Russ College of Engineering and Technology

http://www.ohio.edu/engineering/

Stocker Center

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Dean

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The Fritz J. and Dolores H. Russ College of Engineering and Technology offers degree programs through the School of Electrical Engineering and Computer Science and the Departments of Chemical Engineering, Civil Engineering, Industrial and Manufacturing Systems Engineering, Mechanical Engineering, Aviation, and Industrial Technology. Engineering curricula are focused on the engineering profession, in which a knowledge of the mathematical and natural sciences—gained by study and experience—is applied to develop ways to use economically the materials and forces of nature for the benefit of society and the environment. Graduates have both the theoretical and practical training to begin a professional career or continue advanced work at the graduate level. Program flexibility is provided through technical electives so students can concentrate their studies in a chosen area or use the electives in other areas.

Education and University-based research and development in engineering and technology are vital to the future. Today's students are preparing for careers in some of the most exciting, promising, and critical of all modern undertakings. During the past 20 years, the Russ College of Engineering and Technology has accelerated toward the forefront in providing the leadership required to meet such challenges. Within its framework, aggressive learners can acquire the specific knowledge for a successful career, and individual talents can be adapted to preferences among the college's eight undergraduate programs.

The Russ College of Engineering and Technology was originally founded in 1935 as the College of Applied Sciences, but its origins date back to the earliest history of Ohio University; records show that surveying was among the first courses offered. The first engineering degree was granted in 1902. In 1985 the college moved into the C. Paul and Beth K. Stocker Engineering and Technology Center, and the Francis J. Fuller Aviation Training Center and Avionics Engineering Center hangar were completed in 1989.

In 1994, the college was renamed the Fritz J. and Dolores H. Russ College of Engineering and Technology and an 18,000-square-foot addition to Stocker Center was completed, providing additional laboratory space for undergraduate and graduate study and for multidisciplinary research. In 1996 the Konneker Research Laboratory was opened for expanded research in biotechnology. Two new facilities recently opened, one for advanced pavement research and one for advanced research in corrosion.

In 1996 the Board of Trustees established the Robe Leadership Institute in the Russ College to promote and encourage effective leadership among the students, faculty, and administrators. Currently, a Leadership Seminar in Engineering is available to seniors and graduate students in the College together with a Leadership Resource Center, named after Gerald Loehr, for materials and references on leadership. The institute sponsors leadership awards for students, faculty, and staff of the college.

All engineering programs are accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore MD, 21202-4015—telephone: (410) 347-7700. The computer science program is accredited by the Computing Accreditation Commission of ABET.

The industrial technology program is accredited by the National Association of Industrial Technology, and the aviation curriculum is approved by the Federal Aviation Administration.

Admission and Transfer Requirements

Recent high school graduates, or transfer students who have earned less than 30 quarter hours (or 20 semester hours) of credit at another accredited collegiate institution, may be admitted directly to an engineering program or computer science if they meet the general requirements for admission to Ohio University and have completed four years of college-prep math, and one year each of chemistry and physics. For the industrial technology and aviation programs, there are no admission requirements above the general University requirements.

Transfer students who have earned more than 30 quarter hours (or 20 semester hours) of credit at another accredited collegiate institution may be admitted directly to an engineering program or computer science if they meet the general requirements for transfer students, including a g.p.a. greater than 2.5.

Students who wish to transfer into an engineering program or computer science must have earned a C or better in a math course and a science course. The math course must be equivalent to Math 113 or higher. The science course must be equivalent to Chemistry 121 or higher or Physics 251 or higher. For the industrial technology and aviation programs, there are no admission requirements above the general University requirements for transfer students.

Students enrolled at any Ohio University campus who wish to transfer into any program in the Russ College cannot do so if they would be on academic probation after transferring into that major. The probation rules for Russ College are stricter than those for the University as a whole. In order to not be on probation, a student must have a g.p.a. of 2.0 or higher for all courses taken, for all courses taken in the Russ College, and for all courses taken in the intended major. Students must also have successfully completed all required courses in three attempts and have no required course that they've attempted twice without success.

Academic Requirements

Advising and Program Planning
Indicate your choice of discipline on the official application for admission to the University to assure the assignment of a faculty advisor in the department of your choice. If you have not decided upon a specific major within the college (major code ND0910), the associate dean for academics or the appropriate designate will serve as your advisor until you choose a major. Course requirements for the freshman year in each of the engineering departments within the Russ College of Engineering and Technology are similar. Hence, while it is desirable to indicate a specific major field of study earlier, you can defer a decision on a specific major field of study until the beginning of your sophomore year.

After completing one of the engineering degree programs in the Russ College of Engineering and Technology, you are qualified and encouraged to seek, by examination, registration as a professional engineer from the Board of Registration for Professional Engineers of the state where you intend to practice. It is to your advantage to take the examination during the spring quarter closest to the expected time of graduation or as soon after graduation as possible.

With careful planning you may, in addition to the Bachelor of Science degree from this college, obtain a second degree or a minor from another college in the University. (See "A Second Bachelor's Degree" in the University-Wide Graduation Requirements section.)

Marietta College and the Russ College of Engineering and Technology at Ohio University have agreed to participate in an alliance that will provide opportunities for students studying at either school to pursue engineering degrees not currently offered at their respective schools. This will be accomplished through a binary program that offers students the opportunity to earn a degree from each institution in disciplines to be formally decided upon by each respective school. See the associate dean for academics for details.

Graduate programs leading to the M.S. degree are available in all of the engineering programs and in computer science. In addition, graduate work leading to the Ph.D. degree is available in chemical engineering, electrical engineering, and an inter-disciplinary program in integrated engineering. These programs are described in detail in the *Graduate Catalog*.

Degree Requirements

As a candidate for a degree in the Russ College of Engineering and Technology, you must satisfy all of the curriculum requirements that are applicable toward a degree in your particular field as specified on the following pages. You must earn a minimum of 36 quarter hours applicable toward your degree after entering one of the degree programs. You must also complete 50 percent of the course work applicable to your degree while in residence at Ohio University. In addition, you must:

1. Have a 2.0 (C) average on all courses attempted which are applicable toward a degree.
2. Have a 2.0 (C) average on all courses attempted in the Russ College of Engineering and Technology that are applicable toward a degree.
3. Have a 2.0 (C) average on all courses attempted in the major area of study that are applicable toward a degree.
4. Successfully complete a course by the end of the third enrollment in that course. "Enrollment" includes classes in which WP or WF grades were earned.

Averages will be computed on final hours and points in repeated courses, if any.

Requirements for Continuing in the College
Once you are enrolled in the Russ College of Engineering and Technology, you will continue in your program unless there is demonstrated weakness in the mathematics, science, and engineering-related subjects that indicates your inability to meet the academic requirements of the program. The associate dean for academics and department chair will make decisions concerning cases of this nature, and you will be notified accordingly.

In addition to the above overall performance, you must meet the specific requirements listed under "Deficiency Points" and "Retaking Courses."

Deficiency Points
Once you are enrolled in the Russ College of Engineering and Technology you will continue in your program in a normal manner, provided:

1. You maintain an average of 2.0 (C) or better in all hours attempted at Ohio University that are applicable toward a degree.
2. You maintain an average of 2.0 (C) or better in all hours attempted in the Russ College of Engineering and Technology that are required for graduation (including technical electives). There are several computer science courses that are not included in the g.p.a. computation.
3. You maintain an average of 2.0 (C) or above in all courses attempted in your major area of concentration that are applicable toward the degree. There are several computer science courses that are not included in the g.p.a. computation.

Averages in any of these categories below 2.0 (C) result in probation. If you are on probation in any quarter, your academic record is reviewed by the associate dean for academics to determine if you may continue in the program. If you are placed on University probation at the end of any quarter, you must earn a minimum of nine quarter hours of credit with a 2.0 (C) or better average in your next quarter of attendance or be dropped from the University. These credits must be in courses directly applicable to the degree requirements.

In the subsequent quarter, if your academic progress is such that you are not eligible to be removed from probation, your academic record will be reviewed to determine if you should be continued. The number of times a continuance may be granted is limited to three; thus, there is an absolute limit of four consecutive quarters on proba-

tion. Although the maximum number of times you may be continued on probation is four, if you are on probation you may be dropped at the end of any quarter for poor academic performance.

If you are placed on college or departmental probation at the end of any quarter, you must increase your college or departmental g.p.a. to above 2.0 (C) within the next four quarters of enrollment; or you will be dropped from the Russ College and/or your major. You should discuss your probation with your academic advisor, department chair, and/or the associate dean for academics. If you are dropped from the University, college, and/or major, you may appeal by contacting the associate dean for academics.

Normally, a petition for reinstatement will not be considered until 12 months after you are dropped.

Academic Probation
Students who are placed on academic probation during their first year are required to complete an Academic Success workshop. The 90-minute workshop aims to help students improve their academic performance and return to good academic standing. Information about the workshop is sent to students' local addresses and University e-mail accounts.

Retaking Courses
As a student in the Russ College of Engineering and Technology, you must succeed in a required program course by the third time you enroll in the course. ("Enroll" means being on the class roster after the fourteenth-day drop date.) If you do not meet this requirement, you will be dropped from your program. Success is a passing grade or, in those courses in which a grade of C or C- is required to continue a sequence, a minimum grade of C or C-.

When you retake a course, only the grade received in the most recent attempt is used to determine your accumulative g.p.a. You may not retake a course after an advanced course in the same field has been passed if the course that you desire to retake was a prerequisite for the advanced course.

Course Credit by Examination or correspondence may not be used to earn credit in a course required for graduation which you have previously failed.

Tier II Requirement
Many courses required for majors in the Russ College also satisfy components of the University-wide Tier II requirement. Students should consult with their faculty advisor before choosing additional courses for the purpose of satisfying the Tier II requirement.

English Requirement
In addition to the curricular requirements as stated on the following pages for departments in engineering and technology, you must also satisfy the University curricular requirements in English.

Pass/Fail Option
You may elect to take courses on a pass/fail basis within eligibility requirements stated in the Academic Policies and Procedures section.

Cooperative Education

Cooperative education opportunities and internships are available in the Departments of Chemical Engineering, Civil Engineering, Electrical Engineering and Computer Science, Industrial and Manufacturing Systems Engineering, Mechanical Engineering, and Industrial Technology. Students participating in cooperative education alternate periods of on-campus study with roughly equal periods of worksite experience. Students may also work back-to-back quarters.

Participation in cooperative education provides valuable career experiences. The alternating work/study periods allow you to integrate classroom theory with practical applications and provide you with opportunities to earn money to assist in financing your education. You can also participate in summer internships.

If you are interested in these programs, contact the assistant dean for career and outreach programs, Stocker 169.

Technology Fee

The Russ College of Engineering and Technology is committed to providing its students with the most modern computing tools available. To achieve this goal, all students enrolled in the Russ College are charged a quarterly technology fee. This fee is used to continuously upgrade the hardware and software available to all students in the college's computer labs. Full-time students (11-20 credit hours) are billed $65 per quarter. Students enrolled for fewer than 11 hours are billed at a rate of $6 per credit hour.

Financial Aid

In addition to the financial aid program sponsored by the University, the Russ College of Engineering and Technology and its departments have separately funded scholarships. All admitted students are automatically considered for both University and College scholarships. The College also has established a student loan fund for upperclass students needing assistance. Information is available in the dean's office, Stocker Center.

Global Leadership Center

For information about the Global Leadership Center, refer to the program description in the College of Communication section.

Exploratory (Undecided) Engineering Students

Major code ND0910
Each year a substantial number of new students entering the Russ College of Engineering and Technology do so without a firm commitment to any one of the engineering programs offered by the college. The schedule below is suggested for these students. Each listed course will satisfy a degree requirement in Chemical, Civil, Electrical, Industrial and Systems, or Mechanical Engineering. In some cases, the listed course will serve as a free elective.

Freshman		
Fall		
CHEM 151	General Chem.[2]	5
ET 280	Engr. and Tech.— An Overview[1]	4
MATH 263A	Analytic Geom. and Calc. [2]	4
ENG 151	Freshman English[3]	5
Winter		
CHEM 152	General Chemistry	5
IT 101	Engr. Graphics Fund.[1]	3
MATH 263B	Analytic Geom. and Calc.	4
ECON 103	Microeconomics[1]	4

Spring		
PHYS 251	General Physics	5
CHE 231	Engineering Materials	4
MATH 263C	Analytic Geom. and Calc.	4
PHIL 130	Ethics[1]	4

1 These courses may be taken during any quarter.

2 Math and Chemistry course will depend upon freshman orientation placement exam results.

3 Students will take Freshman English in quarter assigned at freshman orientation.

Once a student has decided upon a major, he or she should begin to follow the preferred sequence for that major with advice from her or his faculty advisor. Students who begin their studies with a declared major and then change majors during their first year of study may substitute ME 101, EE 101, EE 102, CE 200, CHE 100, or ISE 200 for ET 280.

Degree Programs

Aviation

Flight and Aviation Management Options

Ohio University has been actively involved in aviation since 1939. It has many years of service to the aviation industry as an aviation education institution. The University operates its own airport and the University owns a fleet of aircraft that are used for transportation, research, and student pilot training. Students studying for a career in aviation are involved in each of these important areas. The degree programs offered by the Department of Aviation are rigorous, challenging, and exciting. They are designed to prepare graduates of the program for demanding pilot and management positions in the aviation industry.

The Department of Aviation offers a Bachelor of Science degree with two options: Flight and Aviation Management. Also, a two-year Associate degree program is offered. The Flight option program is a Federal Aviation Administration (FAA) approved FAR 141 program that meets the federal regulations for pilot training schools. Specifically, the Flight program educates and prepares students for a variety of pilot-related positions, including professional flight instructor, commercial pilot, airline pilot, and corporate pilot positions. The Aviation Management option is a program designed to prepare students to meet the challenges of working in and managing various operations within the aviation industry. It provides the graduate with the ability to undertake positions in the aviation industry and to progress in time to managerial and supervisory positions with the necessary leadership and human relations skills. Both options give the graduate the broad knowledge base, perspectives, and flexibility to compete in the increasingly technical world of aviation.

Flight option students are expected to complete each flight course in one quarter. However, in some circumstances beyond the control of the student, such as weather, students can carry over completion of the course to the following quarter with permission. If the requirements for the course completion are not met in the following quarter, the student may be automatically dropped from the program.

Students must maintain a 2.0 g.p.a. to enroll in flight courses. Additionally, students must receive a grade of C- (70%) or better in all ground school courses that require an FAA knowledge test as a prerequisite for the appropriate flight course. It is possible to substitute elective courses in the curriculum as long as the minimum total credits for that subject area is maintained and that prior approval is received from the Department of Aviation.

Flight option majors must take AVN 400, AVN 420, AVN 430, AVN 445, and AVN 455 at Ohio University. These courses can not be transferred to Ohio University.

Bachelor of Science in Aviation—Flight Option
Major code BS7258

General Education Requirements

General Studies: 38 hours

ENG 151 or ENG 152 or 153	Freshman Comp. (1E)	5
PSY 101	General Psychology (2S)	5
COMS 101	Fundamentals of Human Communication (2H)	4
COMS 103	Fund. of Public Speaking	4
ENG 305J	Technical Writing (1J)	4

Choose a minimum of 16 hours from the classes below

ECON 103	Microeconomics (2S)	4
ECON 104	Macroeconomics (2S)	4
POLS 101	American National Government (2S)	4
GEOG 121	Human Geography (2S)	4
COMS 205	Group Discussion	4
COMS 206	Comm. in Interpersonal Relationships	4
COMS 342	Communication and Persuasion	4
PHIL 101	Fund. of Philosophy (2H)	4
ART 110	Seeing and Knowing the Visual Arts (2H)	4
ENG 200	Intro to Literature (2H)	4

Math/Science/Technology: 33 hours

MATH 163A	Calculus (2N)	4
PHYS 201	Intro to Physics (2N)	5
PSY 120	Elementary Statistics	4
GEOG 101	Elements of Physical Geography (2N)	5
GEOG 201	Environmental Geography (2A)	4
GEOG 302	Meteorology	5
GEOG 304	Obs. in Meteorology and Forecasting	2

Choose a minimum of 4 hours from the classes below

MATH 113	Algebra (1M)	5
PSC 100	Survey of Astronomy (2N)	4
GEOG 405	Forecasting in Meteorology	2

Computer Science: 8 hours

CS 120	Computer Literacy	4

Choose a minimum of 4 hours from the courses below

CS 230	Computer Programming (2A)	5
MIS 202	Business Info Sys.	4

Management and Human Resource Management: 16 hours

MGT 202	Intro to Management (2S)	4
MGT 340	Organizational Behavior	4

Choose additional 8 hours from College of Business courses 200 or above.

General Electives: 4 hours

Tier III: 4 hours

Aviation Core Requirements

Aviation Core: 24 hours

AVN 100	Intro to Aviation	4
AVN 110	Basic Aeronautics	4
AVN 300	Aviation Laws and Regulations	4
AVN 305	Aviation Weather	4
AVN 315	Aviation Safety	4
AVN 360	Natl. Airspace System	4

Option Requirements

Flight Education: 72 hours

AVN 240	Private Pilot Flight	4
AVN 310	Adv. Aeronautics	4
AVN 320	Adv. Aircraft Systems	4
AVN 340	Cross-Country Flight	4

AVN 350	Instrument Flight Systems and Procedures	4
AVN 400	Instrument Flight	4
AVN 405	Advanced Cross Countries	4
AVN 420	Commercial Flight	4
AVN 430	Multi-Engine Flight	4
AVN 440	Flight Instructor Ground	4
AVN 445	Flight Instructor Flight	4
AVN 450	Instrument Instr. Ground	3
AVN 455	Instrument Instr. Flight	4
AVN 475	Aviation Internship	2
AVN 390	Airline Oper. and Mgt.	4
AVN 480	Gen. Aviation Operations and Mgt.	4
AVN 485	Adv. Acft/Flt Crew Ops	5
AVN 489	Transition to Aviation Industry	2
IT 220	Aircraft Powerplants	4
Additional (optional) electives:		
AVN 410	Fund. of Aviation for Teachers	4
AVN 435	Flight Engineer	4
AVN 462	Multi-Engine X-C	1
AVN 465	Multi-Engine Flight Instr.	2
AVN 486	Principles Corp Flt Ops	4
AVN 487	Corp Flt Ops Int	2-6
Total hours required		**195**

Note: You must meet all University General Education Requirements in order to graduate.

Bachelor of Science in Aviation—Aviation Management Option
Major code BS7261

General Education Requirements

General Studies: 38 hours

ENG 151 **or** ENG 152 or 153	Freshman Comp. (1E)	5
PSY 101	General Psychology (2S)	5
COMS 101	Fundamentals of Human Comm. (2H)	4
COMS 103	Fund. of Public Speaking	4
ECON 103	Microeconomics (2S)	4
ECON 104	Macroeconomics (2S)	4
ENG 305J	Technical Writing (1J)	4
Choose a minimum of 8 hours from the classes below		
COMS 205	Group Discussion	4
COMS 304	Interviewing	4
COMS 342	Communication and Persuasion	4
PHIL 101	Fund. of Philosophy (2H)	5
ART 110	Seeing and Knowing the Visual Arts (2H)	4
ENG 200	Intro to Literature (2H)	4
Math/Science/Technology: 38 hours		
MATH 163A	Calculus (2N)	4
PHYS 201	Intro to Physics (2N)	5
PSY 120	Elementary Statistics	4
GEOG 101	Elements of Physical Geography (2N)	5
Choose a minimum of 20 hours from the classes below		
MATH 113	Algebra (1M)	5
PSC 100	Survey of Astronomy (2N)	4
COMT 101	Comm. Systems Mgt. (2A)	4
HLTH 202	Health Sciences and Lifestyle Choices (2A)	4
GEOG 302	Meteorology	5
Computer Science: 8 hours		
CS 120	Computer Literacy	4
Choose a minimum of 4 hours from the courses below		
CS 230	Comp. Programming (2A)	5
MIS 202	Business Info Sys	4
General Electives: 28 hours		
	Tier III	4

Choose at least 24 hours of University courses to meet the 192-hour requirement (AVN 240 is recommended).

Aviation Core Requirements

Aviation Core: 24 hours

AVN 100	Intro to Aviation	4
AVN 110	Basic Aeronautics	4
AVN 300	Aviation Laws and Regulations	4
AVN 305	Aviation Weather	4
AVN 315	Aviation Safety	4
AVN 360	Natl. Airspace System	4

Option Requirements

General Business: 44 hours

ACCT 101	Financial Accounting	4
ACCT 102	Managerial Accounting	4
MGT 202	Management	4
MGT 340	Organizational Behavior	4
HRM 320	Human Resource Mgt.	4
FIN 325	Managerial Finance	4
BUSL 255	Law and Society	4

Choose 16 credit hours from the courses below.
Note: You may not exceed 44 credit hours in College of Business courses.

MGT 430	Mgt. Systems—Decision Making	4
BUSL 356	Law of Mgt. Process	4
ECON 305	Managerial Economics	4

Choose an additional 4 credit hour College of Business course, 300 or higher.

Aviation Management: 12 hours

AVN 390	Airline Oper. and Mgt.	4
AVN 480	General Aviation Oper. and Mgt.	4
AVN 475	Aviation Internship	2
AVN 489	Transition to Aviation Ind.	2
Total hours required		**192**

Note: You must meet all University General Education Requirements in order to graduate.

Aviation Technology (A.A.S.)

Major code AA7250

The Associate in Applied Science (A.A.S.) degree in Aviation Technology is offered by the Department of Aviation exclusively at the Athens campus. The degree program provides students with the opportunity to explore career possibilities in the field of aviation and to receive pilot certification through the instrument rating and the commercial pilot certificate before committing to the baccalaureate degree program. Also, students who complete the A.A.S. degree program may terminate their studies and enter the aviation industry to pursue career positions as certified pilots and other opportunities as may be available. However, A.A.S. degree students are strongly encouraged to continue their studies for the B.S. degree because of the competitive nature of the aviation industry wherein the most qualified personnel are sought. Students interested in this program should contact the Department of Aviation.

Students must receive a grade of C- (70%) or better in all ground school courses that require an FAA written test as a prerequisite for the appropriate flight course.

Technical Requirements: 56 hours

AVN 100	Intro to Aviation	4
AVN 110	Basic Aeronautics	4
AVN 240	Private Pilot Flight Course	4
AVN 300	Aviation Laws and Regs.	4
AVN 305	Aviation Weather	4
AVN 310	Adv. Aeronautics	4
AVN 315	Aviation Safety	4
AVN 320	Adv. Aircraft Systems	4
AVN 340	Cross Country Flight	4
AVN 350	Instrument System Regulations and Procedures	4

AVN 360	The National Airspace System	4
AVN 400	Instrument Flight	4
AVN 405	Adv. Cross Countries	4
AVN 420	Commercial Flight	4

The following flight courses must be taken at Ohio University: AVN 400, 405, and 420. No transfer or experiential credit will be given.

General Requirements: 43-44 hours

CS 120	Computer Literacy	4
ECON 103	Prin. of Microeconomics	4
ECON 104	Prin. of Macroeconomics	4
ENG 151	Freshman Composition	5
GEOG 101	Physical Geography	5
COMS 103	Fund. of Public Speaking	4
MATH 115	Pre-Calculus or higher Tier I MATH	4–5
MGT 202	Management	4
POLS 101	American National Govt.	4
PSY 101	General Psychology	5

Minimum required for graduation: 99–100

Chemical and Biomolecular Engineering

Bachelor of Science in Chemical Engineering
Major code BS7251

Chemical engineering is that branch of engineering that deals with changing raw materials into valuable products that you use everyday. The discipline of chemical engineering is based on the application of chemistry, biology, physics, materials science, mathematics , and economics. The traditional chemical engineer develops a chemical process from its laboratory beginnings through pilot-plant equipment to full-scale, production plant operations. Chemical engineers are employed in a wide range of industrial and research positions. In addition to the traditional chemical engineering employers in the chemical and petroleum industries, chemical engineers increasingly find employment in the areas of polymers, pharmaceuticals, food processing, agriculture, environmental engineering, biotechnology, paper processing, energy, and electronics.

The chemical engineering program at Ohio University prepares undergraduate students for the opportunities and challenges that they will meet upon graduation. Our curriculum includes traditional chemical engineering courses such as mass and energy balances, thermodynamics, fluid flow, heat transfer, separation processes, reaction engineering, and process design. Our students also have the opportunity to take special topics courses in materials engineering, environmental engineering, biochemical and biomedical engineering, corrosion, and electrochemical engineering. Students may use these special topics courses to tailor their own individual area(s) of specialty emphasis.

The educational objectives of our chemical engineering program, listed below, describe the skills and abilities that we expect our students to gain as they progress towards graduation.

Objective 1: Graduates will have a strong foundation in chemical engineering theory and practice.

Outcomes for Objective 1: Students will demonstrate the ability to:

a. apply knowledge to chemical engineering problems from subjects including mathematics, chemistry, physics, biology, and other engineering disciplines;

b. apply knowledge of chemical engineering fundamentals including material balances, energy balances, thermodynamics; momentum transfer and fluid flow, heat transfer, mass transfer, chemical reaction engineering, and bioengineering;

c. apply knowledge of chemical engineering unit operations such as heat exchangers, continuous contacting equipment, staged separation processes, chemical reactors, and mass transfer equipment;

d. complete experimental studies including designing and conducting experiments, formulating mathematical models, and analyzing and interpreting results using statistical tools;

e. solve engineering problems including identifying the problem to be solved, determining what data is and isn't needed, identifying probable causes and potential solutions, identifying applicable theory and constructing modeling equations, articulating underlying assumptions in the theory, identifying the type of math problem and appropriate solution techniques, solving several steps in sequence, and critically evaluating the solution for reasonableness;

f. and design chemical processes, using current engineering tools and considering controllability, product quality, economics, safety, and environmental concerns.

Objective 2: Graduates will have communication and interpersonal skills needed to succeed in a professional environment.

Outcomes for Objective 2. Students will demonstrate the ability to:

a. participate effectively in a team through leadership, individual contributions, and multidisciplinary interactions;

b. and communicate in oral, written, and graphical form.

Objective 3: Graduates will be scholars and professionals and dedicated to the betterment of themselves and society.

Outcomes for Objective 3. Students will demonstrate the ability to:

a. articulate the responsibilities of engineering practice including professional responsibilities and ethical responsibilities;

b. articulate the interaction between engineering solutions, contemporary issues, and cultural perspectives;

c. and engage in life-long learning by learning independently and articulating the importance of independent learning for future professional development.

In additional to our required core courses, a total of 21 credit hours of technical electives (including six in advanced chemistry) are required. These elective courses permit students to pursue interests in various areas of science and engineering.

Students so inclined, may concentrate their technical electives in one of three areas: a biological focus, a materials focus, or a focus on energy and the environment. In order to be recognized for a focus, the student will need to complete at least four technical courses related to that focus area. Lists of the pre-approved courses in each area are available in the department. Chemistry courses which also meet the advanced chemistry technical elective requirement are included on each list.

Freshman

Fall

CHEM 151	Fund. of Chemistry I	5
MATH 263A	Calculus	4
CHE 100	Intro Chemical Engineering	2
ENG 151, 152, or 153	English Composition[1]	5

Winter		
CHEM 152	Fund. of Chemistry II	5
MATH 263B	Calculus	4
	Free Elective[1]	3
	Tier II Requirement[1, 2]	4
Spring		
CHEM 153	Fund. of Chemistry III	5
MATH 263C	Calculus	4
CHE 101	ChE Problem Solving	3
	Tier II Requirement [1, 2]	4
Sophomore		
Fall		
CHEM 305	Organic Chemistry	3
MATH 263D	Calculus	4
PHYS 251	General Physics	5
BIOS 170	Intro to Zoology I	5
Winter		
CHEM 306	Organic Chemistry	3
MATH 340	Differential Equations	4
PHYS 252	General Physics	5
CHE 200	Material Balances	4
Spring		
CHE 231	Principles of Engr. Mat.	4
CHE 201	Energy Balances	4
PHYS 253	General Physics	5
	Technical Elective[3]	3
Junior		
Fall		
CHE 305	ChE Thermodynamics	4
CHE 345	ChE Fluid Mechanics	5
CHE 400	ChE Applied Calculations	3
	Technical Elective[3]	3
Winter		
CHE 306	ChE Phase Equilibria	4
CHE 346	ChE Heat Transfer	5
	Technical Elective[3]	3
ENG 305J	Junior Comp. or other jr-level comp.	4
Spring		
CHE 307	Chemical Reaction Engr I	3
CHE 347	Mass Transfer and Separations	5
CHE 408	Experimental Design	3
	Technical Elective[3]	6
Senior		
Fall		
CHE 308	Chemical Reaction Engr II	4
CHE 415	Unit Operations Lab I	3
CHE 448	Safety in Process Industry	3
CHEM 453	Physical Chemistry	3
	Technical Elective[3]	3
Winter		
CHE 416	Unit Operations Lab II	3
CHE 442	Process Control	4
CHE 443	ChE Design I	4
CHEM 454	Physical Chemistry	3
CHE 481	Biochemical Eng.	3
or CHE 483	Biomedical Eng.[4]	3
Spring		
CHE 417	Process Control Lab	2
CHE 444	ChE Design II [5]	4
CHE 499	ChE Senior Assessment	1
	Free Elective	4
	Technical Elective[3]	3

[1] May be taken in any order.

[2] Tier II courses should be selected from the humanities, social science, and cross-cultural perspectives areas. At least four credit hours from each of any two of these areas is required.

[3] Technical electives must be from approved list and include six hours of advanced chemistry.

[4] in the case both courses are completed, three hours will count toward the technical elective requirement.

[5] CHE 444 fulfills the University's Tier III requirement.

Civil Engineering

Bachelor of Science in Civil Engineering
Major code BS7252

Civil engineering evolved as a formal discipline at the start of the 19th century as a response to society's needs for increased mobility and convenience. Today's civil engineers deal primarily with public and private infrastructure and its relation to the environment, which includes planning, design, construction and maintenance of transportation systems, bridges, dams, buildings, water supply/distribution/treatment systems, wastewater and storm water collection/treatment/disposal systems, irrigation systems, and flood control. Civil engineers also operate public and private works, and design environmental protection for water, air, and land.

The Civil Engineering Program Educational Objectives state that graduates of the CE Program will (1) have an understanding of the fundamental engineering principles to solve problems and advance their knowledge base; (2) develop leadership skills necessary to assume progressively more responsible roles in their professions; (3) develop effective communication skills necessary to interact in a diverse professional environment; and (4) be able to employ modern engineering and computational tools.

The curriculum builds a sound foundation in basic sciences and mathematics, followed by courses in engineering science and design that provide a solid base for life-long professional learning. Engineering courses and laboratories provide an opportunity for students to experience those principles and standard practices that they will encounter in their careers. The curriculum is oriented to develop a student's ability to think logically and to apply the knowledge gained to the design and synthesis of complex civil engineering projects. The program provides an integration of design experience from the freshman year to the senior year, culminating in a capstone design course. The senior capstone course provides a comprehensive design experience for students that encompasses ethical, social, economic and safety issues. Engineering design, team problem solving and communication skills are emphasized throughout the curriculum. Students pursue areas of interest by selecting appropriate technical electives in the areas of environmental; construction; geotechnical; engineering materials; pavements; structures; transportation; and water resources. Graduates of the program are prepared to become registered professional engineers. Students are required to take the Fundamentals of Engineering (FE) Exam as part of their graduation requirements. The FE Exam is one of the first requirements to becoming a registered engineer. An optional program is available for those who want to become registered surveyors.

A co-op program is open to qualified civil engineering students, who can obtain technical experience and income by working for private or government organizations while still in school. Students who participate in the co-op program typically take more than four years to complete degree requirements.

Freshman		
Fall		
CE 200	CE Fundamentals[1]	1
CHEM 151	Fund. of Chemistry I	5

ENG 151, 152, or 153	Freshman English	5
IT 101	Engr. Graphics Fund.	3
MATH 263A	Calculus I	4
Winter		
CHEM 152	Fund. of Chemistry II	5
IT 222	Civil Engr. Graphics	3
MATH 263B	Calculus	4
PHYS 251	Physics	5
Spring		
CE 210	Plane Surveying	4
CS 210	Programming in C	5
MATH 263C	Calculus	4
PHYS 252	Physics	5
Sophomore		
Fall		
CE 220	Statics	4
GEOL 283	Geology for Engineers[1]	4
MATH 263D	Calculus	4
PHYS 253	Physics	5
Winter		
CE 222	Strength of Materials	4
CE 223	Strength of Materials Lab	1
CE 311	Route Engineering[1]	3
MATH 340	Diff. Equations	4
ME 224	Dynamics	4
Spring		
CE 201	CE Comp. Tech[1]	3
CE 361	Transportation[1]	3
CHE 231	Prin. of Materials	4
CHEM 123	Prin. of Chemistry	4
COMS 103	Public Speaking	4
Junior		
Fall		
CE 330	Struct. Theory I[1]	5
CE 340	Fluid Mechanics	4
CE 341	Fluid Mechanics Lab	1
CE 316	Const. Eng. Mgmt[1]	3
	Tier II Elective[2]	4
Winter		
CE 370	Geotechnical Engr.[1]	4
CE 371	Soil Engr. Lab[1]	1
	CE Elective[3]	3–4
ISE 304	Applied Engr. Statistics	3
ENG 305J, 308J, 309J	Junior Comp.	4
Spring		
CE 343	Hydrology[1]	3
CE 380	CE Materials[1]	3
CE 400	Societal Concerns in CE[1]	2
	CE Elective[3]	3–4
	Tier II Elective[2]	4
Senior		
Fall		
CE 342	Applied Hydraulics[1]	3
CE 450	Water Treatment[1]	3
CE 471	Foundtion Engr.[1]	3
EE 313	Basic Elec. Engr. I	3
	CE Elective[3]	3–4
Winter		
CE 428	CE Experimental Tech.[1]	3
CE 432	Concrete Design[1]	4
CE 451	Wastewater Treatment[1]	3
	CE Elective[3]	3-4
ME 321	Thermodynamics	4
Spring		
CE 433	Steel Design[1]	4
	CE Elective[3]	6–8

1 Course offered only during quarter shown.

2 To meet Tier II University General Education requirements, students must take at least 4 credit hours in each of two of the following areas: Cross-Cultural Perspective (2C), Humanities and Fine Arts (2H), and Social Sciences (2S). A list of acceptable courses can be found under Graduation Requirements-General Education Requirements in this catalog. A recommended list of courses in these areas can be obtained from the Civil Engineering Department.

3 Students have the option of selecting six civil engineering electives, one of which must be a senior capstone design course, CE 491A Land Development; CE 491B Water Resources-Environmental; CE 491C Structures-Soils; and CE 491D Senior Design. Five CE electives are required from the following list and should include at least three credits of design [design credits are shown in brackets]: CE 331 (3) Structural Theory II; CE 353 (3) Env. Engr. Basics [1]; CE 410 (3) Appl. Property Surveying; CE 415 (3) Geodetic Surveying; CE 416 (3) Construction Estimating; CE 423 (4) Continuum Mechanics; CE 424 (3) Strengths of Matls. II [1]; CE 427 (3) Exp. Stress Analysis; CE 434 (3) Adv. Str. Design [3]; CE 437 (3) Timber Des. [3]; CE 438 (3) Prestressed Concrete [3]; CE 439 (3) Computer-Aided Des. [3]; CE 445 (3) Flow Routing [1]; CE 452 (3) Water and Wastewater Analysis; CE 453 (3) Solid Haz. Waste Mgt. [2]; CE 454 (3) Green Engineering; CE 457 (3) Water Resources Engr. [3]; CE 462 (3) Traffic Engr. [2]; CE 474 (1) Soil Mechanics Lab; CE 482 (3) Paving Matls. and Mixtures [1]; CE 483 (3) Prin. of Pavement Des. [3]. Qualified students may, with the permission of the department, substitute certain graduate-level courses for the foregoing civil engineering electives.

NOTE: CE491A, CE 491B, CE491C, and CE491D fulfill the University Tier III requirement.

Computer Science

Bachelor of Science in Computer Science
Major code BS7260

The computer science program is administered by the School of Electrical Engineering and Computer Science. The school is the beneficiary of a major endowment from the late Dr. C. Paul Stocker, an electrical engineering alumnus. This endowment provides support for facilities and a level of excellence surpassed by few other electrical engineering and computer science departments in the nation. Its laboratories and offices are located in Stocker Center and the Convocation Center. The program offers a Bachelor of Science in Computer Science (B.S.C.S) degree through the Russ College of Engineering and Technology that is accredited by the Computing Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4014—telephone: (410) 347.7000.

Computer science involves the design, development, analysis, and maintenance of the computer software that controls complex computer systems and networks. Computer scientists work with all aspects of computer software, including graphics, multimedia, the World Wide Web, e-mail, compilers, software engineering, artificial intelligence, theory of computer algorithms, operating systems, database systems, and internet applications.

While writing programs is an important function for computer scientists, they do much more than that. They analyze the needs of software users, develop algorithms and interfaces to meet those needs, and work in small groups to design software components. They must be proficient at problem solving, mathematical reasoning, logical thinking, and interpersonal communication. The computer science program at Ohio University, because of its strong ties with mathematics and engineering, emphasizes both the mathematical and the practical components of computer science.

The computer science program has three major objectives for its undergraduate students;

- Depth and Breadth: Produce graduates that will have the theoretical, practical, and professional knowledge necessary to be productive upon entering the workforce or successful in advanced study;
- Staying Current: Produce graduates that will maintain and develop the knowledge and skills needed to identify,

formulate, and solve problems throughout their careers; and

- Professionalism: Produce graduates that exhibit an understanding of the necessity for personal integrity, ethical behavior, and cultural awareness.

Program educational objectives are statements that describe the expected accomplishments of graduates during the first few years after graduation.

Computer science students must fulfill the University's General Education Requirements and the humanities and social science distribution requirements from the College of Arts and Sciences. Students are also required to complete one year of foreign language. Students have the option of completing four technical courses (OPTION B [PBIO 114 or BIOS 170, PBIO 115 or BIOS 171, PBIO 331 or BIOS 325, PBIO 427], E [MATH 340, EE 304, EE 313, EE 314], or G [VICO 462, VICO 314, VICO 361, VICO 371]), or an additional year of foreign language (OPTION L). (See the College of Arts and Sciences for the requirement waiver policy for international students and foreign language completed in high school.) There are 10 required courses in mathematics, engineering, and basic sciences, which provide a foundation for the 14 required courses in computer science and electrical engineering. These courses culminate with CS 456 where students are required to complete a capstone software project. Students take four technical elective courses in which they can explore areas of computer science at an advanced level. During the course of their program, students work with several programming languages using both personal computers and UNIX workstations.

Computer science majors must complete 192 hours of coursework for an average of 16 hours a quarter over four years of undergraduate study. Credit earned in approved internship or co-op programs may be applied toward graduation requirements.

Due to the prerequisite requirements of OPTION E, students following that option must take PHYS 251, PHYS 252, and PHYS 253. Students following OPTIONS B, G, or L may take either physics (PHYS 2251, 252, and 253) or chemistry (CHEM 151, 152, 153, or 123), as their science sequence. Example programs of study are provided below for options E and L.

Option E (1 year foreign language,1 year technical courses)

Freshman		
Fall		
MATH 263A	Calculus	4
	Soc. sci. or humanities[5]	3–5
	Freshman composition[2]	5
	Foreign language[3]	4
Winter		
CS 240A	Intro to Computer Sci.[4]	5
MATH 263B	Calculus	4
	Foreign language[3]	4
EE 102	Intro to CPE	4
Spring		
CS 240B	Intro to Computer Sci.	4
MATH 263C	Calculus	4
CS 265	Computer Ethics	1
	Soc. sci. or humanities[5]	3–5
	Foreign language[3]	4
Sophomore		
Fall		
CS 240C	Intro to Computer Sci.	4
MATH 263D	Calculus	4
PHYS 251	General Physics	5
	Additional sci. course[1]	3–5
Winter		
CS 300	Intro to Discrete Structures	5
MATH 410	Matrix Theory	4
PHYS 252	General Physics	5
Spring		
CS 361	Data Structures	5
MATH 340	Differential Equations[3]	4
PHYS 253	General Physics	5
Junior		
Fall		
CS 404	Design & Anal. of Algs.	5
EE 371	Applied Prob. and Stats.	4
EE 304	Basic Elec. Lab I	1
EE 313	Basic Elec. Engr. I	3
	Soc. sci. or humanities[5]	3–5
Winter		
CS 320	Org. of Prog. Languages	5
EE 314	Basic Elec. Engr. II	3
	Junior Composition[2]	4
EE 395A	ECE Design I	4
Spring		
CS 406	Computation Theory	5
	Free Elective	5
	Soc. sci. or humanities[5]	3–5
Senior		
Fall		
CS 442	Op. Sys. and Comp. Arch. I	5
	Technical elective[6]	5
	Soc. sci. or humanities[5]	6–10
Winter		
	Technical elective[6]	5
	Free Elective	4
	Soc. sci. or humanities[5]	3–5
Spring		
	Technical elective[6]	6–10
CS 456	Software Design and Dev.[2]	5

Option L (2 years foreign language)

Freshman		
Fall		
MATH 263A	Calculus	4
	Science sequence[1]	5
	Freshman composition[2]	5
	Foreign language[3]	4
Winter		
CS 240A	Intro to Computer Sci.[4]	5
MATH 263B	Calculus	4
	Foreign language[3]	4
EE 102	Intro to CPE	4
Spring		
CS 240B	Intro to Computer Sci.	4
MATH 263C	Calculus	4
CS 265	Computer Ethics	1
	Science sequence[1]	4–5
	Foreign language[3]	4
Sophomore		
Fall		
CS 240C	Intro to Computer Sci.	4
MATH 263D	Calculus	4
	Foreign language[3]	4
	Science sequence[1]	5
Winter		
CS 300	Intro to Discrete Structures	5
MATH 410	Matrix Theory	4
	Foreign language[3]	4
	Additional sci. course[1]	5

Spring		
CS 361	Data Structures	5
	Soc. sci. or humanities[5]	3–5
	Foreign language[3]	4
Junior		
Fall		
CS 404	Design & Anal. of Algs.	5
EE 371	Applied Prob. and Stats.	4
	Soc. sci. or humanities[5]	6–10
Winter		
CS 320	Org. of Prog. Languages	5
	Junior Composition[2]	4
	Soc. sci. or humanities[5]	3–5
EE 395A	ECE Design [1]	4
Spring		
CS 406	Computation Theory	5
	Technical Elective[6]	5
	Soc. sci. or humanities5	3–5
Senior		
Fall		
CS 442	Op. Sys. and Comp. Arch. I	5
	Technical elective[6]	5
	Soc. sci. or humanities[5]	6–10
Winter		
	Technical elective[6]	5
	Free Elective	4
	Soc. sci. or humanities[5]	3–5
Spring		
CS 456	Software Design and Dev.[2]	5
	Technical elective[6]	5
	Free elective	1–3

1 Computer science majors must complete a year-long laboratory science sequence: either PHYS 251, 252, and 253 or CHEM 151, 152, and (123 or 153). *NOTE THAT STUDENTS TAKING OPTION E, ABOVE, MUST TAKE THE PHYSICS SEQUENCE. In addition, students must complete one additional natural science course. Eligible courses include BIOS 170, 171, 275; CHEM 151 (if not taken to satisfy the year-long sequence requirement), 241, 305, 351, 453; PBIO 110, 111, 247, 248; GEOL 101, 480; ASTR 305; PHYS 251 (if not taken to satisfy year-long sequence requirement), 311, 351, 411, 423, 427. PHYS 251 has a prerequisite of MATH 263A, so you may need to wait until winter quarter to start the PHYS sequence.

2 The Tier I freshman composition requirement can be satisfied any quarter of the freshman year. The Tier I junior composition requirement can be satisfied in any quarter of the junior year; ENG 305J is preferred. The Tier III requirement is satisfied by CS 456.

3 Computer science majors must take either two years of foreign language,or one year of foreign language and courses required for either options B, E, or G. Two or three years of high school foreign language fulfill one year of the foreign language requirement; four or more years of high school foreign language fulfill two years of the foreign language requirement.

4 Students without experience in computer programming are encouraged to take CS 210 Computer Programming I before taking CS 240A.

5 Computer science majors have the same humanities and social science requirements as the College of Arts and Sciences (see College of Arts and Sciences "College Requirements" section). The natural science portion of the requirements is fulfilled by required coursework in mathematics and science. Careful selection of courses under this requirement will also fulfill University Tier II requirements.

6 Computer science technical electives can be satisfied at any time; four classes are required. Students can select from MATH 444, MATH 445, EE 467, EE 468, CS 410, CS 425, CS 444, CS 458, CS 462, CS 475, CS 480.

Electrical Engineering

The electrical engineering program is administered by the School of Electrical Engineering and Computer Science (EECS). The school is the beneficiary of a major endowment from the late Dr. C. Paul Stocker, an electrical engineering alumnus. This endowment provides support for facilities and a level of excellence surpassed by few other electrical engineering and computer science departments in the nation.

The School of Electrical Engineering and Computer Science is located in Stocker Center, a modern facility housing undergraduate, graduate, and research activities. The program offers a Bachelor of Science in Electrical Engineering (B.S.E.E.) degree that is accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 1050, Baltimore MD 21202-4012–telephone: (410) 347.7700.

Electrical engineering addresses the wide application of electrical and electronic phenomena to real-world needs, from consumer goods to space exploration. It encompasses such diverse areas as research, development, design, sales, and operation of electrical and electronic systems. Areas of specialization include such varied fields as circuit design, communications, computers and automata, control systems, electromagnetics, energy sources and systems, power electronics, power system planning, electronics, and instrumentation. Students interested in digital computers may choose from courses in the school on programming, digital circuits, computer design, and software engineering.

Electrical engineering graduates hold challenging positions in such nonelectrical industries as chemical, nuclear, automotive, medical, textile, petroleum, and transportation, as well as in electronics, communications, power, control, and other electrical industries. The jobs performed by electrical engineering graduates include such diverse activities as research, development, design, production and manufacturing, and consulting.

The electrical engineering program has three major objectives for its undergraduate students:

- Depth and Breadth: Produce graduates that will have the theoretical, practical, and professional knowledge necessary to be productive upon entering the workforce or successful in advanced study;
- Staying Current: Produce graduates that will maintain and develop the knowledge and the skills needed to identify, formulate, and solve problems throughout their career; and
- Professionalism: Produce graduates that exhibit an understanding of the necessity for personal integrity, ethical behavior, and cultural awareness.

Program Educational objectives are statements that describe the expected accomplishments of graduates during the first few years after graduation.

The program offers two curriculum tracks leading to a B.S.E.E. degree. The electrical engineering (EE) track is intended for students who want to work in one of the many areas of electrical engineering. A computer engineering (CpE) track is available for students who intend to work in the area of computers. Students who are undecided as to which area they want to pursue should follow the electrical engineering track until they decide.

All electrical engineering students must fulfill the University's general education requirements. Students will select elective courses in conjunction with their advisors. To develop the general knowledge and skills necessary to support the study and practice of engineering, students will take 12 courses in mathematics and the basic sciences. The purpose of the five general engineering courses is to give students an understanding of engineering fundamentals outside of electrical engineering.

The electrical engineering portion of the curriculum consists of seven blocks of courses. The introductory block is intended to promote the students interested in electrical engineering

while introducing physical and logical concepts necessary for future studies. The goal of the foundations block is to develop the fundamental knowledge and analytical skills necessary for the study and practice of electrical engineering. The intermediate breadth block prepares the student to study the various areas of electrical engineering and computer engineering at the advanced level. EECS electives allow students to develop specialized knowledge and skills in one of the areas of electrical and computer engineering or explore other topics at the advanced level.

Because the ability to solve problems is critical for engineers, students will develop engineering design skills as they progress through the curriculum. While engineering design is addressed in most EE courses, it is given special emphasis in EE 103, EE 212, EE 334, and CS 456. In the intermediate design block, students will develop experience in experimental design and analysis. The design experience culminates in the senior year with the EE 495A, B, and C sequence of courses where students complete a design project that simulates work found in professional practice.

EE faculty take their student advising duties very seriously. Each new student is assigned a faculty member as an academic advisor: students meet with their advisor on a quarterly basis to discuss course scheduling. During each quarter, EE faculty set office hours aside to meet with students and assist them with class assignments.

Ohio University is unique in offering internships in avionics engineering. The Ohio University Avionics Engineering Center, a research and engineering organization that is a unit within EECS, is extraordinary in providing undergraduate electrical engineering majors direct field and laboratory experience on real-world avionics projects sponsored by federal agencies and industry. Internship course credit can be granted for laboratory work performed, and a number of part-time jobs are supported for qualified students. Interns work with the professional faculty and staff on projects involving instrument landing systems, navigation processors, test flight evaluation, and low frequency navigation sensor systems.

Students can also participate in the College's co-op program through which they can obtain practical experience and extra income by working for a corporation or a government organization while pursuing their degree. Participating in the co-op program will typically add extra time to the completion of all degree requirements. Sophomore and Junior courses are scheduled to accommodate all students participating in the co-op program. Due to the capstone design sequence of courses (EE 495 A, B, and C), students will not be able to co-op during their last year.

Bachelor of Science in Electrical Engineering
Major code BS7253 EE Track
Major code BS7254 CpE Track

General Studies

	Freshman Composition	5
ENG 305J	Technical Writing	4
	Tier III [11]	4

Math and Basic Science

MATH 263A	Calculus	4
MATH 263B	Calculus	4
MATH 263C	Calculus	4
MATH 263D	Calculus	4
MATH 340	Diff. Equations	4
MATH 440	Vector Analysis	4
CHEM 151	Fund. of Chemistry I	5
PHYS 251	Gen. Physics	5
PHYS 252	Gen. Physics	5

General Engineering

CE 220	Statics	4

Electrical Engineering

Introduction

EE 101	Intro to EE	4
EE 102	Intro to CpE	4
EE 103	Intro to ECE Design	4

Foundations

EE 210	Foundations of ECE I	4
EE 211	Foundations of ECE II	4
EE 212	Foundations of ECE III	4
EE 221	Instrumentation Lab	4

Intermediate Breadth

EE 321	Electromagnetics I	5
EE 371	Probability and Statistics for EEs	3

Select either the EE Track or the CpE Track courses:

EE Track

EE 333	Intermediate EE I	4
EE 334	Intermediate EE II	4

CpE Track

EE 224	Intro. Dig. Circuits & Comp. Design	4
EE 351	Intermediate CpE I	4
EE 352	Intermediate CpE II	4

Intermediate Design

EE 395A	Int. ECE Design Exp. I	4
EE 395B	Int. ECE Design Exp. II	4
EE 395C	Int. ECE Design Exp. III	4

Advanced Design

EE 495A	ECE Capstone Design I	4
EE 495B	ECE Capstone Design II	4
EE 495C	ECE Capstone Design III	4

Electives

Students, in conjunction with their advisor, will create a plan of study for additional elective courses. (Minimum of 18 courses and 72 hours.) The plan must contain a significant number of non-technical courses including some breadth (courses in different areas) and some depth (courses in the same area) [8]. The plan must include:

2 Tier II electives[1]

3 Math[2]/Basic Science[3] electives

2 Engineering electives[4]

2 Programming electives[5]

3 EECS electives[6]

2 Non-Technical Electives (Breadth/Depth)[8]

2 Technical Electives[9]

2 Free Electives (Tech or Non-Tech)[10]

Remedial courses[7] may not be included in the plan of study.

Computer Engineering Track students should take CS 240A and 240B for their programming electives, CS 240C and CS 361 for their engineering electives, CS 300 for one of their Math/Basic science electives, EE 224 and CS 456 for their technical electives, and EE 461 as one of the EECS electives.

1 Courses must be selected so that students take at least 4 hours in two of the three Tier II categories 2S, 2C, and 2H.

2 Courses with automatic approval include CS 300, MATH 411, 410, 412, 413A, 441, 444, 446, 460A, 470, and 480A.

3 Courses with automatic approval include BIOS 170, 171, 172, CHEM 152, 123, 153, 301, GEOL 211, GEOL 231, 270, 283, BIOS 221, PHIL 320, PHYS 253, and PHYS 254.

4 Courses with automatic approval include CE 222, 340, CS 240C, 361, ME 224, 321, 412, 491, CHE 231.

5 Course pairs with automatic approval include CS 210 and 240A, and ET 181 and CS 240A.

6 Courses must be at the 300 or 400 level with at least two at the 400 level.

7 A remedial course is a course that is at a lower level than a required course. Examples would include MATH <263, PHYS 201, 202, 203, CS 120, 220, 230, ENG 150.

8 This combined with the two Tier II electives will normally satisfy the minimum breadth and depth (2+2) or (3+1) model. Exceptions to these have to be approved by the advisor.

9 Courses with automatic approval include any EE 3xx or EE 4xx courses (excluding required courses, EE 313, EE 314, and EE 315), CS 320-361, 404, 410, 442, 444, 456, 462, 480, MATH 410, 412, 444, 446, 460A, 460B, 470, ME 321, 410, 491, 492, CE 340, ISE 330, PHYS 253, 254.

[10] Courses with automatic approval include all Tier II courses, and the approved Technical Electives list found in 9 above. Other approved courses must be ≥ CS210, ≥ PHYS 251, ≥ MATH 263A, and ≥ CHEM 151. Other free electives need the approval of the advisor.

[11] EE 495C is a Tier III equivalent course.

First-Year Program

The following sequence of classes is suggested for your freshman year. Your advisor will help you plan additional coursework to meet all graduation requirements in a timely manner.

Fall		
MATH 263A	Calculus	4
CHEM 151	Fund. of Chemistry	5
EE 101 **or** EE 102	Intro to EE Intro to CpE	4
	Elective	4
Winter		
MATH 263B	Calculus	4
	Math/Basic Science Elec.	4-5
EE 102 **or** EE 101	Into to CpE Intro to EE	4
	Programming Elec.	4-5
Spring		
MATH 263C`	Calculus	4
	Math/Basic Science Elec.	4-5
EE 103	Intro to ECE Design	4
	Freshman Comp.	5

EE 101 and EE 102 can be taken concurrently if needed. EE 101, EE 102, and one programming course must be passed prior to EE 103 enrollment.

CpE track students take CS240A as a programming elective in the winter and CS240B in the spring instead of the math/science elective.

Juniors and Seniors

Juniors are encouraged to attend the Senior Electives Fair organized by the Assistant Chair during the spring quarter of the junior year. The purpose of the fair is to assist students with choosing their senior electives.

Seniors are required to arrange a graduation check with the Assistant Chair no later than the end of the fall quarter of their senior year.

Seniors are expected to complete an exit survey during the spring quarter of their senior year.

For more information visit the School's web site:

http://www.ohio.edu/eecs/

Industrial and Systems Engineering

Bachelor of Science in Industrial and Systems Engineering
Major code BS7255

Industrial and systems engineers obtain a broad technical background with special attention to productivity, costs, quality, and the human factor in production and other systems. These systems to which industrial engineering techniques can be applied are quite diverse. Typically, industrial engineers have worked in manufacturing systems, but the methods have found applications in many other systems, including distribution centers, information systems, hospitals, transportation networks, and financial systems.

Because of the diverse situations in which industrial engineering is used, IEs can be called by a variety of titles, including Process Engineer, Process Improvement Engineer, Quality Engineer, and Systems Engineer.

Upon graduation with an Industrial and Systems Engineering (ISE) degree, you will be responsible for designing, analyzing, optimizing, and controlling these large-scale systems. You will also manage the operation of these systems, taking into account such vital factors as quality, throughput, utilization, costs, energy, reliability, and safety.

As an industrial engineer, you will develop performance measures and standards for equipment and workers to achieve a more effective system. You will also apply engineering principles to design systems that meet technical and economic requirements. Due to their systems training and experience, many industrial and systems engineers move into management positions after a few years on the job.

To prepare our graduates for their job responsibilities, the primary objective of the Industrial and Systems Engineering Program is to produce engineers who are able to design, develop, and implement systems that integrate people, materials, equipment, information and energy. When you have completed the requirements for the ISE degree, you will have the necessary analytical and experimental skills to identify, formulate, and solve engineering problems.

To successfully address technical, business, societal, and ethical aspects in their engineered solutions, several necessary skills have been identified. These skills include:

- the ability to apply appropriate industrial engineering methods and techniques to complex systems
- the ability to apply concepts of engineering science, mathematics, physics and chemistry
- the ability to utilize software relevant to industrial and manufacturing systems engineering
- the ability to design, conduct and analyze statistically-valid experiments
- interpersonal and professional communication
- teamwork and leadership

In addition, graduates should have a professional attitude demonstrated by:

- the identification and recognition of the need to continue learning by both formal and informal means;
- appreciation of the relevance of industrial engineering fundamentals and practice to non-manufacturing areas;
- integrity, cultural awareness, and ethical behavior

Courses in the first year of the program are similar to the curricula of the other engineering disciplines and include math, chemistry, and general education courses. Second year courses include a sequence in physics and several fundamental industrial engineering topics; the third year includes more advanced industrial engineering topics.

In the fourth year, a large number of the courses are electives. The categories of electives include ISE, engineering science, and business. The senior year also contains courses in a professional concentration area (PCA); these areas were recently added to the curriculum to reflect the fact that graduates of the ISE program work in many different fields.

The goal of the PCA options is to provide you with a more specialized preparation for your career. The current options are Manufacturing, Supply Chain Management, Health Care Systems, Human Factors, Information Systems, and Facility Planning and Development. If you are unsure about the career field that you want to pursue, there is also a general Industrial Engineering PCA.

An emphasis in the program is the development of good system design skills. In your senior year, you will complete ISE 445 A/B, a two-course sequence focusing on applied system design. In this course, you will work on a problem related

to the design or improvement of an actual system, such as a manufacturing information system, an inventory control system, a material handling system, or a quality control system. The projects are provided by local industries that participate in our program.

If you wish to increase the breadth or depth of your knowledge, the department offers courses leading to the M.S. ISE and participates in the College's integrated Ph.D. degree program.

Salaries are competitive and because of the increasing need for the U.S. to improve productivity to meet international competition, the need for industrial and systems engineers in manufacturing and other organizations is projected to remain strong.

For more information, see the department's Web site: http://www.ohio.edu/industrial/

An electronic version of this curriculum can be downloaded from the departmental Web site in the form of a flow chart that shows the courses by quarter, including prerequisites.

Freshman Year (49 credits)

Fall		
MATH 263A	Calculus I	4
	Chemistry Elective[1]	4
ENG 151	Freshman Composition	5
ECON 103	Microeconomics	4
		17
Winter		
IT 101	Engineering Drawing	3
MATH 263B	Calculus II	4
	Math/Science Elective[2]	4
ISE 200	Intro to Computers and IE	4
		15
Spring		
MATH 263C	Calculus III	4
PSY 101	General Psychology	5
PHIL 130	Introduction to Ethics	4
	Communications Elective[3]	4
		17

Sophomore Year (49 credits)

Fall		
ISE 330	Engineering Economy	3
PHYS 251	Physics I	5
	Math/Science Elective[2]	4
	Business Elective[4]	4
		16
Winter		
ISE 201	Data Mgmt. and Display	4
ISE 305	Engineering Statistics I	4
MATH 211	Elementary Linear Algebra	4
PHYS 252	Physics II	5
		17
Spring		
ISE 306	Engineering Statistics II	4
ISE 334	Work Design	3
IT 303	Appl. of Obj-Oriented Prog.	4
PHYS 253	Physics III	5
		16

Junior Year (45 credits)

Fall		
ISE 432	Inventory and Manuf. Control I	4
ISE 336	Project Management	3
ISE 441	Operations Research	4
ISE 412	Principles of Six Sigma	4
		15
Winter		
ISE 435	Quality Control and Reliability	3
ISE 433	Computer Simulation	4
	ISE Elective[5]	4
ISE 455	Info Systems Engineering	4
		15
Spring		
	ISE Elective[5]	4
	Engineering Science Elective[6]	4
	Tier I Junior English Req't	4
	Business Elective[4]	
		16

Senior Year (49 credits)

Fall		
	ISE Elective[5]	3
	Engineering Science Elective[6]	3
	Prof Concentration Elective[7]	3
	Business Elective[4]	4
	Match/Science Elective[2]	4
		17
Winter		
ISE 445A	Systems Design I	3
	Engineering Science Elective	4
	Prof Concentration Elective[7]	3
	Prof Concentration Elective[7]	3
	Free Elective[8]	3
		16
Spring		
ISE 445B*	Systems Design II	3
	Prof Concentration Elective[7]	4
	Prof Concentration Elective[7]	4
	Free Elective[8]	4
		15

Elective Options

1) Chemistry Elective (complete 1):
CHEM 121 Principles of Chemistry I (4)
CHEM 150 Concepts in Chemistry (4)
CHEM 151 Fundamentals of Chemistry I (5)

2) Math/Science Elective (complete 3—minimum 12 credits):
BIOS 103 Human Biology Basic Principles (5)
CHEM 122 Principles of Chemistry II (4)
CHEM 152 Fundamentals of Chemistry II (5)
CHEM 123 Principles of Chemistry III (4)
CHEM 153 Fundamentals of Chem III (5)
MATH 263D Calculus IV (4)
MATH 340 Differential Equations (4)
MATH 410 Matrix Theory (4)
MATH 411 Linear Algebra (4)

3) Communications Elective (complete 1):
COMS 103 Public Speaking (4)
THAR 113 Acting Fundamentals (4)

4) Business Elective (complete 3):
ECON 104 Macroeconomics (4)
ACCT 101 Financial Accounting (4)
ACCT 102 Managerial Accounting (4)
BUSL 255 Law and Society (4)
MGT 202 Management (4)
MKT 202 Marketing Principles (4)

5) ISE Elective (complete 11 credits):
ISE 402 Manufacturing Systems (4)
ISE 403 Material Handling Systems (4)
ISE 407 Intro to Designed Experiments (3)
ISE 440 Facility Planning and Design (4)
ISE 442 Inventory and Mfg. Control II (3)
ISE 444 Applications of Math Prog. (3)
ISE 448 Man-Machine Systems (3)
ISE 456 Database Systems (4)
ISE 460 Computer Integrated Mfg. (4)
ISE 489 Special Investigations (variable)

- If a Professional Concentration Area (see #7 below) requires more than 17 credits, the additional credits can be used to satisfy requirements for ISE electives.
- Up to 1 non-ISE course may be counted as an ISE elective **(with permission)** if that course appears in a Professional Concentration Area other than the one you are pursuing. However, you must have a minimum of 17 total engineering credits between your ISE Electives and your PCA Electives.

6) Engineering Science Elective (Complete 11 credits):
Any course from ChE, CE, EE, or ME that is 200-level or above, except: CE 200, 201, 210.; ME 288, 388, 488. Courses taken to satisfy Professional Concentration Area Requirements (see #7) cannot be used to also satisfy the Engineering Science Requirements.

7) Professional Concentration Elective (complete all courses in one of the Professional Concentration Areas listed below):

Industrial Engineering (17 credits)
- ISE 407 Intro to Designed Experiments (3)
- ISE 440 Facility Planning and Design (4)
- ISE 442 Inventory and Mfg. Control II (3)
- ISE 448 Man-Machine Systems (3)
- IT 117 Basic Metal Machining (4)
  or IT 110 Intro to Mfg. Processes

Manufacturing (19 credits)
- ISE 402 Manufacturing Systems (4)
- ISE 440 Facility Planning and Design (4)
- ISE 442 Inventory and Mfg. Control II (3)
- ISE 460 Computer Integrated Manuf. (4)
- IT 117 Basic Metal Machining (4)
  or IT 110 Intro to Mfg. Processes

Supply Chain Management (18 credits)
- ISE 403 Materials Handling Systems (4)
- ISE 407 Intro to Designed Experiments (3)
- ISE 440 Facility Planning and Design (4)
- ISE 442 Inventory and Mfg. Control II (3)
- MKT 404 Logistics and Supp. Chain Mgmt (4)

Information Systems (20–22 credits)
- ET 181 Computer Methods I (4)
  or CS 230 Computer Programming I (5)
- ISE 456 Database Information Systems (4)
- ISE 490 Systems Development Project (4)
- IT 354 Automatic Identification (4)
- IT 337 Mfg. Networks/Data Comm. (4)
  or CS 444 Data Communications (5)

Health Care Systems (18 credits)
- IH 200 Intro to Industrial Hygiene (4)
  or EH 260 Intro to Environnmental Health (4)
- HLTH 335 Admin. of Acute Care Facilities (4)
  or HLTH 340 Contemporary Problems in Health Care Organizations (4)
- HLTH 230 Medical Terminology (2)
- ISE 403 Materials Handling Systems (4)
- ISE 440 Facility Planning and Design (4)

Human Factors (19 credits)
- BIOS 203 Human Biology II (4)
- BIOS 204 Human Biology II Lab (1)
- EH 260 Intro to Environmental Health (4)
- EH 457 Occ. Safety and Health Admin. (4)
- ISE 407 Intro to Designed Experiments (3)
- ISE 448 Man-Machine Systems (3)

Facility Planning and Development (18 credits)
- ISE 440 Facility Planning and Design (4)
- CE 316 Construction Engr. and Mgmt. (3)
- CE 330 Structural Theory I (5)
- CE 416 Construction Estimating (3)
- CE 418 Construction Administration (3)

8) Free Elective (complete 7 credits):
Free elective credits may be satisfied by any course; a sufficient number of free electives are needed to reach the University minimum of 192 credits earned for a degree. One of the credits from each 5-credit Math/ Science Elective course that is taken will be counted toward the Free Elective requirements.

*NOTE: ISE 445A and 445B fulfill the University Tier III requirement.

Industrial Technology

Bachelor of Science in Industrial Technology
Major code BS7256

Industrial technology is the study of materials, production processes, and management procedures used in manufacturing. This degree program prepares you for a technical/ management position in the manufacturing industry by providing current and relevant subject matter and experience. Typically, an industrial technology graduate is responsible for management and supervision of industrial computers, materials, machines, and personnel in areas of production, process planning, maintenance, and quality assurance.

The industrial technology program prepares you to be a technical generalist: one who is competent in a wide range of technical subjects. In addition, since most industrial technology courses are hands-on lab courses, you graduate with practical experience. All students in the program complete a common core of industrial technology courses. In addition, you must take courses in one of three technical focus areas: Manufacturing Materials and Processes (MMP), Manufacturing Information Technology (MIT), or Manufacturing and Technical Sales (MTS); depending on your interests and career goals. The BSIT degree includes a minor in business.

There are four components to the curriculum: technical, general education, business, and elective courses. Each component contributes a valuable part to your overall preparation for employment.

A minimum of 192 quarter hours is required for graduation, including the following specific requirements:

Required Industrial Technology Core: 66

IT 100	Intro to Industrial Tech.	1
IT 101	Engr. Graphics Fund.	3
IT 102	Engr. Graphics App.	4
IT 103	Computer Apps. in Industrial Tech.	4
IT 111	Manufacturing Materials	4
IT 112	Intro to Manufacturing	4
IT 206	Computer Methods in Industrial Tech.	4
IT 208	Industrial Plastics	4
IT 216	Metal Machining	4
IT 218	Metal Fabricating and Casting	4
IT 221	Power Transmission	4
IT 303	Apps. of Object Oriented Programming	4
IT 332	Industrial Electronics	4
IT 363	Quality Assurance	4
IT 400	Senior Seminar	1
IT 435	Industrial Instrumentation and Controls	4
IT 452	Contemporary Integrated Manuf.	4
IT 462	Product Manufacturing*	5

*IT 462 is a Tier III equivalent course.

Technical Focus
(must select from one of the following areas):

Manufacturing Materials and Processes: 24

IT 217	Prod. Metal Machining	4
IT 320	Hydraulic and Pneumatics	4
IT 362	Product Documentation	4
IT 351	Production Tooling	4
	IT Electives[1]	8

Manufacturing Information Technology: 24

IT 230	Manufacturing Computer Technology	4
IT 231	Manufacturing Database Applications	4
IT 337	Manuf. Networks and Data Comm.	4
IT 354	Automatic Ident. and Data Capture	4
	IT Electives[1]	8

Manufacturing and Technical Sales: 24

MKT 358	Professional Selling Techniques	4
MKT 458	Sales Management	4
MKT 498	Internship	4
MKT 425	Business to Business Marketing	4
or MKT 491	Seminar in Sales	4

[1]Any IT course not otherwise required may be used as an IT elective, with the exception of IT service courses (IT 104, 110, 117, 220, 222). Courses required for one focus area may be used as electives under the other focus area.

General Education Requirements: 64

ENG 151	Freshman Composition	5
ENG 305J	Technical Writing	4
COMS 103	Public Speaking	4
MATH 163A	Intro to Calculus	4
MATH 250, 251	Intro to Probability and Statistics	8
CHEM 121, 122	Prin. of Chemistry	8
PHYS 201, 202	Intro to Physics	10

ECON 103	Prin. of Microeconomics	4
PSY 101	General Psychology	5
Global Perspective	Select one course from approved list	4
Tier II	Select from Applied Science and Tech., or Humanities and Fine Arts	4

Business Management: 20

ACCT 101	Financial Accounting	4
ACCT 102	Managerial Accounting	4
BUSL 255	Law and Society	4
MGT 202	Management	4
MKT 202	Marketing Principles	4

Electives: 14

Advanced Standing

A student must be admitted to advanced standing in order to register for Industrial Technology courses at the 200 level or above. To be eligible for advanced standing, a student must complete the following courses with a minimum cumulative g.p.a. of 2.5:

ENG 151 or 152 or 153 or COMS 103

MATH 163 or 263A or MATH 250

CHEM 121 or 151 or PHYS 201 or 251

ACCT 101 or MGT 202 or ECON 103

IT 100, IT 101, IT 103 (or MIS 201 or CS 120), IT 111, and IT 112

Associate's Degree Transfer Students

If you have completed a two-year associate's degree in a related technical subject area from an accredited college or university, you may enter the Industrial Technology program with junior standing. An assessment of previous coursework will determine the remaining requirements for the bachelor's degree.

First-Year Program

The following courses are suggested for your freshman year. Your advisor will help you plan additional coursework to meet all graduation requirements in a timely manner.

Fall		
IT 100	Intro to Industrial Technology	1
IT 101	Engr. Graphics Fundamentals	3
IT 103	Computer Applications in Ind. Tech.	4
CHEM 121	Principles of Chemistry	4
COMS 103	Fund. of Public Speaking	4
Winter		
IT 102	Engr. Graphics Applications.	4
IT 111	Manufacturing Materials	4
CHEM 122	Principles of Chemistry	4
ACCT 101	Financial Accounting	4
Spring		
IT 112	Introduction to Manufacturing	4
ECON 103	Principles of Microeconomics	4
ENG 151	Freshman Composition	5
MATH 163A	Introduction to Calculus	4

Mechanical Engineering

Bachelor of Science in Mechanical Engineering
Major code BS7257

Ohio University's Mechanical Engineering program has four educational objectives:

1. Prepare graduates for engineering careers and advanced education
2. Graduate mechanical engineers with technical skills
   • including a grasp of engineering knowledge and an ability to apply knowledge to solve contemporary engineering problems
3. Graduate mechanical engineers with skills to perform in the work environment
   • including technical communication, teamwork, and decision making
4. Graduate mechanical engineers who are informed and aware of contemporary issues and the impact of engineering on society.

These objectives are consistent with and embrace ABET Criteria 2000 Outcomes.

Mechanical engineering is an extremely diverse profession which is concerned with (1) the economical and ecological conversion of energy from natural sources to provide power, heating, cooling, and propulsion; (2) the design of all types of machines, engines, and vehicles; (3) the processing of materials into useful products; and (4) the development of systems for using machines and resources. Professional activities include research, development, design, testing, production, operation and maintenance, marketing and sales, technical management and administration.

The mechanical engineering curriculum is designed to provide a solid foundation in higher mathematics, physics, and chemistry followed by extensive instruction in all of the classical mechanical engineering disciplines. The curriculum contains a significant amount of design content wherein students are required to apply their engineering skills to solve real-world and/or open-ended problems in a project format. The principal objectives of the design experience are 1) to allow students to use their own creativity in formulating alternative engineering solutions; 2) to develop an ability to work independently and/or in teams which is an important skill for continued growth as a practicing engineer; 3) to bridge the gap between the acquisition of engineering knowledge in required courses and the application of that knowledge to solve engineering problems. The objectives of the design experience are consistent with the department's overall objective of producing highly competent engineers with an ability to formulate and solve real engineering problems.

The design experience begins in freshman year (ME 101) wherein students are introduced to elements of engineering design. This often involves the design and construction of a device to perform a specified task. Throughout the sophomore, junior, and senior years, mechanical engineering students are required to solve design problems in many of the required engineering courses and across the spectrum of disciplines encompassed by the mechanical engineering profession. Senior mechanical engineering students are challenged in a sequence of three formal design courses (ME 470, 471, 472) involving a capstone senior design project which begins in ME 470 and culminates in ME 472. The capstone project requires application of engineering knowledge in thermal/fluid sciences, structures and motion analysis, engineering materials, engineering economy and social issues such as product safety and reliability. Students are required to submit written technical reports as well as give oral presentations describing project results. This is in accord with the department's objective of producing engineers who have good communication skills as well as excellent technical skills. The design experience is enhanced by providing students with technologically modern lab facilities and computational tools.

In addition to engineering courses, the department requires significant studies in the humanities and social sciences to establish a breadth and depth of awareness and education. Advanced courses in both the humanities and social sciences are required. The humanity and social science requirements are consistent with the department's objective of graduating individuals with a well-rounded education.

The Department of Mechanical Engineering prides itself on offering students a close working relationship with the faculty. Mechanical engineering faculty are required to set aside office hours to assist students with class assignments. In addition, each student who enters the program is assigned one of the mechanical engineering faculty members as an

academic advisor who will meet quarterly with the student to assist in course scheduling.

If you are majoring in mechanical engineering as preparation for entry into another profession such as law, medicine, business, etc., consult with the department chair regarding modifying your schedule to meet specific career objectives.

The Department of Mechanical Engineering offers a co-op program that allows you to acquire practical experience and income by working in industry after completing your freshman year. Sophomore and junior courses are scheduled to accommodate a work-academics plan based on alternate periods of study and work. Consult the co-op office if you are interested.

An honors program for students with 90 or more hours and in the top 20% of their class provides the opportunity to receive graduate credit for coursework throughout your senior year. Contact the department office for further information.

The Paul H. and Irene C. Black Memorial Fund provides a large number of generous scholarships for seniors majoring in mechanical engineering. A good academic record, a history of work to cover the cost of education, and participation in departmental activities are key considerations in awarding the scholarship. Contact the department office for additional information.

Freshman

Fall

IT 101	Engr. Graphics Fund.	3
MATH 263A	Calculus I[1]	4
ME 101	Freshman Gateway Course	4
	Eng. Composition[2]	5

Winter

ET 181	Computer Meth. in Engr. I	4
COMS 103	Public Speaking	4
MATH 263B	Calculus II	4
PHYS 251	Gen. Phys.	5

Spring

CE 220	Statics	4
MATH 263C	Calculus III	4
PHYS 252	Gen. Phys.	5
	Hum. or Soc. Sci. Elective[3]	4

Sophomore

Fall

ME 224	Dynamics	4
MATH 263D	Calculus IV	4
PHYS 253	Gen. Phys.	5
EE 313	Basic EE I	3
EE 304	Basic EE I Lab	1

Winter

CHEM 151	Fund. of Chemistry I[4]	5
MATH 340	Diff. Eqs	4
EE 314	Basic EE II	3
EE 305	Basic EE II Lab	1
	Hum. or Soc. Sci. Elective	4

Spring

ME 321	Intro to Thermodynamics	4
MATH 344	Num. Meth for CE	4
IT 117	Basic Metal Mach.	4
CHEM 152	Fund. of Chem. II	5
ME 288	Data Analysis Lab	2

Junior

Fall

CE 340	Fluid Mechanics	4
CHE 231	Prin. of Eng. Materials	4
ME 301	Kinematics	4
ME 388	Junior Lab	4

Winter

	Junior Composition[5]	4
ME 303	Machine Design Analysis	4
ME 314	Intro to Manufacturing Proc.	4
ME 491	Mech. Vibrations I	4
CE 223	Strength of Materials Lab	1

Spring

CHE 418	CHE Lab–Materials	2
ME 401	Syst. Analysis and Controls	4
ME 328	Applied Thermodynamics	4
ME 304	Machine Design Elements	4
ME 351	Computer Aided Design I	3

Senior

Fall

ME 412	Heat Transfer	4
ME 470	ME Design I[6]	4
	Technical Elective[7]	4
	Hum. or Soc. Sci. Elective	4

Winter

ME 471	ME Design II	4
ME 488`	Exper. Des. Lab	2
ME 451	Computer Aided Design II	2
	Technical Elective	4
	Hum. or Soc. Sci. Elective	4

Spring

ME 472	ME Design III[8]	4
	Elective	4
	Technical Elective	4

[1]Students must qualify to take this course by passing a placement test.

[2]The level and the quarter this course is offered is determined by a placement test taken during the Precollege orientation session.

[3]At least eight hours of Tier II humanities and eight hours of Tier II social science are required.

[4]Students must qualify to take this course by passing a placement test.

[5]Students may take this course any quarter upon completion of 90 hours.

[6]ME 470, 471, and 472 must be taken in sequence beginning in the fall quarter of the senior year.

[7]Each student must complete at least 11 hours of technical electives, with at least 3 hours from ME. Technical electives are any engineering course at the 300-level or above, or any course in math or physics at the 400 level.

[8] ME 472 fulfills the University Tier III requirement.