food additives and environmental pollutants. Laboratory data will be used to predict possible environmental hazards. **Prerequisites: CH 203, BIO 143**

#### **BIO 434 BIOCHEMISTRY 3-3-4**

A study of the chemistry, kinetics, energetics and metabolic pathways of biological molecules such as carbohydrates, lipids, proteins, nucleic acids and enzymes are discussed and supported by laboratories that illustrate biochemical reactions, separations, enzyme kinetics and analysis.

**Prerequisites: CH 211, CH 213 (Same as CH 434)**

#### **BIO 454 MOLECULAR BIOLOGY 3-3-4**

This course provides a comprehensive overview of the key concepts in molecular biology. Topics to be covered include nucleic acid structure and functions, biochemistry of DNA, chromosome structure, regulation of gene expression in prokaryotes and eukaryotes. Extended topics will include biotechnology methods, genetic engineering, gene therapy, protein functions, cellular communication, and programmed cell death. **Prerequisites: BIO 114, CH 211, CH 213**

#### **BIO 400X SPECIAL ASSIGNMENTS IN BIOLOGICAL SCIENCES**

##### **VARIABLE CREDIT (MAX. 4)**

Directed reading, independent study, or research, supervised laboratory or field work. The number of credit hours will be determined by the scope of the assignment. **Prerequisite: Permission of department chair**

### **CIVIL ENGINEERING**

#### **CE 204 BASIC SURVEYING 2-2-4**

An introductory course in the theory and practice of basic land surveying. Course topics include measurements of angles, directions, and distances; traverse computations; simple vertical and horizontal curves; earthwork and GPS. Fieldwork will include the use of automatic and laser levels, total station instruments, and data collectors. **Corequisite: MA 134**

#### **CE 304 HYDRAULIC ENGINEERING 3-2-4**

Fundamental principles and design of water and wastewater supply, stormwater and sanitary sewer systems and their components, including pipes, pumps, storage facilities, detention basins, open-channels and culverts. **Prerequisite: ES 323**

#### **CE 313 ENVIRONMENTAL ENGINEERING (NON-AQUEOUS) 3-0-3**

Environmental engineering issues, fundamentals, and applications including air pollution, noise pollution, solid waste management, hazardous waste management, and ionizing radiation. **Prerequisite: CH 114**

#### **CE 314 ENVIRONMENTAL ENGINEERING (AQUEOUS) 3-2-4**

Environmental engineering issues, fundamentals, and applications including hydrology, water treatment, water quality management, and wastewater treatment. Laboratory portion of the course covers common environmental experiments and field trips pertaining to the aforementioned topics. **Prerequisite: CH 114; Corequisite: ES 323 or equivalent**

#### **CE 334 CIVIL ENGINEERING MATERIALS 3-2-4**

Testing and evaluation of physical and mechanical properties of engineering materials. Origin, manufacture, and structural applications of metals, masonry, aggregates, bituminous materials (including superpave), Portland cement and concrete. Theory and use of strain gages.

**Prerequisite: ES 243**

**CE 343 STRUCTURAL ANALYSIS. 3-0-3**

Stress resultants. Concept of work and reciprocal theorems. Influence functions and elastic deformations. Analysis of statically determinate and indeterminate structures. Study of the load flow in typical building systems and the idealization of the structural members. **Prerequisite: Grade of "C" or better in ES 243**

**CE 353 STRUCTURAL STEEL DESIGN 3-0-3**

Analysis and design of structural steel members. Column buckling and lateral stability of beams. Codes and specifications. Recommended to be taken concurrently with CE 363. **Prerequisite: CE 343; Corequisite: CE 334**

**CE 363 REINFORCED CONCRETE DESIGN 3-0-3**

Material properties. Analysis, design and serviceability of reinforced concrete flexural members and columns. Design and development of reinforcement. Codes and specifications. Recommended to be taken concurrently with CE 353. **Prerequisite: CE 343; Corequisite: CE 334**

**CE 374 SOIL MECHANICS 3-2-4**

The course serves as an introduction to geotechnical engineering and provides an overview of the fundamental properties and behavior of soils. Topics to be presented include index properties, soil classification, phase relationships, compaction, subsurface exploration, seepage, bearing capacity and consolidation. Lab testing will generally include Atterberg Limits and gradation testing, Proctor compaction, hydraulic conductivity, triaxial testing, 1-D consolidation, direct shear and unconfined compression. **Prerequisite: ES 243**

**CE 393 HAZARDOUS WASTE ENGINEERING 3-0-3**

A study of hazardous waste regulation, treatment, disposal, and remediation of contaminated sites. Evaluation of unit operations and processes of importance in the treatment and disposal of common organic and inorganic hazardous wastes. Students conduct group design projects and presentations. **Prerequisite: CE 313 or CE 314**

**CE 403 ENGINEERING HYDROLOGY 3-0-3**

Fundamental processes in the hydrologic cycle including precipitation, infiltration, evapotranspiration, and runoff. Quantitative approaches for engineering hydrology to estimate flows for a variety of design problems. **Prerequisite: ES 323**

**CE 413 WATER TREATMENT PRINCIPLES AND DESIGN 3-0-3**

Design of water treatment plants by application of basic and engineering sciences, hydraulics, chemistry and physics. Plant layouts as well as the design of the elements of the plants and their operations are covered. Students conduct group design projects and presentations. **Prerequisite: CE 314**

**CE 423 PAVEMENT DESIGN 3-0-3**

The design of flexible and rigid highway and airport pavements is presented. Topics include traffic quantity estimates, stresses due to traffic loads, subgrade testing and properties, pavement materials testing and properties, AASHTO, Asphalt Institute, and PCA design methods, reinforced subbase design, permeable pavement design, and rigid and flexible overlays. **Corequisites: CE 334, CE 363, CE 374**

**CE 443 ADVANCED STRUCTURAL ANALYSIS 3-0-3**

Continuation of CE 343. Theory of matrix displacement analysis as applied to indeterminate trusses, beams and frames. Approximate methods. Advanced structural systems. **Prerequisite: CE 343**

**CE 453 ADVANCED STEEL DESIGN 3-0-3**

Continuation of CE 353. Steel industrial building frames, design of crane girders, welded plate girders and composite beams. **Prerequisites: CE 353, CE 363**

**CE 463 PRESTRESSED CONCRETE DESIGN 3-0-3**

Analysis and design of prestressed concrete members. Pretensioned and post-tensioned methods or prestressing. Design of precast elements. **Prerequisite: CE 363**

**CE 483 CONSTRUCTION ENGINEERING 3-0-3**

Planning, scheduling and control of construction projects. Critical path, PRIMAVERA, legal aspects of construction, specifications and contracts. **Prerequisite: Senior standing**

**CE 493 ADVANCED CONCRETE DESIGN 3-0-3**

Continuation of CE 363. Design of concrete systems related to buildings. Emphasis on slab-beam-girder system design. Torsion, continuity and length effects in reinforced concrete. One way slab systems and continuous beams. Design philosophies of codes and standards. **Prerequisite: CE 363**

**CE 3103 OPEN CHANNEL HYDRAULICS 3-0-3**

Advanced topics in open-channel hydraulics, including design of hydraulic structures, uniform flow, rigid and loose boundary channel design, gradually varied flow, unsteady flow, and flood routing techniques. **Prerequisite: CE 304**

**CE 3153 DESIGN OF STRUCTURAL CONNECTIONS 3-0-3**

Introduction to design and detailing of structural connections. Topics include bolted connections, eccentrically loaded connections, framed and seated beam connections, welded truss joints, and bolted truss joints. **Prerequisites: EGR 153 or its equivalent, CE 353**

**CE 3253 TIMBER DESIGN 3-0-3**

Analysis, proportioning, and connection of structural members in timber. Specifications and codes. **Prerequisite: CE 343**

**CE 400X SPECIAL PROBLEMS IN CIVIL ENGINEERING VARIABLE CREDIT**

To be offered to students who have demonstrated superior ability. Course content to be arranged for the individual student according to his/her interest and aptitudes. Library research or independent study may be included. **Prerequisites: Senior standing and permission of Department Chair**

**CE 4103 WATER RESOURCES ENGINEERING 3-0-3**

Problems related to the planning and design of systems to manage water resources for flood-damage reduction, hydropower and river navigation. **Prerequisite: CE 304**

**CE 4163 SPECIAL TOPICS IN GEOTECHNICAL ENGINEERING 3-0-3**

This course covers special topics that often confront a practicing geotechnical engineer. Some of these topics may include soil and site improvement using deep dynamic compaction, vibroflotation, wick drains and geosynthetics; slope stability analyses; retaining wall design and geo-environmental concerns, such as environmental site assessments and waste liner/cover systems. Other topics may include special concerns in engineering geology. **Prerequisite: CE 374**

**CE 4173 FOUNDATION ENGINEERING 3-0-3**

The primary objective of this course is to illustrate how to evaluate subsurface conditions in order to select appropriate foundations for structures. Topics include subsurface exploration program, evaluation of bearing capacity and settlement of soils due to foundations, reinforced concrete design of shallow footings, the design of driven piles, auger-cast piles, drilled shaft foundations, and the analysis/design of intermediate foundations such as pin piles and geopiers. **Prerequisite: CE 374; Corequisite: CE 363**

**CE 4183 BRIDGE ENGINEERING 3-0-3**

Application of CE 353 and CE 363 to the design of bridges. AASHTO load specifications. Design of single span bridges and continuous beam bridges. Introduction to slant-legged rigid frame bridges. **Prerequisites: CE 353, CE 363**

**CE 4203 WATER DISTRIBUTION AND DESIGN OF SEWERS 3-0-3**

Theory of pipe networks with application to the analysis and design of municipal water distribution systems. Water hammer and surge in pressure conduits. Wastewater flows and design of sewers. **Prerequisite: CE 304**

**CE 4223 WASTEWATER TREATMENT PRINCIPLES AND DESIGN 3-0-3**

Design of wastewater treatment plants by application of basic and engineering sciences, hydraulics, chemistry, biology, and physics. Plant layouts as well as the design of the elements of the plants and their operation are covered. Students conduct group design projects and presentations. **Prerequisite: CE 314**

**CE 4292 CIVIL AND ENVIRONMENTAL ENGINEERING DESIGN SEMINAR 2-0-2**

Project selection and initial scope of work development for major design experience which integrates fundamental concepts of basic sciences, engineering sciences, engineering design and communication skills. **Prerequisite: Senior standing**

**CE 4294 CIVIL AND ENVIRONMENTAL ENGINEERING DESIGN 0-4-4**

An integrated approach to the design of civil engineering facilities, from inception, feasibility, planning, socioeconomic considerations, environmental impact, safety and engineering analysis and design to a final project report. **Prerequisite: Must have taken CE 4291 the previous semester**

**CHEMISTRY****CH 104 GENERAL CHEMISTRY I 3-3-4**

Fundamentals of chemistry with emphasis on atomic structure, stoichiometry, thermochemistry, properties of solution, properties of matter. The laboratory is quantitative in nature. **Prerequisite: MA 113**

**CH 104H HONORS GENERAL CHEMISTRY I 3-3-4**

Fundamentals of chemistry will be reviewed and specific topics discussed in-depth in a student-centered atmosphere. The course is geared towards collaborative learning and traditional lectures will be kept to a minimum. Topics include, but are not limited to, atomic structure, stoichiometry, thermochemistry, properties of solution, properties of matter. **Prerequisite: MA 113 and admission into the Honors Program, or permission of the Instructor. Students are also required to register for a section of CH 104L to be taken concurrently.**

**CH 114 GENERAL CHEMISTRY II 3-3-4**

A continuation of CH 104. Emphasis is on chemical equilibria, thermodynamics, kinetics, acid-base reactions, electrochemistry and organic chemistry. Includes laboratory time. **Prerequisite: CH 104**

**CH 114H HONORS GENERAL CHEMISTRY II 3-3-4**

A continuation of CH 104H. The course will be structured similarly to CH 104H with collaborative, student-centered learning emphasized. Topics include, but are not limited to, chemical equilibria, thermodynamics, kinetics, acid-base reactions, electrochemistry and organic chemistry. **Prerequisite: CH 104H or permission of the Instructor. Students are also required to register for a section of CH114L to be taken concurrently.**

**CH 144 CHEMISTRY — IDEAS AND APPLICATIONS 3-2-4**

An integrated view of organic and biological chemistry for non-science majors, emphasizing the importance of chemistry to daily living and chemical principles related to everyday experiences.

Simulated chemical problems in the laboratory. **This course cannot be substituted for CH 104 or CH 114 for either science or engineering majors.**

**CH 203 ORGANIC CHEMISTRY I 3-0-3**

A study of the methods of preparation, structure, and characteristic reactions of the more important type of aliphatic compounds, including industrial uses and methods of synthesis. **Prerequisite: CH 114**

**CH 211 ORGANIC CHEMISTRY I LABORATORY 0-3-1**

Laboratory synthesis and experiments illustrative of the methods used in working with organic compounds. **Corequisite CH 203**

**CH 213 ORGANIC CHEMISTRY II 3-0-3**

A continuation of CH 203 with a study in a similar manner of aromatic compounds. **Prerequisite: CH 203**

**CH 221 ORGANIC CHEMISTRY II LABORATORY 0-3-1**

The laboratory work illustrates the synthesis and reaction of aromatic compounds. **Prerequisite: CH 211; Corequisite: CH 213**

**CH 232 QUANTITATIVE ANALYSIS 1-3-2**

Principles of volumetric, spectrophotometric, and electrochemical analysis are stressed in the laboratory; whereas, the lecture material will emphasize the approach and solution to problems dealing with stoichiometry of mixtures, ionic equilibrium, electrochemical processes, and other material related to quantitative analysis. **Prerequisite: CH 114**

**CH 323 INSTRUMENTAL ANALYSIS 1-6-3**

Theory and practice of modern instrumental methods of analysis. Fundamental principles, applications, and limitations of various instrumental methods. Laboratory instrumentation includes electrometric, optical, and separation methods. **Prerequisites: CH 211, CH 232**

**CH 351 PHYSICAL CHEMISTRY I LABORATORY 0-3-1**

Laboratory experiments included in the areas studied in CH 354. **Prerequisite: CH 232; Corequisite: CH 354**

**CH 354 PHYSICAL CHEMISTRY I 4-0-4**

An in-depth study in real gases, thermodynamics, kinetics, chemical and physical equilibrium, and electrochemistry. **Prerequisites: CH 114, MA 213, PH 124**

**CH 361 PHYSICAL CHEMISTRY II LABORATORY 0-3-1**

Laboratory experiments included in the areas studied in CH 363. **Prerequisite: CH 354; Corequisite: CH 363**

**CH 363 PHYSICAL CHEMISTRY II 3-0-3**

Fundamentals of quantum theory of atoms and molecules, and spectroscopy. **Prerequisite: CH 354**

**CH 434 BIOCHEMISTRY 3-2-4**

The chemical and physical behavior of biologically important compounds such as carbohydrates, lipids, proteins, nucleic acids, and enzymes are discussed. The various metabolic pathways are discussed in light of their organic mechanisms. **Prerequisites: CH 211, CH 213 (Same as BIO 434)**

**CH 400X SPECIAL ASSIGNMENTS IN CHEMISTRY VARIABLE CREDIT (MAX. 6)**

Directed readings, independent study, or research. **Prerequisite: Permission of the Department Chair**

## **CHEMICAL ENGINEERING**

### **CHE 111 INTRODUCTION TO CHEMICAL ENGINEERING 2-0-1**

An introduction to the field of chemical engineering. The design process and team concepts are introduced. Issues such as ethics, safety and professionalism are discussed. The tools of chemical engineers such as spreadsheets and simulators are introduced.

### **CHE 203 MATERIAL BALANCES 3-0-3**

This course is an introduction to the practice of chemical engineering. Fundamental principles are applied to chemical engineering problems involving conservation of mass. Stoichiometry is also reviewed. Process flow diagrams and piping and instrument diagrams will be presented. An emphasis of this course will be using the computer as a tool to solve problems that arise in Chemical Engineering. Computer packages such as spreadsheets and mathematical worksheets will be used. **Corequisite: PH 124**

### **CHE 212 ENERGY BALANCES 2-0-2**

This course is a continuation of CHE 202 with the emphasis on problems involving conservation of mass and energy. **Prerequisite: CHE 203; Corequisites: CHE 221**

### **CHE 221 CHEMICAL PROCESS MEASUREMENTS LABORATORY 0-3-1**

This laboratory will introduce students to the procedure for writing laboratory reports. The laboratory includes the measurement of process variables including temperature, pressure, flow and composition. Statistical analysis of data is included. Students are also introduced to a safety program similar to that found in the chemical process industries. **Corequisites: CHE 212**

### **CHE 335 UNIT OPERATIONS I 5-0-5**

The study of unit operations in chemical engineering is initiated with a thorough consideration of fluid flow and heat transfer. Particular attention is given to heat and fluid transfer equipment design. **Prerequisites: "C" or better in CHE 203 and CHE 212**

### **CHE 345 UNIT OPERATIONS II 5-0-5**

Unit operations in chemical engineering is continued with the study of mass transfer applied to the design of distillation and extraction equipment, cooling towers, drying, and gas absorption. **Prerequisite: CHE 335**

### **CHE 362 UNIT OPERATIONS LABORATORY I 1-3-2**

A laboratory course to study fluid mechanics and heat transfer. Identification of laboratory hazards and the steps that are necessary to prevent accidents in the laboratory are covered. Statistics and technical writing are required. **Prerequisite: CHE 335**

### **CHE 365 CHEMICAL ENGINEERING THERMODYNAMICS 5-0-5**

This course will review the laws of thermodynamics and introduce students to thermodynamic cycles and systems. Equations of state will be covered to determine the properties of real liquid and gas. Special emphasis will be placed on applications dealing with chemical equilibrium and phase equilibria for single and multi-component systems. Methods are presented for the estimation of thermodynamic properties. **Prerequisite: CHE 212, MA 213**

### **CHE 412 APPLIED NUMERICAL METHODS 2-0-2**

Advanced engineering mathematics will be introduced. Numerical techniques will be discussed and applied to chemical engineering problems. **Prerequisite: CHE 453**

### **CHE 453 CHEMICAL ENGINEERING KINETICS 3-0-3**

A study of chemical reaction processes with applications to equipment design. **Prerequisites: MA 233, CHE 345, CHE 365**

**CHE 462 UNIT OPERATIONS LABORATORY II 1-3-2**

The first part of this course will cover industrial process safety. Topics in this section will include fire and explosion prevention, industrial hygiene and relief system design. The second part of the course will be devoted to laboratory experiments emphasizing mass transfer and chemical reaction kinetics. **Prerequisite: CHE 362**

**CHE 463 CHEMICAL PROCESS DYNAMICS AND CONTROL 2-3-3**

An introduction to process dynamics and the application of control systems. **Prerequisite: MA 233**

**CHE 473 CHEMICAL PROCESS DESIGN I 3-0-3**

Economic design of commonly used chemical process components such as piping systems, pumps, process vessels, heat exchangers, fired heaters, and distillation columns. Methods employed for design include shortcut calculations and computer methods. **Prerequisite: CHE 345**

**CHE 483 CHEMICAL PROCESS DESIGN II 3-0-3**

Capstone design experience unifying the principles of previous course work. Comprehensive process projects required. **Prerequisites: ES 382, CHE 365, CHE 453, CHE 473**

**CHE 3103 PLASTICS AND CORROSION 3-0-3**

An introduction to the engineering properties of plastics and the fundamentals of corrosion. The effect of the environment on the corrosion of metals, weathering and the deterioration of plastics are examples of some of the topics covered. **Prerequisites: CH 104, PH 124**

**CHE 400X SPECIAL PROBLEMS IN CHEMICAL ENGINEERING VARIABLE CREDIT**

Course content arranged according to the student's abilities and with the permission of the chair of the department. No student may pursue this course off-campus during his or her last semester prior to graduation.

**CHE 4043 AIR DISPERSION MODELING 3-0-3**

Air pollution control regulations and the equipment that is used to monitor and control air pollution are studied. Characterization of particulate and gases and vapors are included. Control technologies such as cyclones, ESP, bag houses, incinerators, adsorption and absorption are presented. **Prerequisite: Junior standing**

**CHE 4073 BIOCHEMICAL ENGINEERING 2-3-3**

Microbiological and biochemical phenomena are treated from an engineering standpoint. Course topics include an overview of basic biological concepts along with the modern techniques of biotechnology. Mathematical models of enzyme and whole cell systems are derived and discussed. Commercial and laboratory reactors as well as separation techniques are studied. **Prerequisite: MA 233**

**CHE 4083 PLANT MANAGEMENT 3-0-3**

A comprehensive overview of the factors and issues which must be considered for the successful management and operation of a chemical plant. Typical areas addressed include process evaluation and optimization, maintenance operations and planning, environmental pollution control and hazardous waste management, manufacturing economics, plant safety, labor relations, community relations and regulatory compliance. **Prerequisite: Junior standing**

**CHE 4173 BIO-SEPARATION PROCESSES 2-3-3**

This course will examine the fundamentals of separation processes used to isolate and purify biochemical products such as whole cells, enzymes, food additives, and pharmaceuticals. Topics to be discussed include cell disruption, centrifugation, filtration, membrane separations, extraction, and chromatographic separation processes. The laboratory portion of the course will include experiments covering the above topics. **Prerequisites: CHE 335 or ES 343 and ES 323 or permission of instructor**

### **CHE 4193 HIGH POLYMER PROCESSES 2-3-3**

The chemical and engineering aspects of high-polymers, structure, property and relationships. Physical methods of characterizing high polymers, basic chemistry and kinetics of polymerization reactions, industrial polymerization processes. Compounding and processing of plastics and elastomers, molding, extrusion and other polymer-manipulation techniques. **Prerequisites: CH 203, CHE 335**

### **CHE 4223 SELECTED TOPICS IN THE ENGINEERING SCIENCES 3-0-3**

This course is divided into three 5 week long modules. The first module will cover basic electricity and circuit analysis, as well as process measurement and instrumentation. The second module will introduce statics and strengths of materials while the final module will introduce the properties of materials and material science. **Prerequisite: PH 124**

### **CHE 4273 PHARMACEUTICAL PROCESSES 2-3-3**

The objective of this course is to provide students with an overview of the pharmaceutical process industry from an engineering standpoint. Special emphasis will be given to biologically derived pharmaceuticals. Topics in the course include the drug discovery, drug development, and drug manufacturing processes including cGMP. The course also covers fermentation selection, operation and control, and unit operations associated with recovery and purification. The course concludes with finished product preparation and packaging. The laboratory time will be used to tour pharmaceutical production facilities. **Prerequisites: CHE 335 or ES 343 and ES 323 or permission of instructor**

## **COOPERATIVE EMPLOYMENT**

### **CO 050 CO-OP EMPLOYMENT**

For cooperative education (co-op) students only. Co-op employment in a professional environment with emphasis on training oriented to students who are majoring in an engineering, environmental science or computer science program. Co-op students must pre-register for this course before each semester's work assignment. The final cooperative education (co-op) work assignment must be within the calendar year prior to graduation. While enrolled in this course, a student is considered a full-time Tri-State University student. **Prerequisite: Sophomore standing with a minimum GPA of 2.0**

### **CO 453 CO-OP WORK EXPERIENCE 3 CREDITS**

To obtain cooperative education endorsement on the degree, the student must register for this course. While enrolled in this course, the student must complete a formal report on his/her co-op work experience. The report must be completed by the eighth week of the semester. **Prerequisites: Senior standing, minimum of three semesters of CO 050 Co-op Employment**

## **COMMUNICATION**

### **COM 163 INTERPERSONAL COMMUNICATION 3-0-3**

Communication concepts and principles are pragmatically applied to interpersonal communication in work, college, dating, family, and social settings. Communication exercises, role plays, and case studies enable students to analyze communication dynamics and improve communication skills employing language, nonverbal communication, listening, perception of self and others, relationship development and assertiveness. Extensive training in conflict management skills and analysis.

### **COM 203 MEDIA AND COMMUNICATION 3-0-3**

Provides an introductory historical and expository survey of key mass media and popular art forms (including books, newspapers, magazines, radio, film, television, photography, music, advertising, and the Internet). Emphasizes, through exercises in becoming "media literate," the persuasive, often insidious, power of society's "consuming images," both visual and aural. **Prerequisite: ENG 113 or ENG 133 or permission of the Instructor**

**COM 213 BUSINESS COMMUNICATION 3-0-3**

Emphasis on research and effective written and oral communication. Topics include report writing, professional correspondence, communication related to the employment process, and oral presentations using PowerPoint. **Prerequisites: ENG 103 or ENG 104, ENG 113 or 133, and SP 203**

**COM 223 THEORIES AND PRACTICES IN COMMUNICATION 2-2-3**

An introduction to the disciplines and professions of communication. Considers quantitative, qualitative, and humanistic research and theories for understanding language, nonverbal communication, listening, persuasion/rhetoric, and communication context. Indicates how communication knowledge, research techniques, and skills are employed in various professions and considers professional preparation strategies such as communication portfolio development. **Prerequisite: ENG 103 or ENG 104**

**COM 233 INTERCULTURAL COMMUNICATION 3-0-3**

A study of the need for communication which transcends ethnic, racial and cultural boundaries. The course attempts to foster mutual understanding among various cultures by examining the following topics: nonverbal communication, stereotypes, and concepts of time, family, gender and religion.

**COM 323 BROADCASTING AND ELECTRONIC COMMUNICATION 3-0-3**

Discusses the principles, techniques, practices, skills and professional requirements of communication professions, including broadcasting, that employ electronic media. Includes media writing. **Prerequisites: SP 203, SP 212, or permission of the Instructor**

**COM 363 PERSUASION AND ARGUMENTATION 2-2-3**

Knowledge of concepts and principles of persuasion, rhetoric, and argumentation is applied through debate and other exercises designed to improve skill in reasoning, argumentation, persuasion, planning, and rational decision-making. Students develop skill in analyzing and planning worthy and effective oral, written, and mediated persuasive communication.

**Prerequisites: ENG 113, SP 203**

**COM 373 TOPICS IN COMMUNICATION 3-0-3**

Detailed survey of one of the major areas within the discipline of communication. The course changes each time it is offered, with the specific topic announced in the class schedule.

**COM 383 JOURNALISM 3-0-3**

Discusses the principles, practices, and professional requirements of the journalism profession. Focuses on principles of news writing and copy editing. Students may have the opportunity to work on the student newspaper, *The Triangle*, or the yearbook, *Modulus*. **Prerequisite: ENG 113**

**COM 413 TEAM & ORGANIZATIONAL COMMUNICATION 3-0-3**

Concepts and skill development for effective oral and written communication in task-oriented teams, small groups, and organizational contexts. Considers communication techniques to improve problem solving and decision-making while fostering team/organizational cohesiveness and productivity. Written and oral team projects apply the techniques and refine effective communication skills essential for team and organizational contexts. **Prerequisite: COM 213 or ENG 133, or permission of Instructor**

**COM 463 PUBLIC RELATIONS 3-0-3**

Considers knowledge and skills needed in public relations, including the PR planning, decision-making, and problem solving process of research, objectives, programming, and evaluation. Case studies and problems apply planning and execution of PR campaigns and relations with a variety of publics: media, employees, members, communities, government and the public, investors, consumers, international, and special groups. Includes crisis and emergency PR and PR aspects of integrated marketing communications. Includes news releases and other PR writing, crisis and emergency PR and PR aspects of integrated marketing communications. **Prerequisites:**

**COM 213, COM 263 or COM 413, or permission of the instructor.**

**COM 3001 DIRECTED ACTIVITIES IN COMMUNICATION 0-2-1**

Individual participation in supervised on-campus communication activities. May be repeated for credit if taken to develop significantly different skills each time, not to exceed three total hours. The course is graded on a Satisfactory/Unsatisfactory basis. **Prerequisite: Permission of the Department Chair**

**COM 400X INTERNSHIP IN COMMUNICATION VARIED (1-3 HRS.)**

Individual internship in communication with variable credit of from one to three hours. May be repeated for credit, not to exceed four hours total. COM and ENG majors taking COM 400X cannot take COM 4014 and must take a different capstone course. **Prerequisites: At least a 2.5 G.P.A. and permission of the Department Chair**

**COM 4014 SENIOR CAPSTONE INTERNSHIP IN COMMUNICATION 0-6-4**

An internship including capstone requirements, such as submission of a COM or ENG program portfolio. **Prerequisites: Must not have taken COM 400X, senior COM or ENG major with at least a 2.5 G.P.A., and permission of the Department Chair**

**COM 410X INDEPENDENT STUDIES IN COMMUNICATION VARIED ( 1-4 HRS.)**

An individualized reading and research project in the communication discipline. **Prerequisite: Permission of the Department Chair.**

**COM 4282 SENIOR COMMUNICATION PROJECT PROPOSAL 1-2-2**

Application of communication principles and skills by planning and developing a formal proposal for a capstone communication campaign or project. **Prerequisite: Senior COM or ENG major**

**COM 4292 SENIOR COMMUNICATION PROJECT 0-4-2**

Application of communication principles and skills by implementing and evaluating a capstone communication campaign or project. **Prerequisite: Must have taken COM 4282 the previous semester**

**COMMUNITY VOLUNTEER****COV 101 COMMUNITY VOLUNTEER 0-2-1**

Students perform volunteer work assisting and advancing adult literacy in Steuben County under the direction of the Steuben County Literacy Coalition. The course is graded on a pass/fail basis and may be taken twice.

**COMPUTER SCIENCE****CS 103 COMPUTERS AND APPLICATIONS 3-0-3**

Historical aspect of computing, terminology, concepts, principles, and use of computer in solutions of business, scientific and educational decision-making problems. Introduction to system structures, storage media, peripheral equipment, communications and Web development.

**CS 111 SPREADSHEETS 1-0-1**

Spreadsheet layout and design, range addressing, templates, labels, functions, formulas, formatting, data table features, graphs, styles, printing options, file management. Intermediate topics include data base features, worksheet protection, table lookups, data validation, goal seek, exporting/importing text, macros, pivot tables, trend lines, object linking and embedding (OLE). **Prerequisite: CS 103 or experience with PC's**

**CS 113 BUSINESS COMPUTER APPLICATIONS 3-0-3**

This course emphasizes predominant software packages in word processing, spreadsheets, presentation graphics, database management and e-mail usage, with an eventual goal of the student gaining certification in those areas. **Prerequisite: CS 103 or advanced placement**

**CS 132 VISUAL BASIC PROGRAMMING 2-0-2**

Programming fundamentals using VBasic, control objects, event-driven Windows applications, forms, functions, arrays, parameter passing, graphical user interface, using components of an integrated development environment. **Prerequisite: MA 113**

**CS 163 PROGRAMMING IN "C" 3-0-3**

Algorithmic problem solving and programming using top-down design, stepwise refinement and functional decomposition. Declarations, operations, assignment conditional and loop statements, parameter passing, arrays and structures. **Prerequisite: MA 113**

**CS 203 SYSTEMS ANALYSIS 3-0-3**

A study of the phases of the development cycle of information systems, including preliminary investigation, requirements determination, analysis design, development testing, implementation and evaluation. **Prerequisite: CS 103 or equivalent**

**CS 213 DIGITAL FORENSIC SCIENCE 3-0-3**

This course introduces the student to investigative techniques involving computers and other electronic devices. Topics include investigative procedures, computer hardware, data recovery methods and laws concerning digital devices. This course also covers how computers are used in investigations. **Prerequisite: CS 103 (Same as FS 213 and LE 213)**

**CS 222 PROGRAMMING IN COBOL 2-0-2**

Syntax of the COBOL language with emphasis on business applications. Includes control breaks, file I/O, data integrity, and arrays. **Prerequisite: MA 113**

**CS 233 COMPUTER ORGANIZATION 3-0-3**

Assembly language programming, computer arithmetic, logic, hardware controller design, addressing, opcodes, interrupts, macros, stored data and program concepts. **Prerequisite: CS 163 or equivalent**

**CS 253 DATA STRUCTURES I 3-0-3**

Arrays of structures, arrays of addresses, searching, sorting, merging, analysis of algorithms, linked lists, stacks, queues, introduction to trees, introduction to recursive algorithms, backtracking. A significant amount of programming expected. **Prerequisite: CS 233**

**CS 263 DATA BASE MANAGEMENT 3-0-3**

Data storage concepts, file organization, data base representation, descriptions, software reliability, security, integrity, relational data bases, query languages. **Prerequisite: CS 103**

**CS 282 COMPUTER TEACHING METHODS 2-0-2**

Under the guidance of a faculty advisor, a student presents computer topics and assignments in a class such as CS 162 or CS 132. Student evaluates software for instructional purposes. **Prerequisite: CS 163 or CS 132**

**CS 283 WEB PROGRAMMING 3-0-3**

Web publishing software, HTML code, style sheets, Java script, VB script, dynamic HTML, active server pages, Perl, publishing on the Internet. **Prerequisite: CS 233**

**CS 293 OPERATING SYSTEMS 3-0-3**

Operating concepts including tasking, processes, coordination and synchronization, physical and virtual memory, device management, security and protection, resource allocation, networking. Shell scripts written in UNIX/LINUX. **Prerequisite: CS 233**

**CS 303 SYSTEM MANAGEMENT 3-0-3**

Introduction to system software, including concepts and theory of operating systems, environment options, utility programs and introduction to network concepts. **Prerequisite: CS 233**

**CS 313 MODERN LANGUAGES AND PRACTICES 3-0-3**

Overview of programming languages, finite state automata, regular expressions, context free grammars, language transition systems, programming paradigms emphasizing objects.  
**Prerequisite: CS 253**

**CS 323 OPERATIONS RESEARCH 3-0-3**

Computer solution of mathematical models for decision making, linear dynamic and integer programming, critical path scheduling, queuing theory, game theory, resource allocation. (Uses computer.) **Prerequisites: CS 132 or CS 163, MA 253 or MA 393 (same as MA 323)**

**CS 343 COMPUTER ARCHITECTURE 3-0-3**

Advanced assembly language, subroutine linkage, linking and loading, object files with relocatable and non-relocatable code. Machine representations and hardware interrupts.  
**Prerequisite: CS 233**

**CS 353 DATA STRUCTURES II 3-0-3**

Data structures from an object-oriented paradigm, stacks, queues, general trees, B-Trees, hash tables, graphs, analysis of algorithms. A significant amount of programming expected.  
**Prerequisite: CS 253 or equivalent**

**CS 363 COMPUTER APPLICATIONS 3-0-3**

Discrete event simulation using simulation language. Applications to manufacturing and industry, queuing problems. **Prerequisites: CS 132 or CS 163, MA 253 or MA 393**

**CS 371 MICROCOMPUTER LABORATORY 0-2-1**

Students work with both hardware and software components. **Corequisite: CS 373**

**CS 373 MICROCOMPUTERS 3-0-3**

Hardware considerations include system board features, memory, hard drive, floppy drives, I/O devices, and comparison of CPU features, CMOS/BIOS firmware. Operating system features, configurations, setup options, multimedia technology, software installation, configuration. Students present PC-related topics. **Prerequisite: CS 233**

**CS 383 COMPUTER GRAPHICS 3-0-3**

Graphic geometric transformations and data structures for viewing objects. Algorithms for windows, viewports, hidden surface elimination. Display architecture and graphic file formats.  
**Prerequisites: CS 253, MA 213**

**CS 403 ADVANCED DATA BASE 3-0-3**

Advanced topics for relational and object oriented data base, enhanced query, tables, report features, macros, & Visual Basic applications, relational algebra including RAR modeling.  
**Prerequisites: CS 132, CS 263, CS 233**

**CS 423 MANAGEMENT INFORMATION SYSTEMS 3-0-3**

Management information systems, planning and development, using business, industrial related environments. Assesses the value and cost of information derived from the system. Requirements analysis, specification, design, implementation, testing, validation, maintenance.  
**Prerequisites: CS 203, CS 233, CS 293, or CS 303**

**CS 433 COMPILER CONSTRUCTION 3-0-3**

Survey of topics related to compiler design, including parsing, table processing, code generation and optimization. **Prerequisite: CS 353**

**CS 453 INTRODUCTION TO COMPUTER THEORY 3-0-3**

Mathematical definitions of programming systems, finite automata, and regular grammars, Turing theory, robotic theory, structure of computer computations and artificial intelligence.  
**Prerequisites: CS 353, MA 213**

### **CS 300X COMPUTER PROJECT I VARIABLE CREDIT**

With faculty assistance, student submits project proposal for approval from Department Chair. (See department chair for policy regarding independent study.) **Prerequisite: Permission of the Department Chair**

### **CS 400X COMPUTER PROJECT II VARIABLE CREDIT**

With faculty assistance, student submits project proposal for approval from Department Chair. (See department chair for policy regarding independent study.) **Prerequisite: Permission of the Department Chair**

## **EARTH SCIENCE**

### **EAS 143 CONSERVATION 2-2-3**

The study of the mineral, air, water, soil and biological resources and how they relate to man's use of the environment. Methods used in management of these resources evaluated on long-range productivity needs and pollution side effects. Economic, ecological and sociological criteria are considered. **(Same as BIO 143)**

### **EAS 203 OCEANOGRAPHY 2-2-3**

A description of the oceans and their relation to humans. The principles of physical, chemical, geological and biological oceanography are used to explain the ocean environment. Society's effect on the oceans and problems and potentials of utilizing the natural resources of the sea included. **Prerequisites: A lab science and MA 113 (Same as BIO 203 and GEO 203)**

### **EAS 213 PHYSICAL GEOGRAPHY 3-0-3**

An analysis of the spatial and functional relationships among landforms, climates, soils, water, and the living world. This course also addresses the connections between environmental processes and human activity, such as human impact on the environment. **(Same as GEO 213)**

### **EAS 253 WEATHER & CLIMATE 3-0-3**

Elementary description of the atmosphere: its motion systems, thermal characteristics, clouds and precipitation, weather map interpretation and analysis; climates of the United States. The text conveys meteorological concepts in a visual, practical and non-mathematical manner.

### **EAS 273 GEOLOGY 3-0-3**

An introduction to the field of geology. Study of minerals and rocks and their formation, within the context of the earth's geologic history. Emphasis on soils, running water and groundwater. Plate tectonics, glaciers, volcanoes, erosion and weathering are also covered. Non-lab science only. **(Same as GLY 273)**

## **ELECTRICAL AND COMPUTER ENGINEERING**

### **ECE 112 PROTOTYPING AND PROJECTS 1-2-2**

An introduction to electrical and computer engineering by means of lectures and labs that teach students to prototype circuits in simulation and/or prototyping boards, and to program a simple PLC or microcontroller. Projects should result in working prototypes for both a simple soldered circuit and a sensor-computer-actuator system.

### **ECE 221 CIRCUITS I LABORATORY 0-2-1**

An introduction to the use of basic electrical measuring instruments and to the properties of simple, passive circuit implementations. Measurement of voltage, current, time, frequency and gain. An introduction to the use of breadboarding. Emphasis is placed on oscilloscope and DMM use. **Corequisite: ECE 223**

### **ECE 223 CIRCUITS I 3-0-3**

Covers foundation topics in linear circuit theory including electrical quantities, element constraints; rules, laws, theorems, and circuit analysis techniques. Signal models are developed for elementary non-periodic forcing functions and their Laplace transforms defined. Time-domain

circuit problems are transformed to the s-domain and solved by matrix and Laplace inversion techniques. The important concept of an s-domain network function is developed in terms of the impulse response. **Prerequisites: MA 134; PH124 or ECE 112**

#### **ECE 224 CIRCUITS II 4-0-4**

Network functions for driving-point and transfer functions are related to pole-zero diagrams. The P-Z diagram and Bode Plots are used to illustrate frequency response. Single-frequency analysis is implemented using the phasor notation and this is applied for ac power calculations. Response to general periodic functions is obtained by the principle of superposition and the Fourier Series. The linear transformer and ideal transformer are studied and the operational amplifier is introduced as an ideal element. **Prerequisite: ECE 223. Corequisite: ECE 221.**

#### **ECE 263 C++ & OBJECT-ORIENTED DESIGN 3-0-3**

An introduction to an advanced programming language, C++, and object technology. Emphasis is placed on learning object-oriented analysis and design methods. **Prerequisite: CS 162**

#### **ECE 291 DIGITAL SYSTEMS I LABORATORY 0-2-1**

Basic theoretical concepts of digital logic design are put into practice through the use of computer simulations and breadboarding of circuit designs. Basic concepts of circuit prototyping and troubleshooting are presented. **Corequisite: ECE 293**

#### **ECE 293 DIGITAL SYSTEMS I 3-0-3**

Number systems, Boolean algebra, minimization of Boolean functions, logical design of combinational circuits, introduction to sequential machines, and the design of several digital systems. Introduction to design automation tools: schematic capture, timing verification, system simulation and documentation. **Corequisite: ECE 291**

#### **ECE 301 DIGITAL SYSTEMS II LABORATORY 0-2-1**

Students are assigned several design projects in which they go through the entire design process. Designs are implemented using FPGA arrays. **Corequisite: ECE 303**

#### **ECE 303 DIGITAL SYSTEMS II 3-0-3**

Introduction to hardware description languages, including VHDL. Design of digital systems using FPGA arrays. Sequential machine design: multi-input system controller design, next state decoder design, memory systems, and output decoder design. **Prerequisite: ECE 293; Corequisite: ECE 301**

#### **ECE 311 ANALOG CONTROL SYSTEMS LABORATORY 0-2-1**

Time response and frequency response measurement of servomotor systems; modeling linear systems; model-based compensator design. **Corequisite: ECE 313**

#### **ECE 313 ANALOG CONTROL SYSTEMS 3-0-3**

Introduction to control systems; mathematical models; feedback characteristics; open and closed-loop systems, steady-state error; performance measures; stability of linear feedback systems: root-locus, Bode diagrams, Nyquist criterion. Design of simple control systems, and feedback control systems using compensation techniques. **Prerequisite: ECE 224; Corequisite: ECE 311**

#### **ECE 323 Modeling and Analysis 2-1-3**

This course bridges the gap between the device-based topics of circuits and the signal-and-system topics of controls, DSP, and communications. We review transfer functions, and introduce block diagrams (with feedback) and their analysis and manipulation using linear algebra up to eigen-analysis. Solution methods include, but are not limited to, mathematics and simulation software. Lab data leads to linear, nonlinear, and linearized models for devices. Fourier analysis and block diagrams are applied to develop and apply these models. Sampling, quantization, and reconstruction via filtering apply the techniques taught, and formalize numerical solution. **Prerequisites: MA 164, ECE 224**

**ECE 331 DIGITAL SIGNAL PROCESSING LABORATORY 0-2-1**

Sampling and reconstruction; audio signal and image processing with linear systems; filter design; simulation and non-real-time algorithm implementation with MATLAB and SIMULINK.  
**Corequisite: ECE 333**

**ECE 333 DIGITAL SIGNAL PROCESSING 3-0-3**

Review of continuous-time signals, Fourier analysis, and spectra; noise; sampling and aliasing; time response and convolution; frequency response and linear filtering, FFT and spectral analysis. Exams include take-home research problems and open-ended design problems. DT equivalents of CT transfer functions. **Prerequisite: ECE 224; Corequisite: ECE 331**

**ECE 343 ENGINEERING INSTRUMENTATION 2-2-3**

Introduction to LabVIEW. Design and construction of virtual instruments. Study of the measurement process, process variables, quality of a measurement, readability, sensitivity, resolution, precision, calibration, uncertainty, and errors. Measurement of voltage, current, resistance, time, temperature, pressure, flow, motion, and force. **Prerequisite: ECE 224, MA 393**

**ECE 351 ELECTRONICS LABORATORY 0-2-1**

Experimental determination of the i-v characteristic of a PN-junction diode. Design of a common-emitter BJT circuit and a common-source FET circuit using measured model parameters. Design of BJT and FET voltage follower circuits. Design of a multiple transistor circuit. Measurement of DC bias conditions and AC frequency response of diode and transistor circuits. Design and testing of Op-Amp circuits including an inverting amplifier, a non-inverting amplifier, an adder and an integrator. Use of SPICE required. Student provides a formal report of one of the laboratories.  
**Corequisite: ECE 354**

**ECE 354 ELECTRONICS 4-0-4**

General amplifier concepts: models, computation of gain, input and output impedance, frequency response considerations and one-pole models. Introduction to PN-junction diodes, BJT system models (CE, CC, and CB), and FET system models (CS, CD, and CG). Analysis and design of BJT and FET amplifier and switching systems based on models using numerical and graphical interpretations, with emphasis on DC stability. BJT and FET small-signal analysis for single and multiple transistor circuits. The ideal Op-Amp (OA): simplified design of amplifier circuits including adder, subtractor, integrator, and differentiator. Use of an OA as a comparator. Use of SPICE required. **Prerequisite: ECE 224; Corequisite: ECE 351**

**ECE 361 ADVANCED ELECTRONICS LABORATORY 0-2-1**

Design and testing of such advanced electronic circuits as phase-locked loops, waveform generators, FM generators, tone generators, frequency shift-keyed square-wave generators and demodulators, Op-Amp oscillators, light-activated switches, 4-20 ma current loops, voltage-to-frequency, and frequency-to-voltage converters. Building and testing of a pc board-based electronic system, e.g., a frequency-stabilized stereo FM transmitter. Use of SPICE required.  
**Corequisite: ECE 363**

**ECE 363 ADVANCED ELECTRONICS 3-0-3**

Design and analysis of multi-transistor circuits including difference and absolute value circuits. Design and analysis of 4-20 ma current loops including sensor interfacing. Operation of analog-to-digital converters (ADC) and digital-to-analog converters (DAC). Design and analysis of instrumentation amplifiers including activation and linearization of sensor bridges. Discussion of an advanced electronic system, e.g. a frequency-stabilized stereo FM transmitter. Discussion of such electronic circuit issues as ground-loops, noise, and EMI shielding. Use of SPICE required.  
**Prerequisite: ECE 354; Corequisite: ECE 361**

**ECE 373 ENERGY CONVERSION 3-0-3**

Introduction to power systems and their components: three-phase power. Magnetic fields and forces in materials; analysis of magnetic circuits, transformers, principles of energy conversion. Operating characteristics of synchronous machines and induction motors. **Prerequisite: ECE 224**

**ECE 382 SUBSYSTEM DESIGN 1-2-2**

This course develops skills in engineering design through the implementation of at least one electronic subsystem requiring both analog and digital components. The course emphasizes subsystem specifications, theoretical and technical research, teamwork, debugging, and design documentation. **Prerequisites: ECE 293, ECE 354**

**ECE 383 SOFTWARE ANALYSIS AND DESIGN 3-0-3**

Analysis of system software requirements that leads to the specification of software architecture. High-level modeling using the Unified Modeling Language (UML). Implementation of a major software project that is driven by the developed UML models. **Prerequisite: ECE 263**

**ECE 391 MICROCONTROLLERS LABORATORY 0-2-1**

Labs require programming and testing projects on microcontroller hardware, thus exercising the development-assembly-simulator-debugger-download tool-chain. Labs culminate in a measurement and control application project. Student teams provide demonstrations and formal reports on their hardware and software designs. **Corequisite: ECE 393**

**ECE 393 MICROCONTROLLERS 3-0-3**

Programming low-cost microcontrollers in assembly. Students will learn to interpret commercial data-sheets so that they can use the memory and interrupt systems on a microcontroller, control the on-chip functional units, and design low-bandwidth input-output interfaces. Projects include both round-robin and interrupt-driven programs. Grading emphasizes modern design models and maintainable code. **Prerequisite: ECE 293; Co-requisite ECE: 391**

**ECE 40X SPECIAL TOPICS IN ELECTRICAL ENGINEERING Varied 1-4**

Special topics of particular interest to electrical and computer engineers are considered. Can be taken more than once for credit as the topics change. **Prerequisites: Established by the Instructor**

**ECE 411 EMBEDDED SYSTEMS LABORATORY 0-2-1**

Hardware and software C-language development tools for microcontrollers. Projects require simulation and implementation, and include interfaces to logic and/or memory devices, and testing by examining and debugging timing. **Corequisite: ECE 413.**

**ECE 413 EMBEDDED SYSTEMS 3-0-3**

Programming microcontrollers in mixed C and assembly. Students will implement systems that include complex peripherals or distributed processing. Students learn the concepts of real-time multitasking systems, including RTOS. We examine compiled code for debugging and optimization, and also introduce more sophisticated techniques of debugging implemented systems. Other topics may include introducing 32-bit machines, performance metrics, power consumption and bootloading. **Prerequisite: ECE 393; Corequisite: ECE 411**

**ECE 423 SOFTWARE ENGINEERING 3-0-3**

Introduction to software engineering, software requirements definition, software requirements document, system modeling, system specification, software design, the design process, verification and validation. Safety critical software. Project management, human factors in software engineering, software management, project planning and scheduling, software cost estimation, software maintenance, configuration management, documentation, and software quality assurance. Design projects using the concepts. **Prerequisite: ECE 383**

**ECE 441 COMMUNICATION SYSTEMS LABORATORY 0-2-1**

Spectral measurements. Transmission of signals through linear systems: effects of linear distortion and noise. CW systems: modulation and demodulation. Sampling and reconstruction systems: waveforms and spectra. Baseband binary systems: line codes, bit rate, noise, matched filters. **Corequisite: ECE 443**

**ECE 443 COMMUNICATION SYSTEMS 3-0-3**

Fourier analysis and its application to signal transmission through channels and systems. Principles of continuous wave modulation systems: frequency-division multiplexing. Sampling theory and analog pulse systems: time division multiplexing. Baseband digital systems; PCM, ISI, noise performance. **Prerequisite: ECE 354; Corequisite: ECE 441**

**ECE 473 DYNAMIC ELECTROMAGNETIC FIELDS 3-0-3**

An introduction to dynamic electromagnetic fields. Maxwell's equations; retarded potentials; electromagnetic waves; transmission lines; waveguides; antennas. **Prerequisite: PH 323**

**ECE 491 CONTEMPORARY ISSUES FOR ENGINEERS 1-0-1**

A seminar based on weekly news sources covering global perspectives on business and engineering, and effects and responsibilities of engineers in society.

**ECE 492 PROJECT MANAGEMENT 2-1-2**

Formal discussion of project management fundamentals: project planning, work allocation, costing, scheduling, milestones, monitoring and review; report writing and presentation; risk management. Professional practice: role of IEEE and management ethics. Review of standards and useful references. Discussion of the required student capstone design project (ECE 493): expectations and formal requirements for the design. **Prerequisite: Consent of advisor**

**ECE 493 DESIGN PROJECT 0-3-3**

Capstone design. **Prerequisite: Consent of the faculty advisor for the project**

**ECONOMICS****ECO 213 MICROECONOMICS 3-0-3**

Introduction to the theory of demand and supply and price determination in market economies. The study of individual consumers and producers, different market structures and the distribution of income.

**ECO 223 MACROECONOMICS 3-0-3**

Introduction to the theory of national income determination for the United States and other global economic systems. The study of fiscal and monetary policy tools and the government's role in promoting stability and growth, and the causes of unemployment, inflation and trade deficits.

**ECO 243 ECONOMICS OF SOCIAL ISSUES 3-0-3**

An economic analysis of social issues, such as the problems of pollution, poverty, crime and the use of drugs. A study of the economic consequences of various social and economic policies, population pressures and related energy and pollution problems. **Prerequisite: ECO 213 (Same as SOC 243)**

**ECO 303 QUANTITATIVE ANALYSIS IN BUSINESS 3-0-3**

This course builds on Designing Operations and applies quantitative techniques to common business problems, preparing the student to make data-driven decisions. Topics include decision theory, Bayesian analysis, forecasting, linear programming, dynamic programming, game theory, transportation models, assignment and scheduling modeling, simulations, and queuing theory. **Prerequisites: MA 253, MGT 353 (Same as ECO 303)**

**ECO 323 MONEY AND BANKING 3-0-3** This course is a study of the principles of monetary economics. An analysis of the structure and operation of financial institutions and the Federal Reserve System is included. The function of monetary policy within the framework of macroeconomic theory is examined. **Prerequisites: ECO 223 (Same as FIN 323)**

**ECO 333 PUBLIC FINANCE 3-0-3** This course involves an investigation of the role of the public sector in economic development. Fiscal policy and the practice of public finance are examined. Topics cover cost functions for public goods, externalities and fiscal federalism. **Prerequisite: ECO 223 (Same as FIN 333)**

**ECO 343 ECONOMIC GEOGRAPHY 3-0-3**

A study of agricultural and industrial production in relation to environmental factors and international interdependence. Includes emphasis upon trade routes and urban trade centers.

**Prerequisite: ECO 223 (Same as GEO 343)**

**ECO 363 COMPARATIVE ECONOMIC SYSTEMS 3-0-3**

A comparison of the capitalist, socialist, communist and mixed economies, theory, history and application of the system in selected countries. **Prerequisite: ECO 223**

**ECO 383 INTERNATIONAL ECONOMICS 3-0-3**

Introduction to the fundamental theories of international specialization and exchange, and international payments; the analysis of processes and organizations for maintaining equilibrium of international economic relationships.

**Prerequisite: ECO 223**

**ECO 393 ECONOMIC HISTORY OF THE UNITED STATES 3-0-3**

A survey of major economic developments in American history. Stresses the changed conditions and values in moving from an agricultural to an industrial society. **Prerequisites: HIS 103, HIS 113 (Same as HIS 393)**

**ECO 453 BUSINESS AND PUBLIC POLICY 3-0-3**

This course includes an analysis of the legal, political and economic framework that has shaped public policy toward business in the United States. It will include the methods as to how public policy is created and its implications for management decision making. The issues that this course will be concerned with are: how public policy is related to societal, community, employee, consumer, and environmental concerns and their implication for business. **(same as BA 403)**

**Prerequisites: MGT 363, ECO 223, LAW 203, MK 303, or permission of the instructor**

**ECO 400X INDEPENDENT STUDIES IN ECONOMICS VARIED (1-4 HRS.)**

Credit earned through directed reading, independent study, research or supervised field work. Maximum 4 hours credit. **Prerequisite: Permission of Department Chair**

**EDUCATION**

*Information presented in this catalog is subject to change at any time depending on actions taken by state (IDOE/DPS) and national (NCATE) accrediting agencies. A student will be responsible for meeting any requirements for licensure that are in effect at the time she/he seeks to be licensed. The requirements may differ from what is presented in this document. Students should remain alert to changes in requirements. Updated information is available from the Franks School of Education.*

**EDU 111 FRESHMAN PRACTICUM 1-0-1**

A study of teaching as a career. The candidate examines conditions and responsibilities at lower elementary, upper elementary, middle school, high school, and alternative school levels. Field experience.

**EDU 211 SOPHOMORE PRACTICUM 1-5-1**

A study of the responsibilities of teaching in a specific setting. The candidate is assigned to an area school according to subject matter and grade level of planned certification. Field experience.

**Prerequisite: EDU 111**

**EDU 212 INTRODUCTION TO MUSIC FUNDAMENTALS 2-0-2**

A study of general music fundamentals and methods. There is an emphasis on integrated instruction and the appropriate use of music to enhance the cognitive and psychomotor domains. Open to elementary and PE (K-12) majors. **Prerequisites: Admission to Teacher Education, EDU 111**

### **EDU 222 EDUCATIONAL PSYCHOLOGY FOR EARLY CHILDHOOD/MIDDLE CHILDHOOD TEACHERS 2-1-2**

A study of the application of basic psychological principles to classroom instruction and the school environment at the K-6 level. Current research about motivation, theories and philosophies of how children learn, and major theories of child growth and development are explored. All developmental domains of children from birth through early adolescence are examined. Field Experience. **Prerequisites: Admission to Teacher Education, EDU 111, PSY 113**

### **EDU 232 EDUCATIONAL PSYCHOLOGY FOR MIDDLE GRADE AND SECONDARY TEACHERS 2-1-2**

A study of the application of basic psychological principles to classroom instruction and the school environment at the middle and high school levels. Motivation, principles of learning, crucial issues and alternative learning environments are explored. All developmental domains of the early adolescent through young adult are examined. Field experience. **Prerequisites: Admission to Teacher Education, EDU 111, PSY 113**

### **EDU 301 INTRODUCTION TO TEACHING PRACTICUM 0-5-1**

An in-depth study of the responsibilities of teaching in a specific setting. The candidate is assigned to an area school according to subject matter and grade level of planned certification. Field experience. **Prerequisites: Admission to Teacher Education, EDU 211, Benchmark #1; Corequisite: EDU 303**

### **EDU 303 INTRODUCTION TO TEACHING 3-0-3**

A study of the problems, purposes, and responsibilities of teaching, including educational standards, deductive and inductive instructional strategies, assessment, needs of diverse learners, daily and long-range planning, classroom management, and parental involvement in the schools. **Prerequisites: Admission to Teacher Education, EDU 211, Benchmark #1; Corequisite: EDU 301**

### **EDU 311 JUNIOR PRACTICUM 1-1-1**

A study of educational programs and practices in schools with multicultural populations. Field experience. **Prerequisites: Admission to Teacher Education, EDU 211**

### **EDU 312 EXCEPTIONAL CHILDREN IN THE SCHOOLS 2-1-2**

A study of exceptional children and programs in K-12 educational settings. Areas of study are program design, identification processes, curriculum development, inclusion, mainstreaming and program evaluation. Special education areas of concentration include learning disabilities, visual/hearing impaired, physically handicapped, emotionally handicapped, and mentally handicapped. (Gifted area of concentration includes academic.) Field experience. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303**

### **EDU 323 FOUNDATIONS OF EDUCATION 3-0-3**

A study of the historical, philosophical, and social aspects of American public education. The legal and financial basis of public education and the rights and responsibilities of teachers and students are reviewed. Significant professional issues are identified and explored. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303**

### **EDU 333 READING IN THE CONTENT AREA 3-1-3**

A study of content area reading at the middle and high school levels. An emphasis on comprehension, study skills, and reading strategies appropriate for the various subject matter disciplines. Field experience. Open to secondary and all-grade majors only. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2**

### **EDU 353 CHILDREN'S LITERATURE 3-0-3**

Major emphasis is placed on selection and reading of quality children's literature associated with early childhood, middle childhood, and early adolescent stages of development. Literary genres are studied in relation to their value to children. Ways to best present literature in the classroom

are explored, including children's responses to literature. Open to elementary and English education majors only. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303**

#### **EDU 412 THE MIDDLE SCHOOL 2-1-2**

A study of the historical and philosophical origins of the middle school. The changing cognitive, physical, social and emotional needs of the middle level learner are examined; team teaching, exploratory, advisor-advisee, intramural activities; scheduling; teacher qualities; parent expectations are examined. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303**

#### **EDU 422 MIDDLE SCHOOL METHODS 2-1-2**

A study of instruction and techniques for successful teaching of middle-level students. Emphasis on planning, application, team teaching, interdisciplinary teaching, interrelationship of subject matter. Field experience. **Prerequisites: Admission to Teacher Education, EDU 412**

#### **EDU 432 PRACTICUM IN TEACHING—SECONDARY 0-10-2**

A supervised field-based experience at the secondary (9-12) level, with an emphasis on effective teaching methods and the philosophy of education. Open to secondary and all-grade majors only. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2; Corequisite: EDU 442**

#### **EDU 441 TEACHING OF READING PRACTICUM 0-5-1**

An in-depth study of the responsibilities of teaching reading in an elementary setting. Field experience. Open to elementary majors only. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2; Corequisite: EDU 445**

#### **EDU 442 SPECIAL METHODS FOR THE SECONDARY TEACHER 2-1-2**

A study of teaching methods designed to facilitate competency in specific subject areas; methods, daily and long-range planning, classroom management, instructional technology, curriculum development, secondary school organization, individualized instruction, motivation, concept development, and interdisciplinary teaching. Open to secondary and all-grade majors only. Field experience. **Prerequisites: Admission to Teacher Education, EDU 232, EDU 301, EDU 303, Benchmark #2; Corequisite: EDU 432**

#### **EDU 445 TEACHING OF READING 5-0-5**

A study of multiple approaches used in the teaching of reading including balanced reading programs, phonics, and literature-based programs. A study of reading methods, strategies, and techniques designed to help children who are experiencing difficulties learning to read. Open to elementary majors only. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2; Corequisite: EDU 441**

#### **EDU 452 ART FOR THE ELEMENTARY TEACHER 2-1-2**

A study of discipline-based art education as it applies to the elementary classroom. Emphasis on the preparation of art projects and the use of art as a tool of learning using a variety of mediums and materials. Open to elementary majors only. Field experience. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2**

#### **EDU 454 METHODS OF TEACHING MATHEMATICS AND SCIENCE 4-4-4**

A study of methodologies, techniques and materials used in the teaching of mathematics and science at the K-6 level. Emphasis is on hands-on science and the use of math manipulatives. National and state curriculum standards specific to teaching mathematics and science are examined and included as critical components of effective lesson/unit planning. Open to elementary majors only. Field experience. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2**

#### **EDU 462 EDUCATIONAL MEASUREMENT 2-0-2**

A study of methods of assessment and evaluation that include standardized tests, teacher-made tests, authentic assessment, rubrics, portfolios, performance assessment, informal assessment.

**Prerequisites: Admission to Teacher Education, EDU 222, and/or EDU 232, EDU 301, EDU 303, Benchmark #2**

**EDU 463 EDUCATIONAL MEDIA AND TECHNOLOGY 2-1-3**

A study of instructional media and technology used in K-12 settings. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303**

**EDU 464 METHODS OF TEACHING LANGUAGE ARTS AND SOCIAL STUDIES 4-1-4**

A study of methodologies, techniques, technology and curricular resources used in the teaching of language arts and social studies at the K-6 level. National and state curriculum standards specific to teaching social studies and oral/written expression in language arts are examined and included as critical components of effective lesson/unit planning. Field experience. Open to elementary majors only. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2**

**EDU 470 SUPERVISED STUDENT TEACHING 1-40-10**

Observation, participation, and teaching in a school under the direction of a master cooperating teacher and university supervisor. Candidate is assigned to an area school for 10-11 full weeks according to subject matter and grade level of planned certification. **Prerequisites: Admission to Teacher Education; senior status; 2.5 GPA in major, overall; Benchmark #3; Corequisite: EDU 471**

**EDU 471 STUDENT TEACHING SEMINAR 1-0-1**

Analysis, synthesis, and reflection based on the student teaching experience. **Prerequisites: Admission to Teacher Education; senior standing; 2.5 GPA in major, overall; and Benchmark #3; Corequisite: EDU 470**

**EDU 472 PRACTICUM IN TEACHING—MIDDLE 0-10-2**

A supervised field-based experience at the middle school (5-8) level, with an emphasis on effective teaching methods and the philosophy of education. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, EDU 412, EDU 422, Benchmark #2**

**EDU 482 PRACTICUM IN TEACHING—ELEMENTARY 0-10-2** A supervised field-based experience at the elementary (K-6) level, with an emphasis on effective teaching methods and the philosophy of education. **Prerequisites: Admission to Teacher Education, EDU 301, EDU 303, Benchmark #2**

**EDU 400X DIRECTED STUDIES IN EDUCATION VARIED ( 1-6 HRS.)**

Individual projects, research, and/or directed studies of contemporary issues in the field of professional education. Credit arranged on an individual basis. **Prerequisite: Approval of the Dean of the Franks School of Education**

## **ENGINEERING GRAPHICS**

**EGR 143 ENGINEERING GRAPHICS 2-2-3**

Graphical communication for engineers by means of sketching and computer-assisted drafting. Fundamentals of orthographic projection and descriptive geometry. Isometric projection. Three-dimensional geometric computer modeling using solid models. Emphasis on developing the skills needed for engineering design.

**EGR 153 ENGINEERING GRAPHICS FOR CE 3-0-3**

Graphical communication by means of sketching and computer-aided drafting. Fundamentals of orthographic projection and descriptive geometry. This course stresses applications of graphic communications, both manually and through the use of CAD systems.

## **ENGLISH**

### **ENG 014 ACADEMIC WRITING 4-0-0**

Review and practice of the basic skills and rules necessary for successful academic writing. **This is a non-credit preparatory course.**

### **ENG 024 ACADEMIC READING 4-0-0**

Review and practice of the basic skills necessary for successful academic reading. **This is a non-credit preparatory course.**

### **ENG 034 ENGLISH PREPARATORY INDEPENDENT STUDY**

This is a non-credit preparatory course.

### **ENG 103 ENGLISH COMPOSITION I 3-0-3**

Intensive training in methods of exposition leading to the ability to write coherent, clear, and persuasive essays. **Prerequisite: Adequate SAT verbal score or ACT English score.**

### **ENG 104 INTENSIVE ENGLISH COMPOSITION I 4-1-4**

Intensive training in methods of exposition leading to the ability to write coherent, clear and persuasive essays. This course also reviews the major conventions used in writing English. A one-hour weekly lecture will provide a general review of these conventions, along with a one-hour weekly lab to provide further instruction either on an individual or group basis. **Placement in this course is determined by SAT verbal score, ACT English score or by successful completion of non-credit preparatory English courses.**

### **ENG 113 ENGLISH COMPOSITION II 3-0-3**

Continuation of ENG 103. Concentration on research paper and library methods. **Prerequisite: ENG 103 or ENG 104**

### **ENG 133 TECHNICAL COMMUNICATION 3-0-3**

Emphasizes writing clear and effective technical documents and professional correspondence. Concentrates on audience adaptation, graphics and document design, electronic and print research, and technical reports and presentations. **Prerequisite: ENG 103 or ENG 104**

### **ENG 153 INTRODUCTION TO LITERATURE 3-0-3**

Introduces the student to literature of some complexity and sophistication, developing a critical vocabulary and skills in reading on an advanced level. Analysis of genre: short fiction, poetry and drama.

### **ENG 204 BRITISH LITERATURE 4-0-4**

A survey of British literature to the present. **Prerequisite: ENG 153**

### **ENG 212 MYTHOLOGY 2-0-2**

An introduction to world mythology, with emphasis on Greek and Roman legends. **Prerequisite: ENG 153**

### **ENG 214 AMERICAN LITERATURE 4-0-4**

A survey of American literature to the present. **Prerequisite: ENG 153**

### **ENG 223 INTRODUCTION TO ENGLISH STUDIES 2-2-3**

Introduces students to the diversity and scope of the field and professions of English studies, including literary criticism, cultural studies, composition and rhetoric, professional writing, and English education. Emphasizes professional opportunities. **Prerequisites: ENG 103 or 104 and ENG 153**

**ENG 253 READINGS IN WORLD LITERATURE 3-0-3**

Readings in selected major works which have influenced thought and culture. Selections may be drawn from (but not limited to) such writers as Dante, Juvenal, Confucius, Montaigne, Rabelais, Cervantes, Moliere, Goethe and Dostoyevsky. **Prerequisite: ENG 153**

**ENG 263 CONTEMPORARY THEMES IN LITERATURE 3-0-3**

A critical study of works of literature selected for their relevancy to current social, ethnic, minority, and ethical problems. Special emphasis placed upon minority writers. **Prerequisite: ENG 153**

**ENG 323 RESTORATION AND EIGHTEENTH CENTURY LITERATURE 3-0-3**

A study of literature from 1660-1798. Authors studied include Moliere and Restoration playwrights, Swift, Pope, Voltaire, Dr. Johnson and others. **Prerequisite: ENG 153**

**ENG 333 STUDIES IN LITERATURE 3-0-3**

Study of selected authors and topics. May be repeated for credit so long as course content is not substantially duplicated. **Prerequisite: ENG 153**

**ENG 363 THE ENGLISH LANGUAGE 3-0-3**

A systematic study of the development of the English language from its medieval beginnings; some consideration of contemporary dialectic and semantic differences; work with etymology. **Prerequisite: ENG 113**

**ENG 393 TEACHING COMPOSITION 3-0-3**

The theory and practice of teaching composition revealed through an introduction to composition scholarship, a review of grammar, and an internship with a TSU composition professor. **Prerequisite: ENG 113**

**ENG 403 BRITISH AND AMERICAN NOVELS I 3-0-3**

A chronological study of the major thematic and structural developments in the novel from its beginnings to the 21st century. Social commentary and satire on classes, monarchy, empire, war, education, religion, marriage, middle class morality. **Prerequisite: ENG 153**

**ENG 413 BRITISH AND AMERICAN NOVELS II 3-0-3**

A continuation of ENG 403. 1890s to present. **Prerequisite: ENG 153**

**ENG 423 DRAMA 3-0-3**

Studies of selected playwrights, movements, trends and developments in world drama from the beginnings to the present day. **Prerequisite: ENG 153**

**ENG 433 SHAKESPEARE AND HIS TIMES 3-0-3**

The close reading of at least eight plays by Shakespeare. Discussion of his life and times, the sonnets, his themes, and the differences between texts and productions. **Prerequisite: ENG 153**

**ENG 443 POETRY 3-0-3**

An investigation of the poetic process through the careful examination of selected poems and statements about poetry. **Prerequisite: ENG 153**

**ENG 453 ADVANCED COMPOSITION 3-0-3**

An advanced study of the principles of structure and style as applied to the writing of exposition, criticism and research papers. **Prerequisite: ENG 113**

**ENG 463 CREATIVE WRITING 3-0-3**

Directed experiments in the original composition of literary essays, plays, short stories, longer narratives or poems. **Prerequisites: ENG 113, ENG 153**

### **ENG 400X DIRECTED STUDIES IN ENGLISH VARIED (1-3 HRS.)**

For senior students of superior ability able to assume a larger share of the responsibility for designing and pursuing a reading research project which is academically respectable.

**Prerequisite: Permission of Department Chair**

### **ENG 4014 CAPSTONE STUDY IN ENGLISH 0-6-4**

A capstone course for students who plan to enter law or graduate school and who are capable of writing a polished, academically significant research paper in the field of English. **Prerequisites:**

**Senior English major, consent of the faculty advisor for the study, and permission of the Department Chair**

## **ENTREPRENEURSHIP**

### **ENT 303 ENTREPRENEURIAL LEADERSHIP 3-0-3**

This course examines leadership, influence, and power as it relates to entrepreneurship with a strong emphasis on entrepreneurial character traits and business ethics. Historical, literary, and contemporary examples of successful entrepreneurs provide a framework for examining the theories of leadership and power.

### **ENT 313 BUSINESS CONCEPTS (FOR NON-BUSINESS MAJORS) 3-0-3**

A survey course designed to introduce non-business majors to business issues and practices. All major functions of business are included (management, marketing, law, finance, economics, operations, accounting, information technology) as well as issues facing the business person (ethics, globalization, motivation, etc.). Not open to students enrolled in the business programs.

**Prerequisites: ENT 303**

### **ENT 323 ENGINEERING CONCEPTS (FOR NON-ENGINEERING MAJORS) 3-0-3**

Fundamental engineering concepts are introduced, with an emphasis on developing foundations for lifelong learning of technological issues. Broad-based technologies and the importance of technical communication are emphasized. Current and future technologies are discussed by visiting practitioners. Not open to students enrolled in the engineering and technology programs.

**Prerequisites: ENT 303**

### **ENT 333 ENTREPRENEURSHIP SEMINAR SERIES 3-0-3**

Through case studies, simulations, guest lectures, and reading, students become aware legal business structures, legal issues related to emerging ventures (patents, copyrights, trademarks, licensing, franchising, employment law, etc.), venture financing, and venture marketing.

**Prerequisites: ENT 313 or 323**

### **ENT 413 CREATIVITY – PRODUCT/SERVICE DEVELOPMENT 3-0-3**

This course explores the nature of creativity from four interacting viewpoints: person, process, product, and environment. Its goal is to develop students' awareness of their creative potential. Activities include group work, discussion, and the development of an idea or invention.

**Prerequisites: ENT333**

### **ENT 423 ENTREPRENEURSHIP & VENTURE PLANNING 3-0-3**

This course focuses on entrepreneurship and small business management. Through case studies, simulations, guest lectures, reading and business plan development, students become aware of the unique challenges facing small business owners and entrepreneurs. Students become familiar with the resources available to small business owners, by developing and presenting a business start-up plan. **Prerequisites: ENT 413**

## **ENGINEERING SCIENCE**

### **ES 213 STATICS 3-0-3**

The first course in engineering mechanics. Force and moment vectors, equivalent systems, trusses, frames, and machines. Equilibrium of particles and rigid bodies. Static friction. Centroids and moments of inertia. **Corequisites: PH 124, MA 164**

### **ES 223 DYNAMICS 3-0-3**

Kinematics of absolute and relative motion of particles and rigid bodies. Kinetics of particles and particle systems. Principles of work and energy, impulse and momentum, and impact. Kinetics of rigid bodies in plane motion. **Prerequisite: ES 213**

### **ES 233 ENGINEERING MATERIALS 3-0-3**

A study of the structure and properties of materials. Materials covered include metals, ceramics, polymers and composites. Mechanical properties are emphasized but electrical properties, thermal properties, and environmental interactions are addressed. Structural features at the atomistic level, the crystal structure level, and the microstructure level of single and polyphase materials are studied in terms of their effects on material properties. **Prerequisite: CH 104; Corequisite: PH 124**

### **ES 243 SOLID MECHANICS 3-0-3**

Concepts of stress and strain in engineering materials. Hooke's law and Poisson's relationship. Analysis of axial, shear, flexural, and torsional stresses. Combined stress. Shear and moment distribution in beams. Deformation of structural members. **Prerequisite: ES 213**

### **ES 253 ELECTRICAL SCIENCE 3-0-3**

Basic voltage-current-energy relationships in circuit elements. Fundamental circuit laws. Resistive networks and network theorems. Sinusoidal steadystate response and phasors. Power and energy in AC circuits. **Prerequisites: MA 134, PH 124**

### **ES 313 THERMODYNAMICS 3-0-3**

Introduction to properties of substances and ideal gases by use of tables. Introduction to thermodynamic concepts of systems, control volumes, heat, work and internal energy. Formulation of the First and Second Laws of Thermodynamics with engineering applications. **Prerequisites: MA 164, PH 124**

### **ES 323 FLUID MECHANICS 3-0-3**

Fundamental properties of fluids. Fluid statics. Kinematics of fluid motion. Conservation of mass, energy and momentum as applied to compressible and incompressible fluids. Similitude. Introduction to laminar and turbulent boundary layers. **Prerequisite: ES 213; Corequisite: MA 213**

### **ES 343 HEAT TRANSFER 3-0-3**

Introduction to heat transfer analysis. Study of the primary modes of heat transfer: conduction, convection and radiation. Engineering applications include heat exchangers, cooling of electronic components, engines, insulation. **Prerequisites: MA 233, ES 313**

### **ES 382 ENGINEERING ECONOMICS 2-0-2**

An introduction to the economics component of design and problem solving. Application of economic concepts from present and future value of money, depreciation and taxes to problems involving replacement studies and selection between alternative uses of capital. Methods include equivalent worth, rate of return, and incremental techniques. **Prerequisites: Junior/Senior standing**

## **ENGINEERING TECHNOLOGY**

### **ETD 103 BASIC TECHNICAL DRAWING 2-2-3**

A course in the fundamentals of drafting. Use of instruments and materials, lettering and techniques of penciling. Primary emphasis is on shape and size description of three-dimensional objects. Preparation of drawings for various reproduction processes. Application of drawing geometry and study of sections and conventional practices.

**ETD 113 GEOMETRIC DIMENSIONING AND TOLERANCING 3-0-3**

Continuation of ETD 103. Advanced applications of dimensioning principles. Applications of tolerances and precision dimensioning. Introduction of geometrical dimensioning and tolerance. True position dimensioning applications. Comparison of decimal and metric system of dimensioning as applied to engineering drawings. **Prerequisite: ETD 103**

**ETD 123 MANUFACTURING MATERIALS AND PROCESSES 3-0-3**

Physical properties of ferrous and nonferrous materials, such as wood products, plastics and rubber. Heat treating and testing of metals. Industrial practice in the working of metals and plastics. Fundamentals of metallurgy, machining, casting, welding and forming.

**ETD 143 DESCRIPTIVE GEOMETRY 3-0-3**

Instruction in the applications of the principles of multiview drawing and the solutions of space problems. Methods for solution of point, line and plane problems, primary and successive auxiliary views, piercing points, intersection of planes and the angle between planes, parallelism and perpendicularity, revolution, intersection and development problems. **Prerequisite: ETD 103**

**ETD 153 ENGINEERING DOCUMENTATION SYSTEMS AND PROCEDURES 2-2-3**

Working sketches and preparation of finished detail and assembly drawings from design sketches and layouts. Familiarization with various drafting room standards. Introduction to part number systems, bill of materials, and the various forms used in industrial drafting rooms. **Prerequisites: ETD 113, ETD 123, ETD 173**

**ETD 163 ENVIRONMENTAL HEALTH AND SAFETY 3-0-3**

Presentation of a safety philosophy and principles of safety. A study of occupational safety and industrial hazard control with a focus on the basic principles of accident prevention. An analysis of safety performance, cost and identification of accident potential. Emphasis is placed on concepts and techniques proven useful in reducing accidents and injuries. **Prerequisite: ETD 123**

**ETD 173 COMPUTER AIDED 3-D MODELING 1-4-3**

A survey of CAD/CAM systems, techniques, and applications. Hardware and software characteristics, capabilities and cost. **Prerequisite: ETD 103**

**ETD 203 BASIC MECHANISMS 3-0-3**

Introduction to simple mechanisms and their kinematics. Study of linkages, cams, gearing and belts. **Prerequisites: PH 114, MA 123**

**ETD 223 COMPUTER AIDED PRODUCT DESIGN 2-2-3**

Introduction to product analysis, development and design. Conceptual design, design for manufacture, reverse engineering, concurrent engineering, designing for special needs, prototyping and product safety. Integration of previous work into complete product design project. **Prerequisites: ETD 153, ETD 173**

**ETD 233 METHODS, TIME, AND MOTION STUDY 3-0-3**

Fundamentals and principles of motion economy, micro-motion, simultaneous operations. Job description and job analysis are presented. Also presented are time study allowances and work sampling. Included are standard data and process reports. **Prerequisites: ETD 123, ETD 163**

**ETD 243 STATICS AND STRENGTH OF MATERIALS 3-0-3**

Principles of statics, analysis of structures, graphic methods, and friction as applied to the inclined plane and wedge. Simple direct and combined stresses, determination of structural sizes as function of unit stress, and physical properties of the materials. **Prerequisites: MA 173, PH 114**

**ETD 253 MEASUREMENT TECHNIQUES 3-0-3**

Emphasis on methods and principles of measuring basic physical qualities for inspection and quality control. Laboratory work in measuring physical variables such as size, flatness, circularity, and total run-out. An introduction and project work in related areas such as reverse engineering,

functional gage design, and statistical process control. **Prerequisites: ETD 113, ETD 123, ETD 173**

**ETD 263 ELEMENTS OF MACHINES 3-0-3**

Design principles and calculations of machine elements. Consideration of economy, loads, stresses, deformations and environment. **Prerequisite: ETD 243**

**ETD 273 ELECTRICAL FUNDAMENTALS 3-0-3**

Electrical circuit principles. Basic circuit laws, motors, generators, controls, distribution systems, and electrical codes are presented. Theory of electricity and magnetism, electrical phenomena and measurements. Circuits, power, AC phenomena, capacitance and conduction are studied.

**Prerequisites: MA 113, PH 114**

**ETD 303 JIG AND FIXTURE DESIGN 2-2-3**

A study of the basic principles of jig and fixture design. Manufacturing processes and properties of materials. Manufacturer's standard parts and their use. Planning sketches, design layout and detailing of machine tools. **Prerequisite: ETD 153**

**ETD 353 ADVANCED CAD 1-4-3**

The use of the CAD system as an engineering tool for the presentation of engineering problem solving. The set-up and maintenance of CAD systems. A study of the advanced techniques that are available on typical CAD systems and their applications in industrial systems. **Prerequisite: ETD 173**

**ETD 413 PRODUCTION SPECIFICATIONS AND TECHNIQUES 3-0-3**

The study of production systems including production specifications, engineering standards, materials flow, ergonomics, industrial safety, plant layout, and automation. Particular attention is given to techniques used in local manufacturing plants. The course will be presented in a series of lectures and field trips concerning specific elements of the production process. **Prerequisites: ETD 123, ETD 353, MA 173**

**ETD 423 ADVANCED DESIGN TECHNIQUES 3-0-3**

Study of advanced design methods as used in engineering design. A study of the design process as practiced in the industrial setting. The procedures used from the start of a design until its final production including presentations and design reports. **Prerequisites: ETD 223, ETD 263**

**ETD 433 COMPUTER NUMERICAL CONTROL PRINCIPLES 2-2-3**

History of numerical control and comparison with conventional machining systems. Standard coding system and control terminology. **Prerequisites: ETD 123, ETD 173**

**ETD 513 CAD/CAM 3-0-3**

Techniques utilizing PC computers and modern CAD/CAM software; solid modeling, finite element analysis; design for manufacturing, including assembly. CNC machining couples with CAD design. **Prerequisite: Graduate standing**

**ETD 523 PARAMETRIC MODELING 3-0-3**

Develop skills in modeling using screen layout, space viewing, coordinates, workbenches building surfaces, and solids. Exploration of product concept through design, assembly, testing, manufacturing and modeling with rendering capabilities. **Prerequisites: Graduate standing, Computer-Aided Drafting and Design**

**ETD 533 COMPUTER AIDED DESIGN ANALYSIS 3-0-3**

A course in Computer-Aided design analysis with the use of parametric modeling and design using Finite Element Analysis (FEA). **Prerequisites: Graduate standing, Calculus**

**ETD 543 COMPUTER NUMERICAL CONTROL 3-0-3**

Principles and applications of numerical control of machine tools. Testing and specification of machine tool accuracy and repeatability. **Prerequisite: Graduate standing**

**ETD 553 STATISTICAL PROCESS CONTROL 3-0-3**

Statistical process control principles for understanding quality assurance, customer focus, TQM, process capability, control charts, concurrent engineering, Taguchi's method, product liability and reliability, ISO, QS, Deming and Baldrige awards. Also included will be the Design of Experiments. **Prerequisites: Graduate standing, Calculus, Statistics**

**ETD 563 COMPUTER AIDED NUMERICAL CONTROL 3-0-3**

Translation of design ideas into specifications for equipment and programming for production. Integration of the complete CAD/CAM cycle. **Prerequisites: Graduate standing, ETD 543**

**ETD 573 COMPUTER INTEGRATED MANUFACTURING 3-0-3**

Computer assisted process planning and estimating. Concepts of computer control and feedback mechanisms. Design considerations for machine tools, machining cells, robotics, and flexible manufacturing systems. **Prerequisites: Graduate standing (same as MAE 553)**

**ETD 583 METROLOGY 3-0-3**

A course in the technology of measurements related to the procedures for conducting inspection and tests; including control, gage capability, repair, calibration and CMM measurement devices. **Prerequisites: Graduate standing, ETD 553**

**ETD 596 APPLIED DESIGN PROJECT 0-0-6**

A project application conducted under the supervision of a faculty advisor in partnership with industry. This project offers the student the opportunity to integrate theory and course work with practice. Final project review and acceptance by faculty committee. **Prerequisite: Graduate standing**

**FINANCE****FIN 303 MANAGERIAL FINANCE 3-0-3**

This course is a study of the principles of managerial finance including time value of money, capital budgeting, methods of financing, working capital management, financial statement analysis and other financial topics. **Prerequisites: AC 213, ECO 213, ECO 223, MA 253, or permission of the instructor**

**FIN 313 CORPORATE FINANCE 3-0-3**

An analytical approach to financial management of a corporation. Areas covered include: long term financing, financial structure, cost of capital, dividend policy, mergers, reorganization and international financial management. **Prerequisite: FIN 303**

**FIN 323 MONEY AND BANKING 3-0-3**

This course is a study of the principles of monetary economics. An analysis of the structure and operation of financial institutions and the Federal Reserve System is included. The function of monetary policy within the framework of macroeconomic theory is examined. **Prerequisites: ECO 223 (Same as ECO 323)**

**FIN 333 PUBLIC FINANCE 3-0-3**

This course involves an investigation of the role of the public sector in economic development. Fiscal policy and the practice of public finance are examined. Topics cover cost functions for public goods, externalities and fiscal federalism. **Prerequisite: ECO 223 (Same as ECO 333)**

**FIN 343 INTERNATIONAL FINANCE 3-0-3**

This course involves a study of the topics essential to the understanding of international finance. Topics include foreign exchange markets and currency risk, international financial markets, international banking, trade financing, country risk analysis, accounting and taxation issues, capital budgeting, and international lending and borrowing techniques. **Prerequisites: FIN 303**

**FIN 353 PERSONAL FINANCE 3-0-3**

An overview of financing decisions made by individual investors for personal financial needs. The course will cover pension investing, tax considerations, retirement planning and various investment products available to investors. **Prerequisite: FIN 303, ECO 213**

#### **FIN 403 INVESTMENTS 3-0-3**

An overview of the security markets, sources of investment information, and the classic process of analyzing and valuing securities is presented. Investment opportunities in a wide variety of financial and real assets are explored. The concept of portfolio theory in terms of risk and return is examined. **Prerequisite: FIN 303**

#### **FIN 473 FINANCE TECHNOLOGIES 3-0-3**

This course is a study of the principles of managerial finance, investments, and other topics relevant to the field of finance. Students explore how to use technologies such as Excel, WINKS, and others to solve financial problems. **Prerequisites: CS 113, FIN 303**

#### **FIN 493 TOPICS IN FINANCE 3-0-3**

Offered to examine specific or current business or special financial issues. Possible examples could include asset management, corporate financing, securities analysis and management of financial institutions. **Prerequisite: FIN 303**

#### **FIN 503 FINANCIAL ANALYSIS FOR DECISION MAKING 3-0-3**

This course reviews the economic and organizational context in which resource allocation decisions are made. Primary tools to be used include spreadsheet analysis, financial simulation and case studies. Topics to be included are: the capital expenditure decision process, reviewing capital investment projects, capital expenditures, EVA, lease-versus-buy decisions and cash flow analysis. **Prerequisite: Graduate standing or approval of instructor**

### **FILM**

#### **FLM 202 FILM APPRECIATION 2-3-2**

Acquaints the student with the art of film criticism. Presents basic cinema vocabulary, information about film production, theory and history of film, and practice in analysis of individual films.

### **FORENSIC SCIENCE**

#### **FS 213 DIGITAL FORENSIC SCIENCE 3-0-3**

This course introduces the student to investigative techniques involving computers and other electronic devices. Topics include investigative procedures, computer hardware, data recovery methods and laws concerning digital devices. This course also covers how computers are used in investigations. **Prerequisite: CS 103 (Same as CS 213 and LE 213)**

#### **FS 343 CRIMINALISTICS AND CRIME SCENE INVESTIGATIONS I 3-0-3**

Introduction to criminalistics and crime scene investigation. Methods of processing a crime scene: documentation, location and collection of evidence, proper collection and handling procedures, selection and presentation for analytical examination, and presentation of the process and findings in court. **(Same as LE 343)**

#### **FS 351 CRIMINALISTICS AND CRIME SCENE LABORATORY 0-2-1**

The study of types of chemical and physical analyses associated with crime scene investigations. **Prerequisite: FS 343 or LE 343 (Same as LE 351)**

#### **FS 353 CRIMINALISTICS AND CRIME SCENE INVESTIGATIONS II 3-0-3**

Advanced criminalistics and crime scene investigation. A detailed review of current methodology of collection, processing and court presentation of evidence. Analysis of the roles of law enforcement and forensic scientists. **Prerequisite: FS 343 or LE 343 (Same as LE 353)**

#### **FS 371 FORENSIC COMPARATIVE SCIENCE LAB 0-2-1**

An introduction to the actual examination of finger, palm, and sole images; shoe sole images; fired bullets and cartridge cases; tool marks; and physical comparison of broken and torn items which might be found at crime scenes. **Prerequisite: FS 351 and FS 353, or by permission of the Department Chair**

## **FRESHMAN STUDIES**

### **GE 101 INTRODUCTION TO ENGINEERING 1-0-1**

This course is required for all freshman engineering students. Its purpose is to improve student success, to make the college experience more relevant to career goals, and to help students obtain as much assistance from the University as possible while working towards their engineering degrees. The course will cover community building, academic goals, effective learning methods, University orientation, and personal and professional development.

### **HPS 101 UNIVERSITY EXPERIENCE FOR HPS MAJORS 1-0-1**

Offers tools, techniques and resources for successful learning for students new to the HPS program. Focus on national standards.

### **UE 101 UNIVERSITY EXPERIENCE 1-0-1**

This course offers resources for success in learning for students new to Tri-State University. This course will assist students in becoming more proficient learners, understanding self and others, and learning personal life skills. This course will present information about Tri-State University offices and services to familiarize students with resources and procedures.

## **GENERAL ENGINEERING**

### **GE 101 INTRODUCTION TO ENGINEERING 1-0-1**

This course is required for all freshman engineering students. Its purpose is to improve student success, to make the college experience more relevant to career goals, and to help students obtain as much assistance from the University as possible while working towards their engineering degrees. The course will cover community building, academic goals, effective learning methods, University orientation, and personal and professional development.

### **GE 301 ENGINEERING INTERNSHIP 0-40-1**

This course involves a meaningful work experience related to the student's field of study in engineering. The Engineering Internship Coordinator must approve the assignment and company. Employment is full-time during the summer semester. This course may be taken a maximum of two times. **Prerequisites: Engineering major, 2.5 GPA, junior standing, adherence to the guidelines set by the Engineering Internship Coordinator and permission of the student's department chair**

### **GE 401 PROFESSIONAL PRACTICE 1-0-1**

This course covers the two broad areas of professional practice. The first consists of topics pertinent to career aspects of the profession: job search activities, graduate school information, lifelong learning, professional registration and the role of professional societies. The second area concerns the social responsibilities of the practicing professional engineer: professional ethics, the role of engineering in public policy, the need for knowledge of current affairs, and consideration of the impact of technology upon society. **Prerequisite: Senior standing in engineering**

### **GE 403 ENGINEERING PROJECT 2-2-3**

Project management fundamentals and the engineering design process, project documentation, quality principles, ethics in design. Multidisciplinary teams of students develop a design project. **Prerequisite: Senior standing in Engineering Administration**

## **GEOGRAPHY**

### **GEO 203 OCEANOGRAPHY 2-2-3**

A description of the oceans and their relation to humans. The principles of physical, chemical, geological, and biological oceanography are used to explain the ocean environment. Society's effect on the oceans and problems and potentials of utilizing the natural resources of the sea.  
**Prerequisites: A laboratory science and MA 113 (Same as EAS 203 and BIO 203)**

### **GEO 213 PHYSICAL GEOGRAPHY 3-0-3**

An analysis of the spatial and functional relationships among landforms, climates, soils, water, and the living world. This course also addresses the connections between environmental processes and human activity, such as human impact on the environment. **(Same as EAS 213)**

### **GEO 223 WORLD GEOGRAPHY 3-0-3**

A study of the major cultural regions of the world, with emphasis on human social development (economic, cultural, historical, political), in the context of a given physical environment. Focus is on the present and future of each region, as well as how those futures are intertwined.

### **GEO 303 HUMAN GEOGRAPHY 3-0-3**

Topical studies to show how human beings have altered and adapted to their physical environments over time through technology, migration, and demographic changes. Focus is on cultural identity and landscape, cultural interaction, and conflict. **Prerequisite: One geography course**

### **GEO 313 GEOGRAPHY OF NORTH AMERICA 3-0-3**

A study of the major geographical sections of the United States and Canada, the development of natural resources, land, climate, populations and soil.

### **GEO 343 ECONOMIC GEOGRAPHY 3-0-3**

A study of agricultural and industrial production in relation to environmental factors and international interdependence. Includes emphasis on trade routes and urban trade centers.  
**Prerequisite: ECO 223 (Same as ECO 343)**

### **GEO 353 POLITICAL GEOGRAPHY 3-0-3**

A study of the concept of territory, especially in terms of national boundaries, as related to world resources, ethnic problems, trade, economic factors and historical development. **(Same as GOV 353)**

### **GEO 400X INDEPENDENT STUDIES IN GEOGRAPHY VARIED (1-4 HRS.)**

Credit earned through directed reading, independent study, research or supervised field work. Maximum 4 hours credit. **Prerequisite: Permission of Department Chair**

## **GERMAN**

### **GER 104 GERMAN I 4-0-4**

Introduction to the German language and culture. Pronunciation, conversation and basic grammar skills are stressed. No previous study of German is required.

### **GER 114 GERMAN II 4-0-4**

Continues conversation and grammar skills. Additional emphasis on reading and writing.  
**Prerequisite: German 104 or permission of the instructor**

### **GER 203 GERMAN III 3-0-3**

An intermediate German class with an emphasis on reading and writing skills and grammar review. Students read selected original literary texts by German authors and write short paragraphs related to the texts. Conversational skills are also emphasized. **Prerequisite: German 114 or permission of instructor**

### **GER 213 GERMAN IV 3-0-3**

A continuation of German III with an emphasis on reading and writing skills and grammar review. The difficulty level of the reading selections increases in this course. **Prerequisite: German 203 or permission of instructor**

## **GEOLOGY**

### **GLY 271 GEOLOGY LABORATORY 0-1-1**

An introductory laboratory study of basic physical geology. The laboratory emphasizes skills needed for the identification of minerals and rocks, for the interpretation of land surface features based on topographic maps and for the understanding of folding, faulting and rock relationships through the interpretation of geologic maps. **Corequisite or Prerequisite: GLY 273**

### **GLY 273 GEOLOGY 3-0-3**

An introduction to the field of geology. Study of minerals and rocks and their formation within the context of the earth's geologic history. Emphasis on soils, running water and groundwater. Plate tectonics, glaciers, volcanoes, erosion and weathering are also covered. **(Same as EAS 273)**

## **GOLF MANAGEMENT**

### **GM 101 INTRODUCTION TO GOLF MANAGEMENT 1-0-1**

This course includes an overview of the golf industry, the variety of career opportunities available, and the skills and talents necessary for successful employment in the golf industry.

### **GM 201 GOLF COURSE ARCHITECTURE 1-0-1**

Students will study site selection, planning the layout, and designing golf holes and athletic fields for a variety of facilities and patrons. USGA, California, and topsoil greens design and construction are studied. Students will study methods of construction for golf, urban, and recreational turf sites.

### **GM 203 GOLF SHOP MANAGEMENT 3-0-3**

This is an introduction to the management of various types of on- and off-course golf facilities (driving ranges, golf discount houses, par-3 courses, learning centers, private, public, executive, resort, etc.). Personnel, committee structure, corporate structure, public relations, promotion and marketing are among topics for consideration and study. Topics also include buying, merchandising, and selling hard and soft goods; golf cart use, maintenance, and repair; administration of membership play, tournaments, and special events; computer operations; record keeping and analysis.

### **GM 213 GOLF CLUB DESIGN, REPAIR AND FITTING 3-0-3**

This is an introduction to golf club design through the years. It includes a study of the techniques of club repair and maintenance. Club fitting for the individual and the masses is examined.

### **GM 223 PROMOTION/MARKETING OF GOLF FACILITIES 3-0-3**

This course is a study of the various tools and techniques in golf facility promotion; advertising, special promotions, sales, brochures, tournaments, fund-raising, etc., are topics for study. Topics also include promoting, marketing and administering the golf school, the multi-day golf package and the corporate golf outing. Sales and market-targeting strategies are discussed and studied.

### **GM 302 TEACHING THE SHORT GAME 3-0-3**

This is a comprehensive study of the methods of teaching and executing the chip shot, the pitch shot and putting. **Golf management majors only**

### **GM 323 TEACHING THE GOLF SWING 3-0-3**

This course examines the principles and theories of golf instruction in the 20th century. Terminology, teaching approaches and styles, practice drills and exercises, teaching aids, and other related areas in the teaching of the golf swing are included. In addition, this course is designed for teaching the accomplished player. It includes a more intricate and sophisticated

study of swing methods and theories from the most successful contemporary teachers of the game. **Golf management majors only**

**GM 411 FOOD AND BEVERAGE MANAGEMENT 1-0-1**

This course is an introduction to food/beverage operation and legal issues. Field trips to various types of golf course food operations are included.

**GM 436 INTERNSHIP (6 HRS.)**

Students will be assigned to golf courses or golf facilities to gain experience in golf operations and management. The term of each internship will vary from five to ten weeks, depending on the nature of the position and responsibilities.

**GM 400X RESEARCH TOPICS IN GOLF MANAGEMENT VARIED (1-4 HRS.)**

Special studies of topics related to golf management conducted in independent study under the direction of the staff. May be taken in conjunction with internships, and may be taken for variable credit, for a maximum of 4 credits.

**GOVERNMENT**

**GOV 113 INTRODUCTION TO GOVERNMENT 3-0-3**

An examination of the origins and operations of the national political machinery; the development, functions and philosophy of political parties; the problems and tasks of leading governmental agencies.

**GOV 313 COMPARATIVE GOVERNMENTS 3-0-3**

A comparison of the systems, philosophies and functions of the governments of England, France, the United States, Germany and the countries of the former Soviet Union. **Prerequisite: GOV 113**

**GOV 323 THE CONTEMPORARY WORLD 3-0-3**

An analysis of current global issues from a historical perspective with an emphasis on developing an awareness of cultural diversity and an understanding of the role of international governmental and nongovernmental organizations. **Prerequisites: GOV 113 or HIS 113 (Same as HIS 323)**

**GOV 333 STATE AND LOCAL GOVERNMENT 3-0-3**

The general relationship between the states and the federal government; organization, functions, and divisions of authority between the executive, legislative and judicial. The functions, powers, and forms of county and municipal governments. **Prerequisite: GOV 113**

**GOV 343 AMERICAN POLITICAL THOUGHT 3-0-3**

A survey and analysis of significant political ideas from colonial times to present. Some of the ideas discussed in the survey include the philosophies of liberalism, conservatism, and pragmatism, as well as the political thinking of such men as Alexander Hamilton, Thomas Jefferson, John C. Calhoun, Henry Thoreau, Herbert Spencer and Lester Ward. **Prerequisite: GOV 113 (Same as HIS 343)**

**GOV 353 POLITICAL GEOGRAPHY 3-0-3**

A study of the concept of territory, especially in terms of national boundaries, as related to world resources, ethnic problems, trade, economic factors and historical development. **Prerequisite: GOV 113 (Same as GEO 353)**

**GOV 363 UNITED STATES FOREIGN POLICY 3-0-3**

A history of United States involvement in world affairs from the War for Independence to the present; the close relationship between the foreign policy and domestic concerns is emphasized; an analysis of the policy-making bureaucracy. **Prerequisites: HIS 103, HIS 113, GOV 113 (Same as HIS 363)**

**GOV 373 POLITICAL PSYCHOLOGY 3-0-3**

An examination of the role of group dynamics and personality variables in contemporary political issues, including leadership and power, political attitudes, current social movements, conflict resolution, coalition formation, cross-cultural comparison of political attitudes and other issues.

**Prerequisites: PSY 113, GOV 113 (Same as PSY 373)**

### **GOV 403 AMERICAN CONSTITUTIONAL DEVELOPMENT 3-0-3**

A study of the historical and judicial developments of the Constitution of the United States by analyzing court decisions and the philosophies of the justices of the Supreme Court. Emphasis on the court's role in the development of national economic policy, with a focus on the court's position on civil rights and liberties, political freedom and social equality. **Prerequisites: HIS 103, HIS 113, GOV 113 (Same as HIS 403)**

### **GOV 400X INDEPENDENT STUDIES IN GOVERNMENT VARIED (1-4 HRS.)**

Credit earned through directed reading, independent study, research or supervised field work. Maximum 4 hours credit. **Prerequisite: Permission of Department Chair**

## **HISTORY**

### **HIS 103 AMERICAN HISTORY I 3-0-3**

Traces the major trends in the history of the United States from colonial times to the end of Reconstruction. Concentrates upon the diplomatic, political, economic, intellectual and cultural achievements of the American nation, set within the larger framework of the European world.

### **HIS 113 AMERICAN HISTORY II 3-0-3**

Increasing emphasis on the post Civil War industrial development of the United States and its subsequent role as a great world power to present.

### **HIS 203 WORLD CIVILIZATION I 3-0-3**

A historical review of human civilization from prehistoric times through the Renaissance. The class focuses upon the political, economic, and cultural achievements of various civilizations of the world.

### **HIS 213 WORLD CIVILIZATION II 3-0-3**

A survey of major civilizations of the world in the post-Renaissance period, including Asian, African and Western European civilizations in the areas of politics, economics, and scientific and cultural developments. Emphasis is placed on the increasing interdependence of world civilizations and people.

### **HIS 253 THE JAPANESE PEOPLE 3-0-3**

A humanistic approach to the study of the Japanese people. An emphasis on using a historical context to reveal domestic political, social, and economic associations, as well as important achievements in literature, religion, philosophy and art.

### **HIS 323 THE CONTEMPORARY WORLD 3-0-3**

An analysis of current global issues from a historical perspective with an emphasis on developing an awareness of cultural diversity and an understanding of the role of international governmental and nongovernmental organizations. **Prerequisite: GOV 113 or HIS 113 (Same as GOV 323)**

### **HIS 343 AMERICAN POLITICAL THOUGHT 3-0-3**

A survey and analysis of significant political ideas from colonial times to the present. Some of the ideas discussed in the survey include the philosophies of liberalism, conservatism and pragmatism, as well as the political thinking of such men as Alexander Hamilton, Thomas Jefferson, John C. Calhoun, Henry Thoreau, Herbert Spencer and Lester Ward. **Prerequisite: GOV 113 (Same as GOV 343)**

### **HIS 363 UNITED STATES FOREIGN POLICY 3-0-3**

A history of the United States involvement in world affairs from the War of Independence to the present, the close relationship between the foreign policy and domestic concerns is emphasized;

an analysis of the policymaking bureaucracy. **Prerequisites: HIS 103, HIS 113, GOV 113 (Same as GOV 363)**

### **HIS 393 ECONOMIC HISTORY OF THE UNITED STATES 3-0-3**

A survey of the major economic developments in American history. Stresses the changed conditions and values in moving from an agricultural to an industrial society. **Prerequisites: HIS 103, HIS 113 (Same as ECO 393)**

### **HIS 403 AMERICAN CONSTITUTIONAL DEVELOPMENT 3-0-3**

A study of the historical and judicial developments of the Constitution of the United States by analyzing court decisions and the philosophies of the justices of the Supreme Court. Emphasis on the court's role in the development of national economic policy, with a focus on the court's position on civil rights and liberties, political freedom and social equality. **Prerequisites: HIS 103, HIS 113, GOV 113 (Same as GOV 403)**

### **HIS 423 THE UNITED STATES AS A WORLD POWER 3-0-3**

A study of social, economic, intellectual and political developments within the United States from approximately 1939 to the present. Emphasis is placed on relating America's developments to its role in international affairs. **Prerequisite: HIS 113**

### **HIS 433 THE AMERICAN REVOLUTION 3-0-3**

A history of the War of Independence and the formation of national government to 1787. **Prerequisite: HIS 103**

### **HIS 443 READINGS IN AMERICAN HISTORY I 3-0-3**

An independent study and research on selected topics. Open to students with departmental approval.

### **HIS 453 READINGS IN AMERICAN HISTORY II 3-0-3**

An independent study and research on selected topics. Open to students with departmental approval.

### **HIS 400X INDEPENDENT STUDIES IN HISTORY VARIED (1-4 HRS.)**

Credit earned through directed reading, independent study, research or supervised field work. Maximum 4 hours credit. **Prerequisite: Permission of department chair**

## **HONORS SEMINAR**

### **HNR 401 HUMANITIES HONORS SEMINAR 1-0-1**

An honors seminar on topics not normally in TSU curricula. May be retaken for credit as long as the topics differ. Sponsored by the TSU Humanities Institute to recognize and to challenge Tri-State's best students.

## **HEALTH, PHYSICAL EDUCATION & SPORT MANAGEMENT**

### **HPS 101 UNIVERSITY EXPERIENCE FOR HPS MAJORS 1-0-1**

Offers tools, techniques and resources for successful learning for students new to the HPS program. Focus on national standards.

### **HPS 102 LIFETIME WELLNESS 2-1-2**

Positive wellness based on the value of physical activity and healthy choices is explored. Lab consists of clinical experience with personal wellness status. Personalized exercise prescriptions will be provided.

### **HPS 103 TEACHING SPORT & RECREATIONAL ACTIVITIES I 0-6-3**

Fundamental skills and the knowledge of rules for sports traditionally considered fall and winter sports. (HPS majors and minors only)

**HPS 123 TEACHING SPORT & RECREATIONAL ACTIVITIES II 0-6-3**

Fundamental skills and the knowledge of rules for sports traditionally considered winter and spring sports. (HPS majors and minors only)

**HPS 131 FIRST AID 1-1-1**

Classroom discussion and practical application of basic first aid principles. American Red Cross certification available.

**HPS 202 INTRODUCTION TO ADAPTIVE PHYSICAL EDUCATION 1-2-2**

Classroom discussion and supervised lab experience that familiarizes students with a general knowledge of various disability groups and the physical education needs of these special students.

**HPS 212 ADAPTIVE PHYSICAL EDUCATION 1-2-2**

Classroom discussion and supervised lab experience that familiarizes students with a general knowledge of adaptive physical education and the inclusion process from assessment to writing I.E.P. goals.

**HPS 221 OFFICIATING 0-2-1**

Knowledge of the rules and officiating practices of sports.

**HPS 223 HISTORY OF PHYSICAL EDUCATION AND SPORT 3-0-3**

The significance of physical education and sport from the ancient Greeks through modern times. The development of physical education as a broad-based academic discipline and sport management as a natural outgrowth of the field.

**HPS 232 PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL TEACHER 1-2-2**

Methods of elementary school physical education which meet the developmental needs of children. Focus on curriculum and skill attainment. Field experience in area schools.

**HPS 243 ATHLETIC TRAINING 2-2-3**

The role of the athletic trainer is examined. Qualifications, relationships and responsibilities of the trainer in relation to the athlete, coach, team physician and community are discussed. Practical application for injury recognition, evaluation, management and rehabilitation.

**HPS 252 CONSUMER HEALTH 2-0-2**

Examination of consumer issues which influence the quality of life of children and adults. Issues studied include the accuracy of health information, advertising claims, product safety, and health products and services.

**HPS 253 RISK MANAGEMENT IN PHYSICAL EDUCATION AND SPORT 3-0-3**

Consideration of the legal aspects involved with physical education and sport activities. Emphasis on negligence case law, liability issues and facility safety.

**HPS 263 PHILOSOPHY OF SPORT AND RECREATION MANAGEMENT 3-0-3**

Examination of the purposes and objectives of sport in society. Discussion of aesthetic dimensions and ethical theories as related to sport. Influence of governing bodies.

**HPS 273 NUTRITION 3-0-3**

A review of the nature of nutritional needs. Focus will include the function of nutrients in the body, weight control and the importance of balanced diets.

**HPS 282 ENVIRONMENTAL HEALTH 2-0-2**

Survey of complex association between environmental factors within general framework of ecological perspective in which the interrelationship of all living things to one another affect human well-being.

**HPS 323 LEADERSHIP IN SPORT AND RECREATION 3-0-3**

Investigation of leadership theories and practical applications for managers in sport and recreation settings. Exploration of the interrelationship between leadership and group dynamics.

**Prerequisite: HPS 313**

**HPS 332 DRUG EDUCATION 2-0-2**

Examines the effects of alcohol, tobacco, and the “illicit” drugs on the physical, psychological, and social health of the individual. Performance-enhancing drugs are investigated.

**HPS 333 KINESIOLOGY 3-0-3**

The study of the general body mechanics of the human organism; the activities of the physical education program in their relation to coordination and the proper body mechanics, analysis of movement. **Prerequisite: BIO 244**

**HPS 342 SCHOOL AND COMMUNITY HEALTH 2-0-2**

Knowledge of observing and understanding the health needs of school-aged children. The role of the school health program, students’ habits, attitudes and understanding of good health practices are explored. Focus on health programs amenable to community action.

**HPS 343 SPORT PSYCHOLOGY 3-0-3**

Study of the underlying mechanisms that coordinate individuals’ thoughts, feelings and behavior, and how these processes are impacted by the sport setting. Psychological factors to be discussed include motivation and aggression. **Prerequisite: PSY 113**

**HPS 352 FAMILY LIFE EDUCATION 2-0-2**

Investigation of the biological, psychological and sociological components of sexuality and family life. Issues discussed include the anatomy and physiology of the reproductive systems, gender roles, family living, marriage, parenthood, divorce, and abuse/violence.

**HPS 353 EXERCISE PHYSIOLOGY 3-0-3**

The study of body composition, muscular strength, power and endurance. The response of the cardiovascular and respiratory systems to exercise, and the developmental stages of growth are also explored.

**HPS 363 CONTEMPORARY ISSUES IN SPORT 3-0-3**

Discussion of the problems and issues facing sport managers today. Analysis of the relationship between sport and culture. Topics may include commercialization, amateurism and socialization in sport. **Prerequisite: HPS 263**

**HPS 373 HEALTH PROBLEMS 3-0-3**

A theoretical and practical treatment of the concepts of disease prevention and health promotion. Topics include alcohol, tobacco and drug abuse, physical fitness, nutrition, chronic and communicable diseases, human sexuality and stress management.

**HPS 393 ADVANCED ATHLETIC TRAINING 2-3-3**

Builds on experiences gained in HPS 243. Includes prevention, evaluation and treatment of athletic-related injuries. Emphasis given to injury assessment and topics related to sports medicine. Examines relationship of athletic trainers in management and care of injuries and their role as professional allied health practitioners. **Prerequisites: BIO 244, HPS 243**

**HPS 403 REMEDIAL EXERCISE & REHABILITATION 2-3-3**

Students become familiar with common physical therapy modalities and their use in sports medicine. Where applicable, the following will be covered for each modality: physics, biophysics, effects, power application, indications and contraindication. Safety is emphasized during instruction and practical experience. **Prerequisites: BIO 244, HPS 243, HPS 353**

**HPS 404 CAPSTONE EXPERIENCE IN SPORTS MANAGEMENT 4-2-4**

A culminating final project, representative of the student’s knowledge obtained in the Sports Management department. The project is to exemplify the student’s professionalism and familiarity

with the subject matter. The analysis is focused on independent study and the development of the student project.

**HPS 412 BUSINESS PLANNING IN SPORT AND RECREATION 2-0-2**

The creation of a business plan for a sport/recreation operation. **Prerequisite: LAW 203**

**HPS 413 ORGANIZATION & ADMINISTRATION OF PHYSICAL EDUCATION AND ATHLETICS 3-0-3**

Theories establishing the procedures for facility, curriculum and faculty development in physical education and athletics are examined.

**HPS 423 EVALUATION OF ATHLETIC INJURIES 2-3-3**

Specialized course dealing with anatomy, kinesiology, injury symptoms and specific tests to help trainers recognize and evaluate athletic injuries. **Prerequisites: BIO 244, HPS 243, HPS 353**

**HPS 433 DEVELOPING HEALTH PROMOTION PROGRAMS FOR ADULTS 3-0-3**

Presentation and examination of health promotion strategies and programs that emphasize lifestyle behaviors that impact health and wellness.

**HPS 443 THERAPEUTIC MODALITIES 2-3-3**

Explores principles of therapeutic rehabilitation of orthopedic injuries including the role of the athletic trainer in the implementation and supervision of a sound rehabilitation program. Special topics include aquatic therapy, the body's response to healing and exercise, development of exercise programs, development and evaluation of tests, measurement techniques and programs, and applications of therapeutic exercise equipment and supplies. **Prerequisites: BIO 244, HPS 243, HPS 353**

**HPS 452 DEVELOPING HEALTH PROMOTION ASSESSMENTS 2-0-2**

Examination of fitness and wellness assessment techniques. Students are expected to demonstrate competencies in a wide variety of testing and assessment procedures for analyzing fitness & wellness levels. Includes submax testing, blood pressure, body fat analysis, strength assessment, nutritional analysis, and individual exercise program development. American College of Sport Medicine protocol is utilized.

**HPS 462 ORGANIZATION & ADMINISTRATION OF ATHLETIC TRAINING 2-0-2**

Organization and administration of an athletic training/sports medicine program including philosophy, budget, facilities, equipment, insurance, legal aspects, records, employment, personnel, and structure of the National Athletic Trainers Association.

**HPS 464 CAPSTONE EXPERIENCE IN HEALTH PROMOTIONS I 0-4-4**

A culminating final project, representative of the student's knowledge obtained in the Sports Management department. The project is to exemplify the student's professionalism and familiarity with the subject matter. The analysis is focused on independent study and the development of the student project.

**HPS 466 INTERNSHIP IN SPORT MANAGEMENT 6 HRS.**

Observation of and participation in a field-related experience under the direction of a field supervisor and a University supervisor. **Must have the approval of the Department Chair**

**HPS 474 INTERNSHIP IN HEALTH PROMOTIONS I 4 HRS.**

Observation of and participation in a field-related experience under the direction of a field supervisor and a university supervisor. Internship opportunities are limited to HPS majors only and must have the approval of the Department Chair.

**HPS 483 INTERNSHIP IN SPORTS MEDICINE 3 HRS.**

Field experiences involving conference, clinic and workshop attendance. Techniques and practice of written, written simulation, and oral practical applications. Provides opportunity to interact with other allied health practitioners. **Prerequisites: BIO 244, HPS 243, HPS 353**

**HPS 2101 WALKING/JOGGING 0-2-1**

Introduction to power walking and the fundamentals of jogging

**HPS 2111 RACQUET SPORTS 0-2-1**

Introductory look at rules, skills, strategy, and etiquette of tennis, racquetball, badminton, and table tennis.

**HPS 2131 GOLF I/ BOWLING 0-2-1**

Introduction to the proper etiquette and fundamentals in golf and bowling. Service fee will be added for course enrollment.

**HPS 2161 WEIGHT TRAINING I 0-2-1**

Conditioning and skills involved in lifting both free weights & machines.

**HPS 2211 AEROBICS 0-2-1**

Development of cardiovascular conditioning through dance & bench step aerobics.

**HPS 2221 GOLF I BUSINESS FOR LIFE****HPS 2231 GOLF II 0-2-1**

Development of the golf swing with emphasis on putting, chipping and correct swing form.

**Prerequisite: HPS 2131 or permission of instructor**

**HPS 2231 CONDITIONING 0-3-1**

Development of cardiovascular and strength conditioning. Course will meet three days a week or the equivalent of three hours per week.

**HPS 2351 KARATE 0-2-1**

Introduction to the fundamentals, skills and rules of karate.

**HPS 400X SPECIAL PROJECTS IN HPS VARIED (1-3 HRS.)**

Credit earned through directed reading, independent study, research or supervised lab or field work. Maximum 3 hours credit. **Prerequisite: Permission of Department Chair**

**LAW****LAW 203 BUSINESS LAW I 3-0-3**

This course is an introduction to the American legal system. It includes a survey of courts, legal procedures, torts and criminal law. It involves an intensive study of the common law of contracts, including contract formation, performance, breach and remedies, as well as a study of the law of sales under the Uniform Commercial Code.

**LAW 303 BUSINESS LAW II 3-0-3**

This course is a study of the law of agency, partnerships, corporations and other business organizations. It includes a study of negotiable instruments, secured transactions, suretyship, bankruptcy, securities regulation and related legal issues. **Prerequisite: LAW 203**

**LAW 403 EMPLOYMENT LAW 3-0-3**

This course is a survey of the law relating to the employment relationship, with a major emphasis on federal law. The course covers unions and collective bargaining under the National Labor Relations Act. Discrimination in employment will address the Civil Rights Act of 1964 as amended, the Equal Pay Act, the Age Discrimination in Employment Act, the Americans with Disabilities Act, and related statutes. State and federal law with regard to employment-at-will, privacy, whistleblower protection, and related issues will also be discussed. **Prerequisites: LAW 203, MGT 363**

**LAW 413 INTERNATIONAL LAW 3-0-3**

The legal considerations governing international business transactions. Introduction to the international legal environment including the status of international law, international dispute settlement, conflicts of law. A more detailed study of the international contracting process, international payment mechanisms, carriage contracts, insurance issues, and related subjects. Government regulation of international business will also be addressed. **Prerequisites: LAW 203, BA 343**

### **LAW 503 PUBLIC POLICY AND THE LEGAL ENVIRONMENT 3-0-3**

This course includes an analysis of the legal, political and economic framework that has shaped public policy toward business in the United States. It will include the methods as to how public policy is created and its implications for management decision-making. The issues that this course will be concerned with are: how public policy is related to societal, community, employee, consumer, and environmental concerns and their implication for business. **Prerequisite: Graduate standing or approval of instructor**

## **LAW ENFORCEMENT**

### **LE 153 JUVENILE JUSTICE 3-0-3**

A comprehensive review of the nature and etiology of juvenile delinquency. The legal and philosophical basis of the juvenile justice process, procedures and programs of prevention and rehabilitation.

### **LE 213 DIGITAL FORENSIC SCIENCE 3-0-3**

This course introduces the student to investigative techniques involving computers and other electronic devices. Topics include investigative procedures, computer hardware, data recovery methods and laws concerning digital devices. This course also covers how computers are used in investigations. **Prerequisite: CS 103 (Same as CS 213 and FS 213)**

### **LE 253 PROBATION, PAROLE & COMMUNITY CORRECTIONS 3-0-3**

An introduction to community-based corrections within the criminal justice system. A comprehensive review of the philosophies and practices, traditional and nontraditional approaches, and exemplary programs of the juvenile and adult systems.

### **LE 263 INTRODUCTION TO CRIMINAL LAW AND JUSTICE 3-0-3**

A survey of the American criminal justice system, its legal bases, and the interrelationships between local, state and national agencies. Specific attention will be focused on criminal law, criminal liabilities and punishments.

### **LE 273 CRIMINAL PROCEDURES AND EVIDENCE 3-0-3**

An examination of the various aspects of criminal procedures and their bases in the Constitution and in law. Topics include arrest, search and seizure, interrogation and the exclusionary rule.

### **LE 343 CRIMINALISTICS AND CRIME SCENE INVESTIGATIONS I 3-0-3**

Introduction to criminalistics and crime scene investigation. Methods of processing a crime scene: documentation, location and collection of evidence, proper collection and handling procedures, selection and presentation for analytical examination, and presentation of the process and findings in court. **(Same as FS 343)**

### **LE 351 CRIMINALISTICS AND CRIME SCENE LABORATORY 0-2-1**

The study of types of chemical and physical analyses associated with crime scene investigations. **Prerequisite: LE 343 (Same as FS 351)**

### **LE 353 CRIMINALISTICS AND CRIME SCENE INVESTIGATIONS II 3-0-3**

Advanced criminalistics and crime scene investigation. A detailed review of current methodology of collection, processing and court presentation of evidence. Analysis of the roles of law enforcement and forensic scientists. **Prerequisite: LE 343 (Same as FS 353)**

### **LE 363 INSTITUTIONAL CORRECTIONS AND CORRECTIONAL LAW 3-0-3**

A detailed review of penology and institutional corrections. A historical and contemporary perspective on jails and prisons. Rehabilitation and incarceration in both the adult and juvenile systems. A critical analysis of legislation and appellate decisions in correctional law for pretrial detainees and convicted and sentenced prisoners.

### **LE 423 CRIMINAL JUSTICE AGENCY ADMINISTRATION 3-0-3**

A detailed examination of the unique blend of criminal justice and business/public administration required in the administration of law enforcement, judicial and corrections agencies. A pragmatic analysis of public funding and utilization of local, state and federal grants.

### **LE 453 TOPICS IN CRIMINAL JUSTICE 3-0-3**

Selected topics in the area of criminal justice.

### **LE 473 LAW ENFORCEMENT PRACTICUM I 3 credits**

Professional practicum placement in a criminal justice agency in the students' areas of concentration. Students will participate in agency activity under the supervision of an agency professional. **Prerequisite: Junior or senior standing and department approval**

### **LE 483 LAW ENFORCEMENT PRACTICUM II 3 credits**

Students with a double concentration or double major may enroll in a second professional practicum placement. **Prerequisite: Double concentration in criminal justice or double major, junior or senior standing, and department approval**

### **LE 493 FORENSIC/CORRECTIONAL PRACTICUM 3-0-3**

Field experience in diagnostic correctional settings or facilities.

### **LE 400X INDEPENDENT STUDIES IN CRIMINAL JUSTICE VARIED (1-4 HRS.)**

Original research and/or a review of current, critical research on an approved topic within the student's field of concentration. **Prerequisite: Junior or senior standing and department approval (course may be repeated)**

## **MATHEMATICS**

### **MA 0304 INDIVIDUALIZED ALGEBRA 4-0-0**

(Same as MA 034, for non-traditional students.) **This is a non-credit, preparatory class.**

### **MA 034 ELEMENTARY ALGEBRA 4-0-0**

Basic Algebra, signed numbers, polynomial rational expressions, factoring, linear equations, graphs, linear systems. **This is a non-credit, preparatory class.**

### **MA 0404 INDIVIDUALIZED INTERMEDIATE ALGEBRA 4-0-0**

(Same as MA 044, for non-traditional students.) **This is a non-credit, preparatory class. Prerequisite: Equivalent of high school Algebra I**

### **MA 044 INTERMEDIATE ALGEBRA 4-0-0**

Rational algebraic expressions, exponents, radicals, linear systems, functional notation, graphs. **This is a non-credit, preparatory class. Prerequisite: Adequate SAT/ACT Mathematics Score.**

### **MA 103 BUSINESS ALGEBRA 3-0-3**

This course emphasizes the business applications of the following: rational algebraic expressions, quadratic equations, linear systems, synthetic division, determinants, exponents, radicals and logarithms. **Prerequisite: Adequate SAT/ACT Mathematics Score.**

### **MA 113 COLLEGE ALGEBRA 3-0-3**

Rational algebraic expressions, quadratic equations, non-linear systems, partial fractions, binomial expansion, synthetic division, determinants, exponents, radicals, logarithms.

**Prerequisite: Adequate SAT/ACT Mathematics Score.**

**MA 123 TRIGONOMETRY 3-0-3**

Trigonometric functions, identities, inverses, unit circle, solutions of triangles, trigonometric equations, complex numbers, radian measure, angular velocity. **Prerequisite: Adequate SAT/ACT Mathematics Score.**

**MA 124 PRE-CALCULUS 4-0-4**

Topics include review of algebraic expressions, linear systems, partial fractions, synthetic division, matrices, slope, fractional exponents, exponential and logarithmic relations, trig functions, identities, inverses, vectors, polar coordinates, conic sections, summation notation and elementary series. **Prerequisite: Three years of high school mathematics and adequate SAT/ACT Mathematics Score.**

**MA 134 CALCULUS I 4-0-4**

Limits, continuity, differentiation, applications, definition of the integral and fundamental theorem of integral calculus. Uses symbolic algebra software. **Prerequisite: Three years of high school mathematics, including Trigonometry, and adequate SAT/ACT Mathematics Score.**

**MA 153 ELEMENTS OF MATHEMATICS 3-0-3**

Set operations, introduction to logic, mathematics of finance, introduction to probability and statistics. Not open to engineering/science majors. **Prerequisite: Two years of high school mathematics**

**MA 164 CALCULUS II 4-0-4**

Applications of integration, differentiation and integration of transcendental functions and methods of integration, L'Hopital's rule, conic sections, parametric equations, polar coordinates, infinite series. Uses symbolic algebra software. **Prerequisite: Equivalent of MA 134**

**MA 173 APPLIED MATHEMATICS 3-0-3**

Mathematics of finance, graphical solution of linear programming problems, introduction to differential and integral calculus with applications. **Prerequisite: MA 103 or MA 113**

**MA 184 MATHEMATICS FOR ELEMENTARY TEACHERS I 4-0-4**

Numeration systems, set theoretic development of whole number system, decimals, percents, ratios, elementary number theory, elementary algebra, problem solving techniques. Designed specifically for elementary and middle school curricula emphasizing NCTM standards.

**MA 194 MATHEMATICS FOR ELEMENTARY TEACHERS II 4-0-4**

Linear, angular, area and volume measure. Metric system, congruence and similarity in geometric figures, probability and statistics. Designed specifically for elementary and middle school curricula emphasizing NCTM standards. **Prerequisite: MA 184**

**MA 213 CALCULUS III 3-0-3**

Calculus of several variables, algebra and calculus of vectors, partial differentiation, directional derivative, multiple integrals, applications. Uses symbolic algebra software. **Prerequisite: Equivalent of MA 164**

**MA 233 DIFFERENTIAL EQUATIONS 3-0-3**

Methods of solution for first and higher order differential equations, systems of ordinary differential equations, Laplace transforms, series solutions. **Prerequisite: MA 213**

**MA 253 STATISTICS 3-0-3**

Laws of probability, frequency distributions, sampling, expectation and variance, normal and sampling distributions, hypothesis testing, least squares, point and interval estimates of parameters. Not open to engineering/ science majors. **Prerequisite: MA 173 or equivalent**

**MA 303 COLLEGE GEOMETRY 3-0-3**

Axiomatic development of Euclidean geometry, constructions, geometric transformations, introduction to non-Euclidean geometry. **Prerequisite: MA 164**

**MA 312 HISTORICAL ASPECTS OF MATHEMATICS 2-0-2**

Chronologically explore significant results in mathematics. Perspective from different cultures considered. Selected topics vary from numeration systems to algebra, geometry, probability and calculus. **Prerequisite: MA 213**

**MA 313 LINEAR ALGEBRA 3-0-3**

Vectors spaces, determinants, subspaces, bases, transformations, and mappings. Theory and applications of matrix algebra. **Prerequisite: MA 213**

**MA 323 OPERATIONS RESEARCH 3-0-3**

Computer solution of mathematical models for decision making. Linear, dynamic and integer programming, critical path scheduling, queuing theory, game theory, resource allocation. **Prerequisites: CS 132 or CS 162; MA 253 or MA 393 (Same as CS 323)**

**MA 333 NUMBER THEORY 3-0-3**

Divisibility, prime numbers, Euclid's algorithm, linear congruences, quadratic residues. Numerical functions, factorization, Fibonacci numbers, Diophantine equations, applications, puzzles. **Prerequisite: MA 164**

**MA 343 SETS AND LOGIC 3-0-3**

Sets, set operations, methods of proof, induction, truth tables, relations, symbolic logic, real number system considerations, elementary combinatorics. **Prerequisite: MA 164**

**MA 353 VECTOR ANALYSIS 3-0-3**

The algebra and calculus of vectors. Dot and cross products, Green's and Stokes' Theorems, gradient, divergence, and curl of a vector field. **Prerequisite: MA 213**

**MA 363 ADVANCED DIFFERENTIAL EQUATIONS 3-0-3**

Bessel and Legendre equations, eigenvalue problems, Sturm Liouville theory, existence and uniqueness theorems for linear and nonlinear equations, stability considerations. **Prerequisite: MA 233**

**MA 373 ABSTRACT ALGEBRA 3-0-3**

A study of fundamental algebraic structures emphasizing groups, rings, integral domains and fields. Homomorphism and isomorphism perspectives. **Prerequisite: MA 164**

**MA 383 COMPUTER SOLUTIONS TO DIFFERENTIAL EQUATIONS 3-0-3**

Numerical techniques for solving both ordinary and partial differential equations. Initial value and boundary valued conditions (Uses Computer.) **Prerequisite: MA 233 and high level programming language**

**MA 393 PROBABILITY AND STATISTICS 3-0-3**

Finite probability, distributions, data analysis, sampling and sampling distributions, hypothesis tests, regression and correlation analysis, analysis of variance, design of experiments. **Prerequisite: MA 213**

**MA 403 ADVANCED CALCULUS 3-0-3**

A modern topological approach to real analysis. Selected concepts include bounded, open, closed sets, connectedness, completeness and compactness, functions, sequences, limits, continuity, series, differentiation and integration. **Prerequisite: MA 213 and junior/senior standing**

**MA 423 COMPLEX VARIABLES 3-0-3**

Complex numbers and functions, analytic functions, Cauchy-Riemann equations, conformal mapping. Cauchy theory, Taylor and Laurent series, calculus of residues, Dirichlet and Neumann problems, Poisson integral formula and analytic continuation. **Prerequisite: MA 233 and Junior/Senior standing**

**MA 443 NUMERICAL ANALYSIS 3-0-3**

Numerical solution of algebraic and transcendental equations, numerical differentiation and integration, linear systems, eigenvalues, curve fitting and two dimensional problems. (Uses computer.) **Prerequisite: MA 213**

**MA 473 DISCRETE MATHEMATICS 3-0-3**

An introduction to discrete and combinatorial mathematics. Construction and analysis of mathematical models using combinatorics, graph theory and other discrete methods with application in a wide variety of areas. **Prerequisite: MA 213**

**MA 400X SPECIAL PROBLEMS IN MATHEMATICS VARIED (1-3 HRS.)**

Selected topics may include, but not limited to, advanced differential equations, modern algebra, boundary-values problems, probability and statistics, topology, transform calculus. Arranged with permission of department chair. (See Chair for independent study policy) **Prerequisite: Senior standing**

**MECHANICAL & AEROSPACE ENGINEERING**

**MAE 103 Introduction to Mechanical Engineering 2-2-3**

An introduction to the fundamental principles and tools of mechanical engineering. Lectures will emphasize the interrelationships between mathematics, natural science, and engineering design. Project work will stress the importance of communication skills and team work. **Corequisite: MA 134**

**MAE 303 Mechanics of Machinery 3-0-3**

Study of the kinematics and dynamics of mechanisms. Fundamentals of displacement, velocity, and acceleration analysis of rigid bodies as a basis for the study of mechanisms. Motion analysis of linkages, cams, and gearing. Static and inertia forces in machines. Balancing of rotating and reciprocating masses. **Prerequisite: ES 223**

**MAE 323 Thermodynamics II 3-0-3**

Vapor power systems: Rankine cycle, first and second law analysis of power plant cycles. Gas power systems: air-standard cycles, gas turbines. Refrigeration and heat pump systems. Non-reacting ideal gas mixtures and psychrometrics. Reacting mixtures and combustion. **Prerequisite: ES 313**

**MAE 333 Fluid Mechanics II 3-0-3**

Surface resistance, wall shear stress and boundary layer flow. Internal flow, laminar and turbulent flow in conduits. External flow, drag and lift. Compressible flow, normal shock waves, isentropic flow through nozzles and diffusers. Turbomachinery, propeller theory, pumps and turbines. **Prerequisites: ES 313, ES 323**

**MAE 343 Manufacturing Processes and Equipment 2-2-3**

An examination of commonly used engineering materials and the manufacturing processes and machines used in processing these materials. Demonstrations of: sand molding, metal casting, metal removal processes (turning, milling, drilling, grinding), and deformation processing. Introduction to CNC machining. **Prerequisites: ES 233, ES 243**

**MAE 353 Machine Component Design 3-0-3**

Stress analysis of machine parts. Combined stresses, working stress, stress concentration. Theory of failure for both static and fatigue loadings. Design of machine elements. **Prerequisites: ES 233, ES 243**

**MAE 363 Introduction to Mechatronics 2-2-3**

A multidisciplinary, hands on, project oriented course studying the use of electronics and microprocessors to control mechanical devices. Students complete a design project in mechatronics. Projects may include building an analog to digital converter, using a transistor H-bridge for motor control, construction of digital logic circuits, use of proximity sensors, and creating music using a microprocessor. **Prerequisite: Junior standing in engineering.**

**MAE 373 Computer-Aided Machine Design 1.5-3-3**

Use of computer applications software as a part of the engineering design process. Introduction to the finite element method for stress analysis. Software packages, such as nonlinear solvers, finite element analysis, solid modeling and kinematic simulation, will be introduced. Design work using these tools will be a major component of the course. **Prerequisites: MAE 103, EGR 143, ES 243**

**MAE 383 Metallurgical Thermodynamics 3-0-3**

Thermodynamic fundamentals and their application to metallurgical processes such as melting, phase transformations and melt composition control. First and Second Laws in an open system. Property relationships and Maxwell's relations. Physical and chemical equilibrium. Thermodynamic basis of phase diagrams and metallurgical solution activities. Introduction to statistical thermodynamics. Applications to melt chemistry control and heat treatment processes. **Prerequisites: ES 233, ES 313**

**MAE 393 Metallurgical Transport Processes 3-0-3**

Thermal, fluid and diffusional transport in metallurgical processes such as cupola melting, AOD vessel operation, electric and reverberatory furnace chemistry control, steel making, and recovery of secondary aluminum and copper. Application of mathematical models from fluid mechanics, heat transfer and mass transport to the fluid, thermal and diffusional aspects of metallurgical processes. **Prerequisite: ES 323**

**MAE 413 Thermo-Fluid Component Design 3-0-3**

Introduction to components for energy transfer including ducts, valves, pumps, fans, compressors, heat exchangers and burners. Design of piping systems and fluid networks. Analysis of pumps and design of systems including pumps. Design of duct systems. Analysis of fans, blowers and compressors, and design of systems which use them. Design of ventilation systems in commercial and industrial buildings. **Prerequisites: ES 343, MAE 333 or MAE 393**

**MAE 423 Heating, Ventilating, and Air Conditioning 3-0-3**

Design of heating, ventilating, and air conditioning (HVAC) systems for buildings. Heat conduction in buildings. Convection and infiltration. Radiation and solar insolation loads. Psychrometry and thermal comfort. Heating and cooling load calculations. Particular attention will be paid to the HVAC needs of industrial firms and commercial installations. **Prerequisites: ES 323, MAE 323**

**MAE 433 Thermal Sciences Laboratory 1-4-3**

Basic concepts and methods of measurement, experimental test planning, calibration, uncertainty analysis. Electrical devices, signal processing, and data acquisition. Temperature, pressure, and velocity measurement. Flow measurement. Strain measurement. Experiments using wind tunnels, heat exchangers, compressors, refrigerators. **Prerequisites: ES 253, ES 323, ES 343**

**MAE 443 Engineering Metallurgy 2-2-3**

Physical metallurgy of practical engineering alloys as it relates to processing and mechanical properties. Ferrous alloys and selected non-ferrous alloys are covered. Property measurements and other characterization techniques and their meanings. Phase diagrams, heat treatment and structure-property-processing relationships in practical steels, cast irons, and aluminum alloys. Laboratory measurement of properties and microstructure: tensile strength, optical metallography, impact toughness, statistical nature of strength, plastic strain anisotropy in sheet metal. **Prerequisite: ES 233**

**MAE 453 Mechanical Vibration 3-0-3**

Introduction to vibration theory and analysis. Undamped, damped, free and forced vibration of single degree-of-freedom mechanical systems. Transient vibration and response to nonperiodic excitation. Vibration of two degree-of-freedom systems without damping. Vibration isolation and vibration absorbers. **Prerequisites: MA 233, MAE 303**

**MAE 463 Mechanical Measurement Laboratory 1-4-3**

Principles of dimensional measurement and the measurement of deflection, stress, strain, and vibration. Transducer theory and signal conditioning. Use of computer data acquisition and signal analysis. Analysis of experimental error and construction of test plans. Laboratory work leading to an experimental project. **Prerequisites: ES 253, MA 393, MAE 353**

**MAE 473 Applied Aerodynamics 3-0-3**

Properties of the atmosphere. Aerodynamic coefficients and their dependence on Reynolds number and Mach number. Aerodynamics of airfoils, wings, and complete aircraft. Performance analysis of aerospace vehicles in atmospheric flight: range, endurance, climb, descent, takeoff and landing. **Prerequisites: ES 223, MAE 333**

**MAE 483 Vehicle Structures 3-0-3**

Introduction to the design of minimum weight structures. Design of members in tension, bending, or torsion. Design of compression members. The concept of shear flow and its use in analyzing monocoque and semi-monocoque structures. **Prerequisite: MAE 353**

**MAE 493 Aerodynamics Laboratory 1-4-3**

Introduction to subsonic and supersonic wind tunnel testing. Wind tunnel characteristics and data acquisition systems. Measurements of lift, drag, moments, with corresponding data reduction and aerodynamic coefficients. Turbulence factor, Reynolds and Strouhal number calculations. Airfoil, aircraft, and vehicle investigations. Supersonic measurements, including total and static pressures, Mach number, and shock angles. Engineering laboratory reports are required for each investigation. Team wind tunnel project and report is required. **Prerequisite: MAE 473**

**MAE 400X SPECIAL PROBLEMS IN MECHANICAL ENGINEERING VARIABLE CREDIT**

Independent study of special topics of particular interest in mechanical engineering. Course may be taken more than once with a maximum of six credit hours. **Prerequisite: Permission of department chair**

**MAE 4013 Aircraft Design I 1-4-3**

First half of a continuous project during which teams of students perform the conceptual design of an airplane. Design work will include specifications, configuration studies, weight and balance, stability and control, performance estimation and trade-off studies, flight loads estimation, and preliminary cost estimates. **Corequisite: MAE 473**

**MAE 4023 Aircraft Design II 0-6-3**

Conclusion of conceptual design of aircraft. Course must be taken the semester immediately following MAE 4013. **Prerequisite: MAE 4013**

**MAE 4033 Thermal Systems Design I 2-2-3**

Introduction to design methodology and practice. Product specifications. Concept generation and selection. Product design. Design for manufacturing. Economics of product development. Prototyping. Teams of students work on a design project in the area of thermo-fluid design. Design project work will continue in MAE 4043. **Corequisite: MAE 413**

**MAE 4043 Thermal Systems Design II 1-4-3**

Conclusion of thermo-fluid design project. Preparation of a formal written design report and oral presentation of the design. Course must be taken the semester immediately following MAE 4033. **Prerequisite: MAE 4033**

**MAE 4053 Mechanical Systems Design I 2-2-3**

Introduction to design methodology and practice. Product specifications. Concept generation and selection. Product design. Design for manufacturing. Economics of product development. Prototyping. Teams of students work on a design project in the area of mechanical systems or machine design. Design project work will continue in MAE 4063. **Prerequisites: MAE 303, MAE 353, MAE 373**

**MAE 4063 Mechanical Systems Design II 1-4-3**

Conclusion of mechanical systems or machine design project. Preparation of a formal written design report and oral presentation of the design. Course must be taken the semester immediately following MAE 4053. **Prerequisite: MAE 4053**

**MAE 4123 Power Generation 3-0-3**

Design of a power plant to meet specified energy demand. Selection and/or synthesis of principal components and pollution control equipment. Performance optimization, instrumentation and control. **Prerequisite: MAE 323**

**MAE 4143 Physical Metallurgy 2-2-3**

Course explores the underlying structure-property relationships of metals. Thermodynamics and kinetics of phase transformations, diffusion, dislocation behavior, strengthening mechanisms, fracture mechanisms, crystallography, creep and fatigue behavior. Laboratory work in fractography, scanning electron microscopy, fracture, tensile properties, and metallography. Project involving failure analysis to illustrate effect of materials in design. **Prerequisite: MAE 443**

**MAE 4153 Machine Component Design II 3-0-3**

Design of machine components and machines. Components include: screws, belts, chains, springs, shafts and gearing. Bolted, riveted, welded, and adhesive connections. Students conduct design projects on both individual and group basis. **Prerequisites: MAE 353, MAE 373**

**MAE 4173 Reaction Engines 3-0-3**

Basic theory of gas turbine engines with particular emphasis on turbofan aircraft engines. Study of the aerothermodynamics of propulsion, component characteristics, overall engine performance, and introduction to engine design. **Prerequisites: MAE 323, MAE 333**

**MAE 4183 Aircraft Stability and Control 3-0-3**

The linearized equations of motion for atmospheric flight are developed. Longitudinal and lateral motions of the airplane are studied with particular emphasis on the phugoid, short-period, dutch-roll and spiral motions. Static stability and control requirements for airplane design are considered. **Prerequisites: MA 233, MAE 473**

**MAE 4193 Metal Casting 2-2-3**

This course covers the casting process from the perspective of engineering design. Tooling design for casting processes, melt quality control, heat transfer and fluid mechanics applications in casting, dynamics of mold interaction with the cast metal. Commercial software applications are included in solidification modeling and melt chemistry control. **Prerequisite: MAE 343**

**MAE 513 Thermal Systems Design and Optimization I 3-0-3**

Review of power cycles, heat transfer and fluid mechanics. Review of engineering economy. Methodology to design and optimize thermal systems. Theory and selection of steam generators. Theory and selection of heat exchangers. Theory and selection of steam turbines. Theory and selection of pumping systems. Design of steam power plants. **Prerequisite: Graduate Standing in Mechanical Engineering**

**MAE 523 Thermal Systems Design and Optimization II 3-0-3**

Review of methodology to design and optimize thermal systems. Theory and selection of chillers. Theory and selection of gas turbines. Theory and selection of fuel cells. Design of cogeneration systems. Review of refrigeration cycles. Theory and selection of compressors. Theory and

selection of expansion valves. Design of refrigeration systems. **Prerequisite: Graduate Standing in Mechanical Engineering**

**MAE 533 Mechanism Synthesis 3-0-3**

Analytical synthesis of planar linkages for function, path and motion generation. Dynamic analysis of joint forces in planar mechanisms. Synthesis of rigid and compliant cam and follower systems. **Prerequisite: Graduate Standing in Mechanical Engineering**

**MAE 543 Advanced Machine Design 3-0-3**

Design of machine elements with an emphasis on uncertainty. Statistical descriptions of material properties. Limits and fits, dimensions and tolerances, and the propagation of error. Effect of uncertainty in theories of failure for both static and fatigue loading. Design for reliability. Application to selected machine elements. **Prerequisite: Graduate Standing in Mechanical Engineering**

**MAE 553 Computer Integrated Manufacturing 3-0-3**

Computer assisted process planning and estimating. Concepts of computer control and feedback mechanisms. Design considerations for machine tools, machining cells, robotics, and flexible manufacturing systems. **Prerequisite: Graduate Standing in Mechanical Engineering (Same as ETD 573)**

**MAE 563 Metallurgical Failure Analysis 3-0-3**

A study of the mechanisms of materials failure, failure analysis techniques, and non-destructive testing methods. Emphasis is placed on the analysis and interpretation of case studies. Fracture mechanics, fatigue, environmental influences, and manufacturing influences on failure are all addressed. Practical laboratory work with the scanning electron microscope and with optical microscopes serves to illustrate and reinforce key concepts in fractography. **Prerequisite: Graduate Standing in Mechanical Engineering**

**MAE 573 System Dynamics and Control 3-0-3**

The development of linear models in terms of state-variable equations, input-output differential equations, and transfer functions. The introduction of both time-domain solutions and Laplace transforms. The development of time constants, damping ratios, transfer functions, poles and zeros, mode functions, and frequency-response functions. The application of feedback modeling and design tools including: root-locus diagrams, Bode plots, and PID control. **Prerequisite: Graduate Standing in Mechanical Engineering**

**MAE 583 Design of Experiments 3-0-3**

Design and statistical analysis of engineering experiments with a focus on process optimization and robust product design. Single factor and multi-factor experimental design and analysis. Taguchi methods are discussed including the application of signal-to-noise ratio, and orthogonal arrays. **Prerequisite: Graduate Standing in Mechanical Engineering**

**MAE 608 Design Project 0-40-8**

A design project, with industrial application, producing all necessary and appropriate documentation, models, and prototypes. The project should entail a minimum of 600 hours of work. All other course work for the degree must be completed prior to registration for this course. **Prerequisite: Completion of course work required for Master of Engineering degree**

## **MANAGEMENT**

**MGT 313 HUMAN RESOURCES MANAGEMENT 3-0-3**

This course includes a discussion of policies, objectives, principles and organizational structure as they pertain to personnel work. The major activities of a personnel department such as recruiting, selecting, training, and employee relations are examined along with the impact of government laws and regulations on these activities. **Prerequisite: MGT 363**

**MGT 323 LEADERSHIP 3-0-3**

This course examines leadership, influence, and power across a variety of disciplines with a strong emphasis on ethics. Historical, literary, and contemporary examples of successful leadership provide a framework for examining the theories and practice of leadership and power.

**MGT 333 SUPERVISION 3-0-3**

This course is intended for people who are, or plan to be, first line supervisors. Its purpose is to present basic principles that will assist in developing the talent needed to direct other people. Skill building cases and incidents are part of the course content. **Prerequisite: MGT 363**

**MGT 343 HUMAN RESOURCE DEVELOPMENT 3-0-3**

This course is a study of processes, methods, theories, and current practices in training and staff development in business and organizational settings. The course focuses on practices that facilitate learning and change to achieve organizational objectives. **Prerequisite: MGT 313 or permission of instructor**

**MGT 353 DESIGNING OPERATIONS 3-0-3**

This course examines the central concepts of designing operations in both manufacturing and service enterprises. Topics include process strategy, location and layout strategy, job design, quality management, planning, productivity, and the design of goods and services. **Prerequisites: MA 173 or permission of instructor**

**MGT 363 ORGANIZATIONAL BEHAVIOR 3-0-3**

This course examines the manager's role in dealing with behavior at all organizational levels. It emphasizes the need for interpersonal and group skills. Applications of behavioral science concepts and findings to organizational situations are included. Topics include motivation, communications, leadership, conflict and change. **Prerequisites: COM 213, PSY 113, or permission of instructor**

**MGT 413 MANAGEMENT OF QUALITY 3-0-3**

This course examines principles of quality management and continuous improvement in manufacturing and services enterprises. The focus is on using key quality tools, including statistical process control, pareto charts, flow charts, cause-effect diagrams, etc. **Prerequisite: MGT 353, MA 253, or permission of instructor**

**MGT 443 MANAGING OPERATIONS 3-0-3**

This course examines contemporary operations management principles and practices. Topics include project management, inventory management, aggregate planning, supply chain management, materials requirement planning, lean manufacturing, and just-in-time principles. **Prerequisite: MGT 353 and MA 253 or permission of instructor**

**MGT 453 STRATEGIC MANAGEMENT 3-0-3**

This course requires a knowledge of all functional areas of business. It integrates these areas through analysis of case histories and related readings. Class discussion, presentations and written reports are used extensively. This course is the capstone business course and should be taken the last semester before graduation. **Prerequisite: Completion of all business core courses or permission of the dean of the Ketner School of Business**

**MGT 463 SMALL BUSINESS MANAGEMENT 3-0-3**

This course examines the preparatory steps necessary to launch a small business enterprise, as well as manage the everyday complexities of cash flow, marketing, staffing, pricing, purchasing and advertising. Its purpose is to present the many competencies needed to operate a small business successfully in the competitive environment of the 21st century. Case analysis and personal interviews are the primary integral components of the course content. **Prerequisites: AC 213, MK 303, FIN 303, MGT 353, MGT 363**

**MGT 493 SELECTED TOPICS 3-0-3**

Offered to treat specific or current business or management issues in depth. **Prerequisite: MGT 353, MGT 363 or permission of the instructor and the dean of the Ketner School of Business**

### **MGT 523 COMMUNICATIONS, LEADERSHIP AND ETHICS 3-0-3**

This course examines leadership, influence and power across a variety of disciplines with a strong emphasis on ethics. Historical, literary and contemporary examples of successful leadership provide a framework for examining the theories and practice of leadership and power. This course requires substantial advanced critical thinking and writing. **Prerequisite: Graduate standing**

### **MGT 543 OPERATIONS STRATEGY AND MANAGEMENT 3-0-3**

This course examines the central role of operations in both manufacturing and service enterprises. Topics include quality management, design of goods and services, layout, scheduling, project management, inventory management, supply chain management and purchasing activities within the firm. **Prerequisite: Graduate standing**

## **MARKETING**

### **MK 303 MARKETING 3-0-3**

The marketing activities necessary to provide goods and services to target customers are examined, as well as the role marketing plays in the social and economic system. The marketing variables of product, promotion, placement, and price are considered in the context of strategic planning, implementation, and control. **Prerequisites: AC 203, COM 213, ECO 213, or permission of the instructor**

### **MK 313 RETAIL MANAGEMENT 3-0-3**

This is the study of the role of retailing in the domestic and international marketing process. A functional approach is taken in the study of retailing topics of placement, promotion, pricing, inventory control. Also examined are the consumer purchasing behavior and lifestyle profiles to understand growth of non-traditional channels. **Prerequisite: MK 303 or permission of the instructor**

### **MK 323 INTEGRATED MARKETING COMMUNICATIONS 3-0-3**

The integrated approach to marketing communications is emphasized. Advertising, sales promotion, database/direct marketing, public relations, sponsorship/event marketing, support media, trade promotions, internet marketing, personal selling and their coordination through a common brand and theme are investigated. A comprehensive IMC marketing plan for a small firm is required. **Prerequisite: MK 303 or permission of the instructor**

### **MK 333 BUYER BEHAVIOR 3-0-3**

Studies in this course include consumer and organizational buying behavior, as well as determinants of this behavior. Consumer characteristics, including attitudes and behaviors, processing of information, as well as consumer cultural, psychological and communication theories are also studied. Course also examines industrial perspectives; the unique aspects of organizational markets and how they differ from individual consumer behavior. **Prerequisite: MK303 or concurrent with MK303 or permission of the instructor**

### **MK 343 INTERNATIONAL MARKETING 3-0-3**

This course provides a detailed examination into the principles and practices of international marketing as it applies to today's global economy. In-depth studies and analysis will be made of trade and commercial policies and practices, as well as international product adaptation, promotion, distribution and pricing strategies. The student will examine the international marketing manager's role in the development of an export marketing program. **Prerequisites: BA 343, MK 303 or permission of the instructor**

### **MK 423 PERSONAL SELLING 3-0-3**

This course examines the impact of personal selling in today's competitive marketplace. Topics examined are motivation, account selection, compensation, seller's role in the economy, and personality variables. **Prerequisite: MK 303 or permission of the instructor**

#### **MK 433 MARKETING MANAGEMENT 3-0-3**

This is the study of the planning, implementation and outcomes of a firm's marketing program. Content will focus on identification, analysis, and reviews of internal/external factors associated with marketing policies and programs. **Prerequisites: MGT 353, MK 303 or permission of the instructor**

#### **MK 463 MARKETING RESEARCH 3-0-3**

This is the study of techniques and approaches associated with researching marketing topics. It includes consumer research, market analysis, product research, advertising research, and sales analysis. **Prerequisites: MA 253, MK 303 or permission of the instructor.**

#### **MK 473 E-MARKETING 3-0-3**

Electronic technologies are applied to the functions of marketing which are product, price, placement, and promotion. E-marketing transforms traditional business using new models that add customer value and increase profitability. The outcome of the course will be the creation of an E-Marketing plan. **Prerequisites: AC 213, ECO 223, MK 303, or permission of the instructor**

#### **MK 483 SENIOR SEMINAR IN MARKETING 3-0-3**

This is an integrative capstone course which brings together all the functional areas of marketing. The focus is on decision-making and problems in marketing strategy. Students will study marketing considerations and responses to changes in the customer, legal, trade, technological and regulatory environments. This course includes the preparation and organization of a comprehensive marketing plan. **Prerequisite: Senior Marketing Major or minor in marketing having completed most of required marketing courses, AC 213, ECO 223, MK 303**

#### **MK 493 SPECIAL TOPICS IN MARKETING 3-0-3**

Offered to treat specific or current marketing issues in depth. **Prerequisite: MK 303, permission of the instructor**

#### **MK 503 STRATEGIC MARKETING MANAGEMENT 3-0-3**

This course examines the collective marketing activities (pricing, promotion, placement, product) as they relate to the target market. The strategic planning process and how it relates to the overall profitability of the marketing department and a corporate structure will be studied. **Prerequisite: Graduate standing**

### **MUSIC**

#### **MUS 272 MUSIC APPRECIATION 2-0-2**

An introduction to the heritage of music culture of the Western world, including musical styles of the past and styles and forms of contemporary music literature. Previous music training not a prerequisite.

### **PHYSICS**

#### **PH 104 PHYSICAL SCIENCE 3-2-4**

A development of basic concepts and theories in the physical sciences and physics. Conceptual view of mechanics, thermodynamics, sound waves, electricity, magnetism and optics.

#### **PH 114 INTRODUCTION TO PHYSICS 3-2-4**

An introduction to the concept and application of Newton's Law, linear motion, rotational motion, laws of conservation of both energy and momentum, Coulomb's Law, static electrical changes, D.C. circuits and selected fundamental quantities. **Prerequisites: MA 113, MA 123**

#### **PH 124 UNIVERSITY PHYSICS I 3-2-4**

Underlying principles of measurement, vectors, translatory, rotary, uniform and circular and harmonic motion, work, power and energy, and physical properties of liquids, solids and gases, statics. Also the fundamentals of heat: thermometry, expansion of liquids, solids and gases, calorimetry, heat transfer, elementary thermodynamics and fluids. Experimental investigation of selected topics. **Prerequisite: MA 134**

#### **PH 134 UNIVERSITY PHYSICS II 3-2-4**

Study of vibrations and wave motion: different types of simple harmonic motion, sound. Also the fundamentals of electric fields, Gauss's Law, electric potential, capacitance, magnetism, direct and alternating currents and circuits. Electromagnetic wave propagation and optics. Experimental investigation of selected topics. **Prerequisites: MA 164, PH 124**

#### **PH 303 INTRODUCTION TO MODERN PHYSICS 3-0-3**

Introduction to contemporary atomic and nuclear physics: special theory of relativity, particle properties of waves, wave properties of particles, atomic structure, first ideas of quantum mechanics. **Prerequisites: MA 233, PH 134**

#### **PH 323 ELECTROMAGNETISM 3-0-3**

A study of electrostatics, special techniques for calculating potentials, electrostatic fields in matter, magnetostatic fields in matter, and Maxwell's equations. **Prerequisites: MA 233, PH 124, PH 134**

#### **PH 333 MECHANICS 3-0-3**

The topics will be chosen based on the students' backgrounds from the following: fundamental laws of mechanics of particles and rigid body including vibrations and Lagrangian mechanics. **Prerequisites: MA 233, PH 134**

#### **PH 343 MATHEMATICAL METHODS IN PHYSICS 3-0-3**

Emphasis on physics applications from the following topics: partial differential equations of mathematical physics. Orthogonal functions. Fourier series. **Prerequisites: MA 233, PH 134**

#### **PH 400X SPECIAL TOPICS IN PHYSICS VARIED (1-6 HRS.)**

Selected fields of physics chosen for their mathematical, philosophical or technological interest. May be repeated with the approval of the department chair for a maximum of 6 credit hours. **Prerequisite: Permission of Department Chair**

## **PHILOSOPHY**

#### **PHL 203 INTRODUCTION TO PHILOSOPHY 3-0-3**

A study of the perennial problems of philosophy, such as the nature of knowledge, the role of the self, the existence of God and the function of science. The contributions of the great thinkers and of history to these problems are presented so that the student may find aid in forming his or her own philosophy.

#### **PHL 313 ETHICS 3-0-3**

A study of ethical language, methods of justifying ethical decisions, and types of ethical value systems, with emphasis on practical applications in terms of personal and social morality.

#### **PHL 323 PHILOSOPHY OF RELIGION 3-0-3**

An inquiry into the nature of religious experience, activity and belief. An examination of the concepts of God, freedom and immortality as well as the relationship of religious knowledge to artistic and scientific knowledge.

**PHL 333 ART, TECHNOLOGY AND SOCIETY 3-0-3**

An interdisciplinary effort to place modern technology within a social, cultural and historical context. **Prerequisite: ENG 113 (Same as SOC 333)**

**PHL 343 LOGIC 3-0-3**

An examination of the function of language and the nature of meanings. Valid and invalid reasoning, deductive and inductive methods. Particular emphasis will be given to the application of formal techniques to the evaluation of arguments in everyday settings. The course is argument and language oriented.

**PSYCHOLOGY****PSY 113 PRINCIPLES OF PSYCHOLOGY 3-0-3**

Introduction to the scientific study of human and animal behavior. Course covers all of the major areas within psychology, including development, learning, intelligence, personality, attitudes, altered states of consciousness, abnormal behavior and psychotherapy.

**PSY 303 RESEARCH METHODS IN PSYCHOLOGY 3-0-3**

An introduction to research methods employed in psychology, with special emphasis on experimental design. Topics include between and within-subjects designs, quasi-experimental designs, as well as research ethics and procedures for controlling extraneous variables. **Prerequisite: PSY 113**

**PSY 313 TOPICS IN PSYCHOLOGY 3-0-3**

Survey, in detail, of one of the major areas of study within psychology. The course changes each semester with the specific topic of study announced in the class schedule. **Prerequisite: PSY 113**

**PSY 323 ABNORMAL PSYCHOLOGY 3-0-3**

Survey of abnormal psychology, including such topics as clinical assessment, anxiety disorders, schizophrenia, personality disorders, age-related problems, depression, sexual dysfunctions, psychotherapy and related legal and ethical questions arising within clinical psychology. **Prerequisite: PSY 113**

**PSY 333 PSYCHOLOGY OF PERSONALITY 3-0-3**

An introductory survey of problems, methods and theories; personality development and motivation, with emphasis on the normal contemporary theories of adjustment and idiodynamics. **Prerequisite: PSY 113**

**PSY 343 SOCIAL PSYCHOLOGY 3-0-3**

An introduction to the measurement and principles of human interaction and group behavior including attitude change, prejudice, attraction, love, altruism, aggression, conformity, group dynamics, crowding and other current social issues. **Prerequisite: PSY 113 (Same as SOC 343)**

**PSY 353 CHILD AND ADOLESCENT PSYCHOLOGY 3-0-3**

An investigation into the development stages within the life of a human being, from birth through adolescence, with emphasis on the origin of personality and factors related to intellectual growth. **Prerequisite: PSY 113**

**PSY 373 POLITICAL PSYCHOLOGY 3-0-3**

An examination of the role of group dynamics and personality variables in contemporary political issues, including leadership and power, political attitudes, current social movements, conflict resolution, coalition formation, cross-cultural comparisons of political attitudes and other issues. **Prerequisites: GOV 113, PSY 113 (Same as GOV 373)**

**PSY 383 FORENSIC PSYCHOLOGY 3-0-3**

A pragmatic review of the psychological and sociological theories and practices which seek to evaluate and analyze deviant human behavior and environments which precipitate criminal conduct. An introduction into the profiling and prediction of criminals and criminal behavior.

**Prerequisite: PSY 113**

**PSY 403 HUMAN SEXUALITY 3-0-3**

A survey of the historical, cultural and psychological origins of sex differences as they relate to sex role identity, stereotyping and related behavior. **Prerequisite: PSY 113**

**PSY 413 THE PSYCHOLOGY OF ADDICTION 3-0-3**

A study of the psychological and sociological factors relating to the problems of addiction. Special attention will be given to the effects which alcohol and other drugs have upon fetuses, children, adults, families and communities. **Prerequisite: PSY 113**

**PSY 423 COUNSELING THEORIES AND PRACTICES 3-0-3**

A thorough review of contemporary approaches to counseling. This course examines the major current theories and practices in psychotherapy in detail. **Prerequisite: PSY 323**

**PSY 443 ADVANCED FORENSIC PSYCHOLOGY 3-0-3**

An in-depth study of the etiology of criminal behavior. A critical analysis of mentally disordered, psychopathic and sexually disordered offenders. Students acquire profiling and prediction skills.

**Prerequisites: PSY 383, junior or senior standing and departmental Chair approval**

**PSY 453 CLINICAL PRACTICUM I 3-0-3**

Field experience in psychology related occupations such as local mental health centers, work with local counselors or school psychologists. May be taken concurrently with PSY 463.

**Prerequisites: Psychology major, senior standing and permission of the instructor**

**PSY 463 CLINICAL PRACTICUM II 3-0-3**

A continuation of PSY 453. May be taken concurrently with PSY 453. **Prerequisite: Psychology major, senior standing and permission of the instructor**

**PSY 400X INDEPENDENT STUDIES IN PSYCHOLOGY VARIED (1-4 HRS.)**

Credit earned through directed reading, independent study, research or supervised field work. Maximum 4 hours credit. **Prerequisite: Permission of Department Chair**

**SCIENCE****SC 400X SCIENCE INTERNSHIP VARIED (1-8 HRS.)**

An extended professional work experience in an area related to the student's major. The work experience consists of at least 50 documented hours of work (which is equal to one credit hour).

**Prerequisite: Two science classes, senior standing and permission of the Department Chair**

**SC 412 SENIOR RESEARCH SEMINAR 1-3-2**

Project selection, initial preparation and preliminary data collection for a major science research project that integrates several scientific disciplines, methods of analysis, the reporting of conclusions and communication skills. Course continues in SC 422. **Prerequisite: Senior standing**

**SC 422 SENIOR RESEARCH PROJECT 0-6-2**

An integrated research project that incorporates the basic and advanced sciences, mathematics and communication skills. This course must be taken the semester immediately following SC 412.

**Prerequisite: SC 412 and senior standing**

**SOCIOLOGY**

**SOC 103 PRINCIPLES OF SOCIOLOGY 3-0-3**

A presentation of the basic concepts and principles of sociology, designed to develop a system of thought about the nature of society and major social problems, such as ethnic patterns, social stratification, youth and educational and religious institutions.

**SOC 243 ECONOMICS OF SOCIAL ISSUES 3-0-3**

An economic analysis of social issues, such as the problems of pollution, poverty, crime and the use of drugs. A study of the economic consequences of various social and economic policies, population pressures and related energy and pollution problems. **Prerequisite: ECO 213 (Same as ECO 243)**

**SOC 313 TOPICS IN SOCIOLOGY 3-0-3**

Selected topics in sociological content such as criminology, minority groups, urbanization and the like. Topics will vary from semester to semester. **Prerequisite: SOC 103**

**SOC 323 THE FAMILY 3-0-3**

An analysis of problems and relationships in the family setting: divorce, mobility, generation differences, changing role of women and youth, delinquency, cross cultural patterns. **Prerequisite: PSY 113 or SOC 103**

**SOC 333 ART, SOCIETY AND TECHNOLOGY 3-0-3**

An interdisciplinary effort to place modern technology within a social, cultural and historical context. **Prerequisite: ENG 113 (Same as PHL 333)**

**SOC 343 SOCIAL PSYCHOLOGY 3-0-3**

An introduction to the measurement and principles of human interaction and group behavior, including attitude change, prejudice, attraction, love, altruism, aggression, conformity, group dynamics, crowding and other current social issues. **Prerequisite: PSY 113 (Same as PSY 343)**

**SPEECH****SP 102 INTRODUCTION TO THEATER 2-0-2**

Understanding the roles of playwrights, actors, directors, designers, and audiences within the "living art" of theater. Demonstrates the relationship between art and culture through the study of, participation in, and viewing of theater.

**SP 203 EFFECTIVE SPEAKING 3-0-3**

Public speaking designed to teach oral communication through the study and practice of the basic principles of speech with particular emphasis on purpose, organization and delivery. **Prerequisite: ENG 103, ENG 113 or ENG 133**

**SP 212 ORAL INTERPRETATION 2-0-2**

The techniques of oral interpretation with emphasis on the selection and analysis of literature and the skilled use of the voice and body for meaningful and aesthetic communication. **Prerequisite: ENG 153**

**SPANISH****SPL 104 SPANISH I 4-0-4**

An introduction to the Spanish language and Latin American and Spanish cultures, with an emphasis on listening and speaking skills. Reading, writing and basic grammar will also be included. No previous study of Spanish is required.

**SPL 114 SPANISH II 4-0-4**

A continuation of Spanish I, including listening and speaking skills, with additional emphasis on the reading of Spanish literature and the study of that culture. **Prerequisite: SPL 104 or consent of the instructor**

**TURF GRASS MANAGEMENT****TGM 101 INTRODUCTION TO TURF GRASS STUDIES 1-0-1**

This course is an introduction to the basics of turf grass management. The class will study turf grass physiology and growth characteristics of plant species and varieties. The class will visit turf grass sites to observe the methods of turf grass maintenance and establishment and will examine the responsibilities of turf grass managers and their staff. Issues related to the turf grass industry and its management will be discussed.

**TGM 103 TURF GRASS PESTS, IDENTIFICATION, AND CONTROL 3-0-3**

This course is a comprehensive examination of turf grass disease, weeds and insects. Students will learn to identify damaging pests and implement chemical and cultural prevention and control.

**TGM 214 TURF MAINTENANCE 3-3-4**

This course is a survey of the schedules for maintaining healthy turf and controlling conditions that favor disease. Students will study the principles involved in irrigation, mechanics, mower operation, and drainage. **Prerequisite: TGM 101, TGM 103**

**TGM 223 TURF ECOLOGY 3-0-3**

This course examines ecological concerns and procedures in turf grass management. Students will study resource quality and quantity and their impacts on turf quality, as well as environmental impacts of turf grass management on the ecosystem. Students will examine soil reports for nutrient sources and required amendments. **Prerequisites: TGM 101, TGM 103**

**TGM 241 INDEPENDENT STUDY IN TURF GRASS 1-0-1**

This course is a supervised independent research project in a turf grass topic, culminating in a paper. Alternatively, the student can study and take a certified applicator exam core and/or category. **Prerequisites: TGM 201, TGM 214; can be concurrent with TGM 223**

**TGM 253 INTERNSHIP IN TURF GRASS 3-0-3**

In this course, the student is placed at a golf facility, athletic field, or other turf maintenance operation and works under the direct supervision of an employer. **Prerequisites: TGM 101, TGM 103**

**UNIVERSITY EXPERIENCE****UE 012 ACADEMIC FOUNDATIONS 2-1-0**

This course helps students develop the competency needed to be successful in other college courses. The focus is on preparing students to do college level reading and writing and learning by building on each student's academic skills. This is a non-credit, preparatory class.

**UE 101 UNIVERSITY EXPERIENCE 1-0-1**

This course offers resources for success in learning for students new to Tri-State University. This course will assist students in becoming more proficient learners, understanding self and others, and learning personal life skills. This course will present information about Tri-State University offices and services to familiarize students with resources and procedures.

# BOARD OF TRUSTEES

*Year in parentheses denotes when affiliation with board began.*

## OFFICERS:

John A. Pittman (1997) Chair  
Austin, Texas

B.S.E.E., Hon. D.E. (Tri-State University); M.B.A. (Baldwin-Wallace College);  
President (ret.), The Fieldbus Foundation, Austin, Texas

Jerry L. Allen (1995) Vice Chair

Westfield Center, Ohio

B.S.M.E., Hon. D.E. (Tri-State University);

Vice President, Product Development, TVC Communications, Inc., Wadsworth, Ohio

Ralph D. Trine (1990) Secretary

Fremont, Indiana

B.S.M.E., Hon. D.E. (Tri-State University); M.S.M.E., M.B.A. (Michigan State University);

Chair and CEO, Vestil Manufacturing Co., Angola, Indiana

## MEMBERS:

James D. Bock (2003)

Elkhart, Indiana

B.S.M.E. (Tri-State University)

President/Owner Bock Engineering Co., Elkhart, Indiana

Keith E. Busse (2003)

Fort Wayne, Indiana

B.S.B.A. (Saint Francis); M.B.A. (Indiana University/Purdue University–Fort Wayne)

President and CEO Steel Dynamics, Inc., Fort Wayne, Indiana

Jimmie Caldwell (1976) Chair Emeritus

Indianapolis, Indiana

B.S.C.E., Hon. D.E. (Tri-State University);

President and Chair (ret.), Chair Emeritus, Geiger and Peters, Inc., Indianapolis, Indiana;

Registered Professional Engineer

James P. Fabiani (2001)

McLean, Virginia

B.S. (Harvard); M.Ed. (University of Massachusetts);

Chair and CEO, Fabiani & Company, Washington, DC

Lawrence A. Franks (1984-2002) (2004) Chair Emeritus

Sturgis, Michigan

B.S.M.E., Hon. D.E. (Tri-State University);

President, Burr Oak Tool and Gauge Company, Inc., Sturgis, Michigan

Tomas Furth (1997)

Caracas, Venezuela

B.S.M.E., B.S.Ch.E., Hon. D.E. (Tri-State University)

President, Sudamtex Holding, Caracas, Venezuela

Brett Gemlick (2004)

Fort Wayne, Indiana

B.S. (Purdue University), M.D. (Ohio State University College of Medicine)

Orthopedics Northeast, PC, Fort Wayne, Indiana

William A. Gettig (1984) Chair Emeritus  
Spring Mills, Pennsylvania  
B.S.M.E., Hon. D.E. (Tri-State University); Hon. Doctor of Laws, (Susquehanna University)  
President and C.E.O., Gettig Technologies, Spring Mills, Pennsylvania

John N. Hester (2000)  
Orangevale, California  
B.S.Ch.E., (Tri-State University); M.S.Ch.E., (Michigan State University); Ph.D. (Walden Univ.)  
Associate Dean Emeritus, College of Engineering, California State University, Sacramento,  
California

Robert L. Jannen (1969) Chair Emeritus  
Naples, Florida  
B.S.Ch.E., Hon. L.L.D. (Tri-State University); M.B.A. (U.C.L.A.)  
Chair (ret.), Burnley Corporation, Huntsville, Alabama

Dean V. Kruse (2001)  
Auburn, Indiana  
Auctioneer's Degree (Reppert Auction School);  
Director, Global Marketing, Kruse International, Auburn, Indiana

Stephen R. LaHood (2004)  
Highland Park, IL  
B.S.B.A. (Tri-State University);

John J. McKetta, Jr. (1957)  
Austin, Texas  
B.S.Ch.E., Hon. D.E. (Tri-State University); B.S.E., M.S., Ph.D. (University of  
Michigan); Hon. D.Sc. (University of Toledo); Hon. D.E. (Drexel University);  
Joe C. Walter Chair in Chemical Engineering (Emeritus),  
Department of Chemical Engineering, University of Texas, Austin, Texas;  
Registered Professional Engineer

John J. "Mike" McKetta, III  
Austin, Texas  
B.A. (Harvard University); J.D. (University of Texas)  
President, Graves, Dougherty, Hearon & Moody, Austin, Texas

Jana A. Moak (2005)  
Enfield, Connecticut  
B.A., M.S. (Northeastern University), M.B.A. (University of Maryland)  
President and CEO, Control Module, Inc., Enfield, Connecticut

Richard L. Oeder (1995)  
Columbus, Ohio  
B.S.C.E. (Tri-State University);  
Area Manager (ret.), Columbia Gas of Ohio, Springfield, Ohio

Jeffrey J. Posendek (2003)  
Avon, Ohio  
B.S., Business Education (Tri-State University)  
Principal, Lakewood High School, Lakewood, Ohio

Mitchel E. Rhoads (2006)  
Rockport, Texas  
B.S. B.A. (Tri-State College)  
Chairman, Rhoads Holding Ltd., Rockport, Texas

Charles H. Taylor (1992)  
Shaker Heights, Ohio  
B.S.M.E., Hon. D.E. (Tri-State University);  
Chair of the Board (ret.), Tube Craft, Inc., Cleveland, Ohio

Dennis A. Trinkle  
Valparaiso, Indiana  
B.A., History, (DePauw University); M.A. & Ph.D. (University of Cincinnati)  
CIO, Valparaiso University, Valparaiso, Indiana

Ken Venturi (2002)  
Palm Springs, California  
B.A. Physical Education (San Jose State University); Hon.D.H.L. (Tri-State University)  
Professional Golf Association Tour player (ret.); commentator CBS Sports (ret.)

R. Wyatt Weaver (2004)  
Angola, Indiana  
M.D. (Indiana University)  
Family Practice Physician, Angola, Indiana

TRUSTEES EMERITI  
(Dates denote years of active service as a trustee.)

Joanne S. Crown (1969-1987)  
Wilmette, Illinois  
B.S. (Indiana University)

Morgan L. Fitch, Jr. (1968-1977)  
Western Springs, Illinois  
B.S.Ch.E. (Illinois Institute of Technology); J.D. (U.S. Navy Law School, University of Michigan)  
Senior Partner, Fitch, Even, Tabin, and Flannery, Chicago, Illinois

Leamen I. Forman (1984-2002)  
Appleton, Wisconsin  
B.S.B.Ad., Hon. D.B.Ad. (Tri-State University)  
President & Chair of the Board (ret.), Bank of Menasha, Menasha, Wisconsin

William P. Himburg (1975-1985)  
Naples, Florida  
B.S. (Tri-State University)  
Chair of the Board, Indian Trails, Inc., Owosso, Michigan

Paul R. Kahlenbeck (1983-1998) Chair Emeritus  
Columbus, Indiana  
B.S.M.E., Hon.D. E. (Tri-State University);  
Vice President (ret.), Cummins Engine Company, Inc., Columbus, Indiana

John W. Kirsch (1965-1975)  
Sturgis, Michigan  
K.Ed. (Albion College); M.B.A. (Indiana University)  
Chair of the Board (ret.), Kirsch Company, Sturgis, Michigan

Wayne Larson (1981-1993)  
Pasadena, California  
B.S.B.Ad. (Tri-State University)  
Owner, Wayne H. Larson Insurance Agency, Pasadena, California

Earl F. McNaughton (1983-2003) Chair Emeritus  
Fremont, Indiana  
B.S.B.Ad., M.S.B.Ad., (Indiana University); J.D. (Valparaiso University);  
Hon. D.B.Ad. (Tri-State University)  
Chair of the Board & President (ret.), The First National Bank of Fremont, Fremont, Indiana

Gary L. Ray (1990-2002) Chair Emeritus  
Medina, Ohio  
B.S.M.E., Hon. D.E. (Tri-State University); M.B.A. (Wharton Graduate Division,  
University of Pennsylvania);  
President/Owner, Transformer Engineering Corp., Cleveland, Ohio

Richard A. Rosenthal (1971-1977)  
Niles, Michigan  
B.S. (University of Notre Dame)  
Director of Athletics, University of Notre Dame, South Bend, Indiana

Clifford W. Sponsel (1978-1999)  
Santa Barbara, California  
B.S.C.E., Hon. D.E. (Tri-State University)  
Investments and Consultant

Carl A. Strock (1979-1988)  
Angola, Indiana  
A.B. (DePauw University)  
Owner (ret.), Strock's Men's Wear, Angola, Indiana

Joseph R. Teagno (1955-1994)  
Chagrin Falls, Ohio  
B.S.M.E., Hon. L.L.D. (Tri-State University); J.D. (Wayne State University)  
General Patent Counsel (ret.), Eaton Corporation, Chagrin Falls, Ohio

Norman O. White (1980-1994)  
Bloomfield Hills, Michigan  
B.S.M.E., Hon. D.E. (Tri-State University)  
Chair of the Board, H.M. White Inc., Detroit, Michigan

# UNIVERSITY ADMINISTRATION

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Dr. David Finley.....Vice President for Academic Affairs  
Scott J. Goplin.....Vice President for Enrollment Management  
Robert L. Remington.....Vice President for Institutional Advancement  
Dr. Thomas W. Zeidel.....Vice President for Finance

## ACADEMIC DEANS

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Dr. Roger Hawks ..... Allen School of Engineering & Technology  
Dr. Jeffrey Sherlock .....Ketner School of Business  
Dr. Dolores Tichenor .....Jannen School of Arts & Sciences  
Dr. Suzanne Van Wagner ..... Franks School of Education

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Ann Benson ..... Department of Science  
Dr. Sean Carroll ..... Department of Electrical & Computer Engineering  
Dr. Forrest Flocker.....Wade Department of Mechanical & Aerospace Engineering  
Dr. Allen Hersel .....McKetta Department of Chemical & Bioprocess Engineering  
Craig Laker ..... Department of Criminal Justice, Psychology & Social Sciences  
William Maddock..... Department of Health, Physical Education & Sport Management  
Dr. Kenneth Meeks ..... Department of Civil & Environmental Engineering  
Edward Nagle ..... Department of Technology  
David Syler ..... Department of Mathematics & Computer Science  
Dr. Lisa Toner ..... Department of English & Communication

## ACADEMIC DEPARTMENT ADMINISTRATIVE ASSISTANTS

Sue Baker..... Mechanical & Aerospace Engineering  
Emily Chancellor..... Science and Mathematics & Computer Science  
Vicki Frey.....English and Health, Physical Education & Sport Management  
Helen Hall.....Civil & Environmental Engineering and Technology  
Diana Kitson.....Criminal Justice, Social Sciences & Psychology  
Judy Miller.....School of Business  
Julie Pfafman.....Academic Affairs  
Mechelle Snyder.....School of Education  
Deb Strong.....Chemical & Bioprocess Engineering and Computer & Electrical Engineering

## ACADEMIC SUPPORT

Kathie Wentworth .....Director of Academic Support Services

## ATHLETICS

Dr. David Anspaugh ..... Athletic Director

Rob Harmon .....Assistant Athletic Director, Head Men's Basketball Coach  
Greg Perschke ..... Assistant Athletic Director, Head Baseball Coach  
Jennifer Rushton ..... Assistant Athletic Director/Senior Women's Administrator,  
Head Women's Basketball Coach

Dan Callahan.....Head Wrestling Coach  
Melissa Cope ..... Sports Information Director, Assistant Women's Basketball Coach  
Assistant Softball Coach

Donnie Danklefsen.....Head Softball Coach, Assistant Men's Basketball Coach  
Ginny Hawthorne ..... Administrative Assistant

Kris Hazard .....Head Men's Soccer Coach  
Randy Hunt.....Head Men's & Women's Cross Country Coach  
Matt Land ..... Head Football Coach  
Walter Lilley .....Athletic Recruiting Coordinator, Assistant Men's Golf Coach,  
Assistant Baseball Coach  
William Maddock .....Head Men's & Women's Tennis Coach  
Elizabeth McGrail .....Head Women's Soccer Coach  
Bill SanGiacomo ..... Head Men's Golf Coach  
Sarah Steele .....Assistant Sports Information Director, Head Women's Volleyball Coach  
Aaron Waltz .....Head Women's Golf Coach

#### BON APPETIT

.....General Manager

Tom O'Brien..... Catering Manager  
Ben Grubisich .....Chef

#### BRAND & INTEGRATED MARKETING

.....Director

Carla Satchwell.....Senior Media Specialist  
Dan McCormick.....Media Specialist  
Krista Shields.....Communications Specialist

#### BUSINESS OFFICE

Dr. Thomas Zeidel.....Vice President for Finance

Jody Greer ..... Controller  
Lynda Crawford ..... Senior Staff Accountant  
Deanne Davis ..... Staff Accountant  
Karen Norris..... Accounts Payable Administrator  
Diane Penix .....Director of Human Resources  
Loretta Simmons..... Senior Student Accounts Administrator  
Andrea Smith ..... Student Accounts Administrator

#### CAMPUS OPERATIONS

Rod Olsen .....Director of Campus Operations

Kathy Grygienc .....Housekeeping Manager  
Kristen Hovermale.....Office Manager

#### CAREER SERVICES

Deborah Roemke ..... Director

#### ENROLLMENT MANAGEMENT

Scott Goplin.....Vice President for Enrollment Management

Cindy Ax ..... Administrative Assistant/Visit Coordinator  
Kimberly Bennett .....Director of Student Financial Planning, Director of Admissions  
Carol Brown .....Transfer Student Coordinator  
Kelly Butler.....Assistant Director of Admission, Visit Coordinator  
Patricia Dean ..... Admission Coordinator  
Terry Dirrim.....Assistant Director Student Financial Planning  
Pamela Fifer ..... Financial Planning Branch Analyst  
Teresa Furniss.....Counselor  
Sherrie Grant .....Counselor  
Kelly McGuire ..... Counselor

Deborah McHenry .....Director of Student Retention  
Judith Simmroth .....Financial Planning Student Coordinator  
Noah Swartz.....Counselor  
Jon Walmer .....Counselor

FOLLETT BOOKSTORE

Grant Felmet.....Manager

INFORMATION TECHNOLOGY

Michelle Dunn.....Chief Information Officer

Lawrence Helmsing ..... Director, Administrative Computing  
Julie Cottin.....Instructional Technologist  
Linda Decker .....Network/PC Technician  
Michael Gough .....Assistant Instructional Technologist  
Chad Hankins.....Residential Network Technician  
Marie Hufnagle ..... Network Manager/PC Specialist  
Renee VanWagner .....Telephone/PC Technician

MAIL ROOM

Aimee Shultzaberger..... Manager, TSU Mail Services

MIDDLE COLLEGE

Cheryl Thomas.....Middle College Coordinator

OFFICE OF THE REGISTRAR

Debra Helmsing .....Registrar

Carol Brown.....Transfer Coordinator  
Lucretia Shank .....Assistant Registrar  
Dianna Whorley .....Records Assistant

OFFICE OF STUDENT LIFE

Randy White ..... Dean of Students

Teresa Johnson ..... Housing Coordinator  
James Kutnow.....Director  
Shelly LaPlace ..... Administrative Assistant  
Marlene Sweet.....Counselor

PERRY T. FORD MEMORIAL LIBRARY

Kristina Brewer ..... Director

Anne Abernathy ..... Technical Services  
Diana Burnham.....Circulation Manager  
Laura Carnahan .....Public & Electronic Information Services  
Connie Tharp ..... Secretary, Acquisitions

UNIVERSITY ADVANCEMENT

Robert Remington.....Vice President for University Advancement

J. Michael Ferrell ..... Director of Major Gifts  
Melanie Harmon.....Director of Corporations & Foundations  
Allen Keen .....Director of Alumni Relations, Annual Giving & Regional Campaigns  
John McBride.....Director of University Relations  
Nancy Roberts.....Administrative Assistant  
Raymond Stuckey .....Director of Development and Planned Gifts  
Julie Wert .....Assoc. Director of Annual Fund, Univ. Advancement

Erlene Yentes .....Director of Records & Receipts

WEAX RADIO STATION

Josh Hornbacher.....Operations Manager

ZOLLNER GOLF COURSE

Aaron Waltz..... Head Golf Pro

Barry Emerick.....Superintendent, Grounds

Nick Wentworth .....Assistant Superintendent, Grounds

Dan Zimmerman.....Maintenance

# FACULTY

*Year in parentheses denotes when employment with Tri-State University began, followed by campus affiliation.*

David Anspaugh (2001)

Professor, Health, Physical Education & Sport Management Department

B.S. (Albion College); M.S. (Eastern Michigan University)

Pe.D. (Indiana University); Ed.D. (University of Tennessee)

Susan Anspaugh (2006)

Visiting Assistant Professor, Department of Health, Physical Education and Sport Management

B.S., M.S. (University of Memphis); Ph.D. (University of Mississippi)

William Barge (2002)

Assistant Professor, Department of Mathematics and Computer Science

B.S. (Miami University of Ohio); M.B.A. (Indiana University), M.S. (Regis University)

Brett Batson (2006)

Assistant Professor, Wade Department of Mechanical & Aerospace Engineering

B.S., M.S., Ph.D. (Iowa State University)

Ann Benson (1985)

Associate Professor of Science

B.S. (Tulane University); B.S. (Tri-State University); M.S. (Indiana University)

Michael Biegas (2005)

Assistant Professor of History

B.S. (Tri-State University); M.S. (Michigan State University)

W. Brooks Bigelow (1988)

Associate Professor of Chemistry

B.S. (University of Delaware); M.S., Ph.D. (New Mexico State University)

Michael Blaz (1976)

Professor of Psychology

B.A. (University of Minnesota); M.A. (Illinois State University); Ph.D. (University of Kentucky)

Ramiro Bravo (1991)

Professor of Mechanical & Aerospace Engineering

Diploma, M.E. (San Andres University); M.S., Ph.D. (University of Iowa); P.E. Indiana

Earl D. Brooks, II (2000)

Professor of Biology

B.S., M.S., Ph.D. (University of Tennessee)

Daniel Callahan (2006)

Instructor, Department of Health, Physical Education & Sport Management

Stephen Carr (2003)

Associate Professor of Electrical Engineering

B.S. (University of Ulster); Ph.D. (Queens University of Belfast)

Sean Carroll (1990)

Associate Professor, Department of Electrical & Computer Engineering

B.E. (Vanderbilt University); M.A., Ph.D. (Princeton University)

Timothy Carver (2005)  
Assistant Professor of Computer Science  
B.S. (Union Institute and University); M.S. (University of Cincinnati)

Nancy Davis (2004)  
Assistant Professor of Education  
B.S. (Indiana State University); M.S. (Long Island University); Ph.D. (Union Institute and University)

Jean Deller (1989)  
Associate Professor of Education  
B.A. (Milligan College); M.S. (Indiana University); Ph.D. (University of Toledo)

Brian Desharnais (2000)  
Associate Professor of Civil Engineering  
B.S. (Merrimack College), M.S. (Rose-Hulman Institute of Technology), Ph.D. (Northwestern University)

Yalcin Ertekin (2003)  
Assistant Professor of Technology  
B.S. (Istanbul Tech. University); M.S., Ph.D. (University of Missouri-Rolla)

Lin Feng (2006)  
Associate Professor of Mechanical & Aerospace Engineering  
B.S., M.S. (Nanjing University), Ph.D. (Case Western Reserve University)

John Fiandt (1995)  
Assistant Professor of Criminal Justice  
B.S.Ed. (Ball State University); M.A. (University of Notre Dame)

David Finley (1996)  
Associate Professor of Chemical Engineering  
B.S., M.S. (University of Michigan); M.S., Ph.D. (Wayne State University); P.E. Indiana

Forrest Flocker (2000)  
Associate Professor of Mechanical Engineering  
B.S. (University of California-Davis); M.S., Ph.D. (University of Missouri-Rolla); P.E. Missouri, Texas, Colorado, Indiana

Wesley Garner (2001)  
Associate Professor of Education  
B.S. (District of Columbia Teachers College); M.Ed. (Wayne State University)

Kajal Ghoshroy (2005)  
Associate Professor of Science  
B.Sc. (Presidency College); M.Sc. (University of Calcutta); M.S. (Illinois State University); Ph.D. (University of New Hampshire)

Roger Hawks (1977)  
Professor of Mechanical & Aerospace Engineering  
B.S. (University of Cincinnati); M.S. (Massachusetts Institute of Technology); Ph.D. (University of Maryland)

Allen Hersel (2003)  
Assistant Professor of Chemical Engineering

B.S. (University of Missouri-Rolla); M.S. (University of Kansas and Yale University); Ph.D. (Yale University)

Jason Hill (2006)  
Assistant Professor of Civil and Environmental Engineering  
B.S., M.S., Ph.D. (Tennessee Technological University)

Timothy Hopp (2003)  
Assistant Professor of English and Theater  
B.A. (Rocky Mountain College); M.A. (University of Maine)

Julie Howenstine (2005)  
Assistant Professor of Business  
B.S. (Oakland University); M.B.A. (University of Saint Thomas)

Donald Jones (1996)  
Associate Professor of Communication & Rhetoric  
B.A. (University of Minnesota); A.M. (University of Illinois); Ph.D. (Southern Illinois University)

Ira Jones (1983)  
Professor of Science  
B.S. (Davidson College); M.S. (New York University); Ph.D. (Auburn University)

Haseeb Kazi  
Assistant Professor of Mathematics  
B.S. (University of Punjab), M.S. (Quaid-I-Azam University), M.S. (Southern Illinois University)

Chad Keefer (2005)  
Visiting Assistant Professor of Physics  
B.S., M.A., Ed.D. (Ball State University)

Scott Kiefer (2002)  
Associate Professor of Mechanical Engineering  
B.S. (University of Wisconsin, Platteville); M.S., Ph.D. (North Carolina State University)

Donald Kreitzer (2004)  
Assistant Professor of Business  
B.S.G.(Indiana University—Fort Wayne); M.A., Ed.D. (Ball State University)

Craig Laker (1999)  
Associate Professor of Criminal Justice  
C.B.S., B.S., M.P.A., M.A. (Indiana University)

Suzanne Lenhart (2002)  
Assistant Professor of Psychology  
B.A. (Defiance College); M.A. (Antioch University)

William Lipman (2000)  
Assistant Professor of Business  
B.A. (Ball State University); M.B.A. (University of St. Francis)

William Maddock (1998)  
Assistant Professor, Department of Health, Physical Education and Sport Management  
B.S. (Slippery Rock State University); M.S. (University of Tennessee)

Dan Matthews (1983)  
Associate Professor of Computer Science  
B.S. (Tri-State University); M.S. (Indiana University)

Kenneth Meeks (1997)  
Professor of Civil & Environmental Engineering  
B.S. (U.S. Naval Academy); B.C.E., M.S. (Georgia Institute of Technology); D.S. (The George Washington University); P.E. Louisiana and Virginia

Kim Miller (2004)  
Assistant Professor of Accounting  
B.S., M.B.A. (Indiana University); C.P.A. Indiana

John Milliken (2004)  
Assistant Professor of Criminal Justice  
B.A. (Ohio State University); J.D. (University of Toledo)

Vicki Moravec (2002)  
Associate Professor of Chemistry  
B.S. (Indiana/Purdue University-Fort Wayne);  
Ph.D. (University of Illinois-Chicago)

Lisa Murphy (2006)  
Assistant Professor, Department of Mathematics and Computer Science  
B.S. (Wright State University); M.S., Ph.D. (University of Illinois)

Edward Nagle (1967)  
Professor of Technology  
B.A., M.S. (Southern Illinois University); CMfgE

Cindy Neyer (1998)  
Assistant Professor of Physics  
B.S. (University of Kansas); Ph.D. (Iowa State University)

Dennis Petrie (1975)  
Professor of English and Humanities  
B.A. (Western Kentucky University); M.A., Ph.D. (Purdue University)

Kathleen Pomeroy (2004)  
Assistant Professor of Education  
B.A. (University of Northern Colorado); M.S. (Indiana University)

Majid Salim (1984)  
Associate Professor of Chemical Engineering  
B.S., M.S., Ph.D. (Wayne State University)

Lawrence Samuelson (1983)  
Professor of Electrical & Computer Engineering  
B.S. (Iowa State University); Ph.D. (Michigan State University)

William SanGiacomo (1965)  
Associate Professor of English, Director, LeCour Golf Management Program  
A.B., M.A. (Montclair State College)

Janice Miller Schlegel (2000)  
Associate Professor of English  
B.A., M.A. (Indiana University); Ph.D. (State University of New York)

Steven Schonefeld (1978)  
Associate Professor of Mathematics  
B.S., M.S., Ph.D. (Purdue University)

Jeffrey Sherlock (1997)

Associate Professor of Business Administration

B.B.A., M.B.A. (Ohio University); Ed.D. (Ball State University)

Sally Simpson (1995)

Associate Professor of Education

B.A. (Colby College); M.S. (Northern Illinois University); Ph.D. (Florida State University)

Michael Smith (2006)

Instructor, Department of Health, Physical Education & Sport Management

B.S., M.B.A. (Tiffin University)

John Stephens (2000)

Assistant Professor of Business

B.S., M.B.A. (Western Michigan University)

David Syler (1968)

Professor of Mathematics & Computer Science

B.S. (Heidelberg College); M.A. (Bowling Green State University); M.A. (Ball State University)

Dolores Tichenor (1967)

Professor of Mathematics, Director of IPA

B.S. (Mundelein College); M.S. (Purdue University); Ph.D. (University of Missouri-Rolla)

Thomas Tierney (1974)

Professor of English and Humanities; Director, Humanities Institute

B.A. (University of Illinois); M.A., Ph.D. (Loyola of Chicago)

Lisa Toner (2002)

Assistant Professor of English and Communication

B.A. (College of Mount Saint Vincent); M.A., Ph.D. (Purdue University)

Timothy Tyler (1994-1998, 1999)

Associate Professor of Civil & Environmental Engineering

B.S., M.S. (West Virginia University); Ph.D. (Virginia Polytechnic); P.E. Virginia and Indiana

Debra Ann VanRie (1991)

Professor of Mathematics

B.S. (Indiana University-South Bend); M.A. (Indiana University-Bloomington); Ph.D. (Bowling Green State University)

Suzanne VanWagner (1983)

Associate Professor, Franks School of Education

B.A., M.A., Ph.D. (Michigan State University)

C. Denise Wagner (2001)

Associate Professor, Department of Technology

B.S. M.E. (University of Colorado-Boulder); M.S. (University of Houston)

John Wagner (1994)

Associate Professor, McKetta Department of Chemical & Bioprocess Engineering

B.S. (University of Colorado); Ph.D. (Rice University); P.E. Ohio

Sean Wagner (2001)

Assistant Professor of Geography and Sociology

B.A. (Southern Methodist University); M.A. (University of Hawaii)

Darryl Webber (2006)

Assistant Professor, Wade Department of Mechanical and Aerospace Engineering

B.S. (Montana College of Mineral Science and Technology); M.S. (Montana Tech of the University of Montana); Ph.D. (University of Missouri-Rolla)

Kathie Wentworth (1993)

Assistant Professor, Department of English & Communication

A.A., B.S. (Tri-State University); M.Ed., (Indiana Wesleyan)

Robert Whelchel (1969-72, 1974)

Professor of Electrical Engineering

B.S., M.S. (Purdue University); Ph.D. (Mississippi State University)

Huiming Yin

Assistant Professor of Civil Engineering

B.S.E. (Hohai University), M.S. (Peking University), Ph.D. (University of Iowa)

Stanley Yoder (1988)

Associate Professor of Electrical & Computer Engineering

B.S. (Tri-State University); M.S. (Wichita State University);

Ph.D. (University of Notre Dame)

# ADJUNCT FACULTY

Mirna Bravo (1993)  
Mathematics & Computer Science  
Licentiate (San Andres University-Bolivia); M.S. (University of Iowa)

Amy Brugh (2005)  
Business  
B.S. (Tri-State University)

Rita Deller (2005)  
Education  
B.S., M.S. (Indiana University)

Brett Fisher (2005)  
Mechanical Engineering  
B.S. (University of Northern Iowa)

Karen Frey (2004)  
Education  
B.S. (Tri-State University)

Roberta Gagnon (2002)  
Computer Science  
B.S.M.E. (University of Toledo)

Ruth Gitzendanner (1994)  
Business  
B.A. (University of Denver); M.B.A. (Roosevelt University);  
C.P.A. (Indiana & Illinois)

Irvin Hart (2003)  
Education  
B.A. (North Central College); M.S.T. (University of Missouri)

Rebecca Henry (2003)  
Science  
B.S. (University of Michigan)

Roberta Gagnon (2002)  
Mathematics and Computer Science  
B.S. (University of Toledo)

John Howard (1997)  
Criminal Justice, Psychology & Social Sciences  
B.S. (Northern Michigan University)

Frank Jagoda (1996)  
Criminal Justice, Psychology & Social Sciences  
Law Enforcement Training Board; Homicide Scene Investigation & Forensic  
Pathology; Law Enforcement Officers' Training; Indiana State Coroners'  
Association

Sally Lanier (2000)  
Education  
B.S. (North Central College)

Theodore Lantz (2000)  
Criminal Justice, Psychology & Social Sciences  
B.S.M.C. (University of Cincinnati); M.B.A. (University of Louisville)

Denise Magwire (2004)  
Health, Physical Education, and Sport Management  
M.S. (Indiana University)

Bruce Novak (2002)  
Business  
B.S., M.S. (Indiana University)

David Olson (1998)  
Education  
B.A. (Manchester College); M.S. (Indiana University-Fort Wayne)

David Paas (1994)  
Business  
A.B, M.A., Ph.D. (University of Nebraska-Lincoln)

Nejla Robinson (2005)  
Business  
B.A. (DePauw University); M.A. (University of Kent)

Deborah Roemke (1999)  
Business  
B.A. (Tri-State University); M.B.A. (Indiana Wesleyan University)

John Rowe (2005)  
Criminal Justice

Jeanine Samuelson (1991)  
English & Communication  
B.A. (Manchester College); M.A., Ph.D. (Purdue University)

Sue SanGiacomo (1994)  
Music  
B.L.S. (Hillsdale College); M.S.Ed. (Indiana University-Fort Wayne)

Dorene Scheimann (2005)  
Education  
B.S., M.S. (Indiana University)

Neil Shamberg (2005)  
History  
M.A. (Ball State University); Ph.D. (Case Western Reserve University)

James Simons (2000)  
Mathematics and Education  
B.A. (Indiana Central College); M.A.T. (Indiana University)

David Skelton (2002)  
Education  
B.S., M.S. (Ball State), Ph.D. (Indiana University)

Jon Smith (2003)  
Physical Education

B.S. (Indiana State University); M.S. (Emporia State University)

Thomas Smith (2003)

Psychology

B.A. (The Ohio State University); M.A. (University of Dubuque); Graduate Theological Foundation

Carter Snider (1997)

Business

A.B., M.A. (West Virginia University)

Susan Stackhouse (2005)

Education

B.S. (Manchester College), M.S. (Indiana University)

William Stitt (2004)

Education

B.A. (Western Michigan University); M.S. (Indiana University)

Cheri Streicher (1999)

English & Communication

B.A. (Ohio Northern); M.S. (Miami University)

Marlene Sweet (1999)

Criminal Justice, Psychology & Social Sciences

B.S.W. (Ball State University); M.S.W. (Western Michigan University)

Jane Tubergen (2005)

Education

B.A. (Purdue University); B.S. (Tri-State University); M.A.T. (Indiana University)

John Vanderkolk (2004)

Science

B.A. (Indiana University)

Aaron Waltz (2004)

Golf Management

B.S. (Ferris State University)

Jan Wilson (1991)

Education

B.S. (Indiana University); M.S.Ed. (University of St. Francis)

## FACULTY & ADMINISTRATION EMERITI

Jerry Beehler (1969) Professor Emeritus, 2005; Mathematics  
John Berger (1983) Professor Emeritus, 1994; Business Administration  
Frederick M. Bogardus (1962) Vice President Emeritus, 1973  
Jack Brillhart (1979) Associate Professor Emeritus, 2002; Mathematics  
Thomas Burney (1971) Professor Emeritus, 1994; Social Sciences  
Ray A. Condon (1963) Professor Emeritus, 1982; English  
Robert H. Cunningham (1961) Professor Emeritus, 1995; Physics  
Beaumont Davison (1983) President Emeritus, 1989  
Benjamin L. Dow (1977) Professor Emeritus, 1987; Aerospace Engineering  
Arthur E. Eberhardt (1952) Professor Emeritus, 1990; Electrical Engineering  
Paul F. Eble (1957) Professor Emeritus, 1981; Physics  
Carl H. Elliot (1974) President Emeritus, 1983  
Satish Goyal (1979) Professor Emeritus, 1987; Civil Engineering  
Albert Guilford (1957-59, 1961-62, 1963, 1967) Professor Emeritus, 2005; Civil & Environmental Engineering  
Ima Lee Heier (1968) Professor Emeritus, 1992; Mathematics  
William W. Hill (1961) Professor Emeritus, 1993; Mechanical & Aerospace Engineering  
Peter Hippensteel (1964) Professor Emeritus, 2005; Biology  
Joan Karbach (1994) Professor Emeritus, 2006; English  
Leo F. Kuhn (1961) Professor Emeritus, 1992; Engineering Graphics  
Sushil Kumar (1981) Professor Emeritus, 2005; Civil & Environmental Engineering  
Richard Krugar (1965) Associate Professor Emeritus, 2006, Mathematics  
Theron G. Lansford (1964) Professor Emeritus, 1999; Psychology  
Michael J. Lesiak (1967) Associate Professor Emeritus, 2004; Accounting  
Ping-Wha Lin (1965-79, 1982) Professor Emeritus, 1995; Civil Engineering  
Ralph H. Martin (1957) Director of Business Affairs & Treasurer Emeritus, 1988  
John C. McBride (1977-88, 1994) University Relations Director Emeritus, 1995  
William Meyers (1964-66, 1972-76, 1983) Professor Emeritus; Aerospace & Mechanical Engineering  
Derald Moore (1968) Professor Emeritus, 1998; Social Sciences  
John E. Morin (1966) Professor Emeritus, 2004; Social Sciences  
Aldo R. Neyman (1986) Professor Emeritus, 1999; Business Administration  
Elizabeth B. Orlosky (1956) Professor Emeritus, 1986; English  
Chester A. Pinkham (1967) Professor Emeritus, 2002; Chemistry  
R. John Reynolds (1993) President Emeritus, 2000  
Richard A. Ruselink (1966) Associate Professor Emeritus, 2004; Mathematics  
Ronald E. Scheffer (1967) Professor Emeritus, 2005; Social Sciences  
Leonard E. Sheffield (1966) Professor Emeritus, 1998; Business Administration  
Billy E. Sunday (1946) Vice President & Treasurer Emeritus, 1983  
Alan R. Stouinger (1962) Professor Emeritus, 2003; Electrical & Computer Engineering  
Frank Swenson (1982) Professor Emeritus, 1998; Mechanical Engineering  
William A. Threlkeld (1957) Professor Emeritus, 1978; Mathematics  
Donald L. Trennepohl (1966) Professor Emeritus, 1973; Business Administration  
W. Henry Tucker (1969) Professor Emeritus, 1984; Chemical Engineering  
William J. Walter (1972) Professor Emeritus, 1993; Business Administration  
Donald T. Zimmer (1973) Professor Emeritus, 1995; Social Sciences  
James Zimmerman (1973) Professor Emeritus, 2005; Arts & Sciences

# CALENDAR

## Fall 2006- Summer 2008

### Fall Semester 2006

August 22	Tues	Classes Begin
September 4	Mon	No Classes: Labor Day
October 9-10	Mon.-Tues	No Classes: Fall Break
November 22-24	Wed.-Fri.	No Classes: Thanksgiving Holiday
December 8	Fri.	Last Class Day
December 11-14	Mon.-Thurs.	Final Exams
December 15-Jan.8, 2007		No Classes: Holidays

### Spring Semester 2007

January 9	Tues	Classes Begin
January 15	Mon	No Classes: MLK Day
March 5 -9	Mon.-Fri.	No Classes: Spring Break
April 6	Fri.	No Classes: Good Friday
April 27	Fri.	Last Class Day
April 30-May 3	Mon.-Thurs.	Final Exams
May 5	Sat.	Commencement

### Summer Session 2007

May 14	Mon.	Classes begin ( Session I & 12 Week)
May 28	Mon.	No classes: Memorial Day
June 22	Fri.	Finals, 1st 6-wk session ( 12-Wk no class)
June 25	Mon.	2nd 6-Wk session begins
July 4	Wed.	No Classes: 4th of July
August 3-4	Fri.-Sat.	Final Exams

### Fall Semester 2007

August 21	Tues	Classes Begin
September 3	Mon.	No Classes: Labor Day
October 1-2	Mon.-Tue.	No Classes: Fall Break
November 21-23	Wed.-Fri.	No Classes: Thanksgiving Holiday
December 7	Fri.	Last Class Day
December 10-13	Mon.-Thurs.	Final Exams
December 14-Jan. 7, 2008		No Classes: Holidays

### Spring Semester 2008

January 8	Tues.	Classes Begin
January 21	Mon.	No Classes: MLK Day
March 3-7	Mon.-Fri.	No Classes: Spring break
April 21	Fri.	No Classes: Good Friday
April 25	Fri.	Last Class Day
April 26 – May 1	Mon.-Thurs.	Final Exams
May 3	Sat.	Commencement

### Summer Session 2008

May 12	Mon.	Classes begin ( Session I & 12 Week)
May 26	Mon.	No classes: Memorial Day
June 20	Fri.	Finals, 1st 6-wk session ( 12-Wk no class)
June 23	Mon.	2nd 6-Wk session begins
July 4	Fri.	No Classes: 4th of July
August 1-2	Fri.-Sat.	Final Exams

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