

Russ College of Engineering and Technology

Stocker Center

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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 19 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 cumulative 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 Requirements for Aviation (major codes 7258 and 7261) Chemical Engineering (7251), Civil Engineering (7252), Computer Science (7260), Electrical Engineering (7253 and 7254), Industrial and Manufacturing

Systems Engineering (7255), and Industrial Technology (7256)

Students in these programs must meet the Tier II requirements as specified in Graduation Requirements-University Wide section of this catalog. Students should consult with the individual program curricula and with their faculty advisor to ensure these requirements are met.

Social Science and Humanities Requirements for Mechanical Engineering (7257)

Students in mechanical engineering have humanities and social science requirements that differ from the General Tier requirements. Satisfying the requirements below will automatically satisfy Tier requirements.

Only formal courses are acceptable unless prior approval is given from the dean's office. Courses in selected topics, independent study, etc., are not acceptable without this prior approval. Courses in education, business, or other professional areas, or courses that are remedial or skills oriented, are not acceptable. Without prior approval from the dean's office, courses not on this list will not apply towards the humanities and social sciences requirements for the Russ College of Engineering and Technology.

You must have at least 24 hours total in humanities/social sciences with a minimum of 8 in each category and a sequence or basic/advanced pair in both categories. (A sequence is a pair of courses in the same department in which one is a prerequisite for the other. A basic/advanced pair is a 300- or 400-level course along with a companion course in the same department. The companion need not be a prerequisite for the 300- or 400-level course.)

Humanities/Social Science Electives for Engineering Degree Students

Humanities

- a Art (ART 110, 393A)
- b African American Studies (AAS 106, 110, 150, 210, 211, 250, 310, 315, 316, 317, 350, 352, 355, 356)
- c Art History (AH except 350)
- d Classical Archaeology (CLAR 201, 203, 352)
- e Comparative Arts (CA except 360J)
- f Dance (DANC 170, 351, 352, 353, 370, 471, 472, 473)
- g English (ENG 200 level or above, except 280, 305J, 307J, 308J, 350, 353, 361, 362, 363, 393, 394, 395, 451, 452)
- h Film (201, 202, 203)
- i Foreign Language: 200 level or above, may not be your primary language
- j Foreign Literatures in English (CLAS except 227; FL; ML except 250A-C)
- k Great Books (HUM 107, 108, 109, 117, or 307, 308, 309)

- l History (HIST 121, 122, 123, 314A-F, 328, 329A-C, 330, 351, 352, 353A-B, 354, 356A-C, 357, 370, 389)

- m History of Theater (THAR 270, 271, 272)

- n Music History and Literature (MUS 120, 124, 125, 321, 322, 323, 421A-G, 427, 428)

- o Philosophy (PHIL except 120, 320, 360J, 417, 425, 426, 427)

- p Women's Studies (WS 100, 200, 250A)

Social Science

- a African American Studies (AAS 101, 135, 202, 220, 225, 235, 254, 340, 341, 345, 360, 364, 368, 370, 380, 430, 432, 440, 460, 482)

- b Anthropology (ANTH except 201, 356J, 378, 492, 494B, 494D, 496)

- c Economics (ECON except 300, 381, 385, 482)

- d Engineering and Technology (ET 320, 350)

- e Geography (GEOG 121, 131, 132, 201, 220, 232, 233, 234, 321, 322, 325, 326, 330, 331, 332, 335, 338, 427, 455)

- f History (HIST except 301J, 396J, 496, and those listed in k. under humanities)

- g International Studies (INST 103, 113, 118, 121, 350)

- h Linguistics (LING except 410, 445, 451, 452, 453, 460, 480, 481, 482, 483)

- i Political Science (POLS except 305J, 482, 483)

- j Psychology (PSY except 120, 121, 221, 226, 275, 312, 314, 315, 321, 327, 341, 351)

- k Social Work (SW except 190, 380, 381, 383, 385, 490A-C)

- l Sociology (SOC except 351, 352, 356J, 450)

- m Women's Studies 400

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. If you participate in this plan, you will require more than the normal four years to complete degree requirements. ABET does not allow cooperative education experiences to replace coursework.

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. If you are applying for scholarships through University channels, you are 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 Learning Community

For information about the Global Learning Community, refer to "Global Learning Community Certificate Program" in the "University-Wide Academic Opportunities" 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 and will meet most of the first-term requirements of all engineering departments. Students should also consult individual program requirements before scheduling to ensure that a course satisfies degree requirements.

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
COMS 103 or IT 101	Fund. of Public Speaking Engr. Graphics Fund. ¹	4 or 3
MATH 263B	Analytic Geom. and Calc.	4
TIER II	Elective ⁴	

Spring

CHEM 123 or 153	General Chemistry ¹	4-5
ET 181	Comp. Methods in Engr. ¹	4
MATH 263C	Analytic Geom. and Calc.	4
TIER II	Elective ⁴	

¹ See individual program requirements or consult with your faculty advisor for alternatives.

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.

⁴ See Graduation Requirements-University Wide in this catalog for list of courses.

Degree Programs

Aviation

Students in the aviation program can complete their bachelor's degree requirements under either of two options: flight or aviation management. A two-year A.A.S. degree in aviation technology is also available at Ohio University.

The flight option meets the guidelines of the Federal Aviation Administration (FAA) and prepares students for career opportunities in commercial aviation as FAA-certified pilots, aircrew members, and other positions in aviation-related business and industry. An aviation degree provides students with the ability to undertake roles in the national aviation system and to progress to supervisory and managerial positions with necessary leadership and human relations skills. Additionally, this educational background gives graduates the broad knowledge base, perspective, and flexibility to compete in the increasingly technical and automated environment of aviation.

Flight option students are expected to complete each flight course in one quarter. However, in extenuating circumstances (bad weather, etc.) students can, with permission, carry over completion of the course in the following quarter. If you do not complete the requirements in this second quarter, you may be automatically dropped from the program.

Students must maintain a 2.0 overall g.p.a. to enroll in flight courses. Flight option majors must receive a grade of at least a C- (70 %) in AVN 110, AVN 310, AVN 350, and AVN 440. It is possible to substitute elective courses in the curriculum as long as you maintain the minimum total credits for that subject area and obtain prior approval in writing from the department/college.

Flight option majors must take AVN 400, AVN 420, AVN 430, AVN 445, and AVN 455 at 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 220	Intro to Computing (1M)	5
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/Fit 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
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Choose a minimum of 4 hours from the courses below

CS 220	Intro to Computing (1M)	5
CS 230	Comp. Programming (2A)	5
MIS 202	Business Info Sys	4

General Electives: 28 hours

Tier III	4
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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

University College and the Department of Aviation offer an Associate in Applied Science in aviation technology on the Athens campus. Career opportunities in commercial aviation as FAA-certified pilots and air crew members as well as positions in related aerospace industries may be available upon completion of this program. If you are interested, contact the Department of Aviation, located at the airport.

You must receive a grade of C- (70 percent) or better in all ground school courses that require an FAA written test in order to progress to a 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 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, fluid flow, heat transfer, and separation processes. 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:

- apply knowledge to chemical engineering problems from subjects including mathematics, chemistry, physics, biology, and other engineering disciplines;
- 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;
- apply knowledge of chemical engineering unit operations such as heat exchangers, continuous contacting equipment, staged separation processes, chemical reactors, and mass transfer equipment;
- complete experimental studies including designing and conducting experiments, formulating mathematical models, and analyzing and interpreting results using statistical tools;
- 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;

- 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:

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

- articulate the responsibilities of engineering practice including professional responsibilities and ethical responsibilities;
- articulate the interaction between engineering solutions, contemporary issues, and cultural perspectives;
- and engage in life-long learning by learning independently and articulating the importance of independent learning for future professional development.

In addition 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 who so desire may choose to concentrate their technical electives in one of four emphasis areas. In order to be recognized as having an emphasis area, students should complete at least 15 of the required 21 credit hours of technical electives within a particular area. In some cases, the emphasis areas include chemistry courses that also meet the advanced chemistry course-technical elective requirement. These 15 hours must include one or two specific courses associated with each emphasis area. The emphasis areas, along with the courses which must be included, are materials engineering (including CHE 431), biochemical engineering (including CHE 481 and CHEM 489), and energy and the environment (including CE 353). The Department of Chemical Engineering office maintains lists of approved technical elective courses, advanced chemistry courses, and courses which constitute each emphasis area.

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 331	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 or CHE 483	Biochemical Eng, Biomedical Eng. ⁴	4 4

Spring

CHE 417	Process Control Lab	2
CHE 444	ChE Design II	4
CHE 499	ChE Senior Assessment	1
	Tier III requirement	4
	Technical Electives 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.**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 at Ohio University is designed to prepare graduates to successfully apply the principles of civil engineering for a productive career in government and/or the private sector, as well as advanced graduate study. The objectives of the program are to: (1) prepare graduates to enter and progress in the practice and principles of civil engineering; (2) provide students with a broad education in civil engineering; (3) expose students to technologies and the tools necessary for the civil engineering profession; and (4) ensure faculty are qualified to teach and advise civil engineering students.

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**

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 200	CE Fundamentals ¹	1
CE 201	CE Comp. Tech ¹	3
CE 210	Plane Surveying	4
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		
MATH 344	Numerical Meth. for CEs ¹	3
CE 361	Transportation ¹	3
CE 380	CE Materials ¹	3
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
	Tier II Elective ²	4
CE 316	Const. Eng. Mgmt ¹	3
Winter		
CE 370	Geotechnical Engr. ¹	4
CE 371	Soil Engr. Lab ¹	1
	CE Elective ³	3
ISE 304	Applied Engr. Statistics	3
ME 321	Thermodynamics	4
Spring		
CE 342	Applied Hydraulics ¹	3
CE 343	Hydrology ¹	3
	CE Elective ³	3
CHE 331	Prin. of Materials	4
ENG 305J	Technical Writing	4
Senior		
Fall		
CE 400	Societal Concerns in CE ¹	2
CE 450	Water Treatment ¹	3
CE 471	Foundtion Engr. ¹	3
EE 313	Basic Elec. Engr. I	3
	CE Elective ³	3
Winter		
CE 432	Concrete Design ¹	4
CE 451	Wastewater Treatment ¹	3
	CE Elective ³	3-4
EE 314	Basic Electrical. Engr. II	3
	Tier II Elective ²	4

Spring		
CE 433	Steel Design ¹	4
	CE Elective ³	3-4
	Tier III Elective	4

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.

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. The College of Arts and Sciences awards B.A. and B.S. degrees in computer science that are not accredited by a Commission of ABET; see the College of Arts and Sciences for details.

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 for them to be immediately productive among entering the workforce or 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 distribution requirement from the College of Arts and Sciences. Students are also required to complete one year of foreign language. Students then have the option of completing four technical courses (option E) or an additional year of foreign language (option L). (See the College of Arts and Sciences for requirement waiver policy for foreign languages taken in high school.) There are 10 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 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.

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
CS 456	Software Design and Dev.	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
	Tier III ²	4
	Soc. sci. or humanities ⁵	3-5

Spring

	Technical elective ⁶	6-10
	Free elective	1-3

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
CS 456	Software Design and Dev.	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
	Tier III2	4
	Soc. sci. or humanities ⁵	3-5
Spring		
	Technical elective ⁶	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; P BIO 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 can be satisfied in any quarter of the senior year.

³ Computer science majors must take either two years of foreign language, or one year of foreign language and MATH 340, EE 313, EE 314, and EE 304. 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 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 for them to be immediately productive upon entering the workforce or 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 takes 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.

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	4

Math and Basic Science

MATH 263A	Calculus	4
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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
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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 electives¹
- 3 Math²/Basic Science³ electives
- 2 Engineering electives⁴
- 2 Programming electives⁵
- 3 EECS electives⁶
- 2 Non-Technical Electives (Breadth/Depth)⁸
- 2 Technical Electives⁹
- 2 Free Electives (Tech or Non-Tech)¹⁰

Remedial courses⁷ 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, and EE 224 and CS 456 for their technical 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 331.
- 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 \geq CS210, \geq PHYS 251, \geq MATH 263A, and \geq CHEM 151. Other free electives need the approval of the advisor.

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	Intro 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

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.webeecs.ent.ohiou.edu/>

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 include not only physical systems

(such as production lines, distribution centers, etc.) but also information systems (manual and automated information systems, computer networks, data bases, software, etc.) and decision/control systems (master production scheduling, inventory management, quality assurance, etc.).

Upon graduation, you will be responsible for designing, analyzing, optimizing, and controlling these large-scale sociotechnical systems. You will also manage the operation of these systems, taking into account such vital factors as quality, throughput, equipment utilization, costs, environment, energy conservation, reliability, and safety.

In addition to its engineering foundation, IE also shares much with business activities. Industrial engineering is similar to the business field of operations management, with a more mathematical approach to problem solving and training in manufacturing and engineering principles.

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.

Consequently, 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. Graduates should 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 1-2 years of the program are similar to the curricula of other engineering disciplines and provide the necessary foundation upon which advanced engineering work depends. The last two years of work provide the professional-level material, including instruction in analysis and computer applications necessary for the interdisciplinary engineering activities that are required of the modern industrial and systems engineer.

An emphasis in the program is the development of good system design skills. In your senior year, you will complete ISE 445, a two-course sequence focusing on applied system design. In this course, you will work on a problem related to the operation 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. During the senior year, you will also take elective courses in the area that are closest to your career goals.

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

Industrial and systems engineers follow careers in many fields, including manufacturing, warehousing, transportation, government, banking, insurance, and hospitals. Because of the diverse situations in which industrial engineering is used. IEs can be called by a variety of titles, including Process Engineering, Process Improvement Engineer, Quality Engineer, and Systems Engineer.

Due to their systems training and experience, many industrial and systems engineers move into management positions after a few years on the job. 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 will remain high.

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

Fall			
MATH 263A	Analytic Geometry and Calculus		4
ENG 15_	Freshman Composition		5
IT 101	Engineering Drawing		3
CHEM 121 or CHEM 151	Princ. of Chemistry I Fund. of Chemistry I		4 or 5
Winter			
MATH 263B	Analytic Geometry and Calculus		4
ECON 103	Princ. of Microeconomics		4
COMS 103	Fund. of Public Speaking		4
CHEM 122 or CHEM 152	Princ. of Chemistry II Fund. of Chemistry II		4 or 5
Spring			
MATH 263C	Analytic Geometry & Calculus		4
ET 280	Intro. to Engineering		4
ECON 104	Princ. of Macroeconomics		4
	Tier II Elective (2H or 2C)		4

Sophomore

Fall			
MATH 263D	Analytic Geometry and Calculus		4
PHYS 251	General Physics		5
ISE 200	Intro to Computers and IE		4
	Free Elective*		3
Winter			
PHYS 252	General Physics		5
ISE 305	Engineering Statistics I		4
ISE 330	Engineering Economy		3
MATH 211	Elementary Linear Algebra		4
Spring			
PHYS 253	General Physics		5
ISE 306	Engineering Statistics II		4
ISE 333	Work Design and Human Factors		5
	Free Elective		3

Junior

Fall			
ET 181	Computer Methods in Engineering		4
IT 117	Basic Metal Machining		4
ACCT 101	Financial Accounting		4
EE 313	Basic Electrical Engr. I		3
Winter			
ISE 455	Information Systems Engineering		4
ISE 435	Quality Control and Reliability		3
ISE 432	Inventory and Manuf. Control I		4
	ISE Elective*		4
Spring			
ENG 305J	Technical Writing		4
ME 321	Intro to Thermodynamics		4
	Business Elective*		4
CE 220	Statics		4

Senior

Fall			
ISE 440	Facility Planning and Design		4
ISE 433	Industrial Computer Simulation		4
	ISE Elective*		4
ISE 441	Intro to Operations Research		4
Winter			
ISE 445A	Systems Design I		3
CHE 331	Princ. of Engineering Matrls.		4
	ISE Elective*		4
	Tier III Elective		4
Spring			
ISE 445B	Systems Design II		3
	ISE Elective*		3
	Math/Science Elective*		4
	Engineering Science Elective*		3-4
	Free Electives*		2-5

*A minimum of 43 hours of electives is required, including:

- 15 hours in ISE elective courses
- 4 hours of mathematics or science selected from MATH 340, CHEM 123, CHEM 153, or PHYS 254
- 4 hours of business selected from BUSL 255, MGT 202, or MKT 202
- 3 or 4 hours of engineering science selected from EE 314, EE 315, CE 222, or ME 224
- 4 hours from Tier 2C or 2H courses
- 4 hours from Tier III courses
- 8 to 11 hours to be freely chosen

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 two technical focus areas—manufacturing materials and processes (MMP) or manufacturing information technology (MIT), depending on your interests and career goals. The degree includes a minor in business.

There are four components to the curriculum: technical courses, general education, business, and electives. 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

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*	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*	8

*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
Tier III	Synthesis	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: 24

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
OPN 300	Prin. of Operations	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 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 classes 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 Fund.	3
IT 103	Computer Applications in Ind. Tech.	4
COMS 103	Public Speaking	4
CHEM 121	Principles of Chemistry	4

Winter

IT 102	Engr. Graphics Apps.	4
IT 111	Manufacturing Materials	4
IT 112	Intro to Manufacturing Processes	4
CHEM 122	Principles of Chemistry	4

Spring

IT 206	Computer Methods in Ind. Tech.	4
IT 208	Industrial Plastics	4
IT 216	Metal Machining	4
MATH 163A	Intro to Calculus	4

Mechanical Engineering

Bachelor of Science in Mechanical Engineering Major code BS7257

Ohio University's Mechanical Engineering program is constructed so that graduates are able to meet the four educational objectives outlined below. These objectives are consistent with and embrace ABET Criteria 2000 Outcomes. Ohio University Mechanical Engineering graduates are to have:

- a strong fundamental scientific and technical knowledge base and critical thinking skills to serve as the foundation for engineering practice and life-long learning;
- the ability to apply engineering skills to engineering analysis and design projects;
- the ability to communicate technical information effectively in written, oral, visual, and graphical forms;
- an awareness and understanding of ethical, legal, and economic ramifications relating to professional practice.

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 100) 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 331	Prin. of Eng. Materials	4

ME 301	Kinematics	4
ME 388	Junior Lab	4
Winter		
ENG 305J	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 ⁴	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	4
	Tier III Elective	4
	Hum. or Soc. Sci. Elective	4

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

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

³Twenty hours of humanities and social sciences with a minimum of eight hours in each area are required. These hours should include a two course sequence in each of these areas.

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

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

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

⁷Each student must complete at least 8 hours of technical electives. Technical electives are any engineering course at the 300-level or above, or any course in math or physics at the 400 level.