Student Handbook

For

Bachelor of Science
In Engineering Program

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Tomorrow starts here.
To the new Engineering students of East Carolina University:

First, I want to welcome you to the ECU Department of Engineering. “Engineer” is one of the words I use proudly to describe myself. It’s what I am, and it’s at the core of almost everything I do. I earned my bachelor’s degree in mechanical engineering from Texas Tech University. I also earned a master’s degree in mechanical engineering from Texas Tech and a Ph.D. in engineering mechanics from Virginia Tech. I’m delighted to be at ECU, and I hope you are, too. One of my goals is to get to know all of the engineering students at ECU, and I look forward to meeting you.

During my career I’ve worked in government laboratories, industrial research and development labs, and taught a wide range of engineering subjects. To this day, I still cannot believe you can actually get paid to do something that is as much FUN as being an engineer. Yes, I said FUN. In what other profession can you earn a great salary to help people and society, create things that make people’s lives better, and get to design and build things and then break/burn/demolish them so you can make them better? Engineering is one of the most exciting and creative professions in the world.

While you are a student at ECU, your primary job is to learn, and our expectations will be high. We are committed, as is everyone at ECU, to seeing you succeed, but you are the one who must do the learning. One of the first things you may need to learn is how to learn. While you may have succeeded in high school without much studying, as many of us did, that will not happen in college. You will need to develop an understanding of how you learn and then use that understanding to learn mathematics, science, humanities, social sciences, and excellent communication skills – the foundations and tools used by engineers. As you progress toward being an engineer, you will begin to see how the different courses in the program are all related to each other in different ways and that the things you learn in one course will be important in other courses as well.

Engineers with a broad set of knowledge are in high demand in industry, where most activities involve numerous engineers with different knowledge sets. The ECU engineering program is somewhat unique in that you and the other students in the program will study many of the same subjects, especially in the first two years of the program. In the third year each student will choose a concentration that will allow them to focus their engineering study in an area of interest. As a result of this carefully crafted curriculum you will graduate with a much broader knowledge base than students who attended other universities where the curriculum is more focused from the beginning. Employers love ECU engineers.

When one of my friends found out I was coming to ECU, they said “Everyone wants to be a Pirate.” I agree. I challenge you to become involved with East Carolina University in multiple ways. You’ll need to study, but I encourage you to have fun, to get involved with the campus and other students and to become a citizen of ECU. You will make friends during your time at ECU who will be your friends for the rest of your life. Look at the opportunities to be a citizen of ECU and seize them.

Go Pirates!

O. Hayden Griffin, Jr.
Chairperson
Department of Engineering
Overview

This handbook is **NOT** intended as a substitute for the undergraduate catalog or for the academic advisor.

It is important that you read and understand this handbook in preparation for seeing your advisor. Then you can spend the time with your advisor more productively by discussing your individual goals and needs instead of attempting to decipher the catalog.

This handbook will be updated every year as the engineering program and curriculum evolves. The handbook and related university catalog for the year you enter is the guiding document for your academic career during your time at ECU. This handbook will be available to you on the department web page.

Welcome to ECU and congratulations on your accomplishments in being selected for the engineering program.
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Program Mission, Outcomes, and Objectives

Mission of the ECU Engineering Program

The mission of the department is to provide a theory-based, application-oriented general engineering education that serves as a basis for career success and lifelong learning. Our graduates demonstrate the engineering and scientific knowledge to analyze, design, improve and evaluate integrated technology–based systems. Our program welcomes a diverse student body and provides the support to foster its success.

Educational Objectives of the ECU Engineering Program

Our five program objectives are consistent with the mission of the program and the university. Graduates of the BS in Engineering program will:

1. Use their education to be successful in a technical career or graduate studies, demonstrating competence in applying classical methods and modern engineering tools,
2. Analyze technical, environmental, and societal issues related to engineering designs and technology systems,
3. Be productive team members and leaders, using skills in human relations and communication,
4. Practice a lifelong commitment to learning and professional development, and
5. Demonstrate commitment to the professional and ethical standards of engineering and recognize the importance of community and professional service.

Learning Outcomes of the ECU Engineering Program

To achieve the program objectives, the BS in Engineering degree program has established eleven learning outcomes that will be documented at graduation. ECU engineering graduates will demonstrate:

a) an ability to apply knowledge of mathematics, science, and engineering,
b) an ability to design and conduct experiments, as well as to analyze and interpret data,
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability,
d) an ability to function on multi-disciplinary teams,
e) an ability to identify, formulate, and solve engineering problems,
f) an understanding of professional and ethical responsibility,
g) an ability to communicate effectively,
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context,
i) a recognition of the need for, and an ability to engage in life-long learning,
j) a knowledge of contemporary issues, and
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
Why Engineering at ECU?

**Fully Accredited Engineering Program**

The engineering program at ECU is fully accredited by ABET, Inc- the national standard bearer for quality engineering programs. East Carolina University is proud to be one of only 5 universities in North Carolina with an ABET accredited engineering program joining N.C. State, Duke, North Carolina A&T, and UNC-Charlotte.

**What is different about the ECU Engineering program?**

ECU Engineering is unique and provides an approach to engineering education that is significantly different from most other universities.

- First, it emphasizes the application of engineering theory to real world problems. Our students are engaged in hands-on engineering activities beginning with the first semester.
- Second, the mathematics and science content is integrated with the engineering courses, software, and labs to provide an integrated plan of study that converts theory into practice.
- Finally, students work very closely with the engineering faculty and their classmates in a team-based learning process called a cohort system that promotes learning, success, and team work.
- Our class size is relatively small. Our introductory courses typically have 12-16 students in them rather than the large courses with 100+ found at other universities. In the ECU engineering department students truly are treated like individuals, not just a number.

**How is the curriculum structured?**

The curriculum is composed of a 39 hour common core of courses that provides a foundation in general engineering. Each concentration contains 26 hours of course work that builds expertise in that specific discipline area. There will be further explanation of the course work in the Curriculum section of this handbook.

**Is a BS in Engineering program right for you?**

Traditional engineering programs, such as mechanical and electrical engineering, produce engineers who focus on a limited technology area or part of a system. ECU's BS in Engineering program gives students a broader engineering perspective and focuses more on understanding how to apply this knowledge to solve problems and to improve entire technology systems as opposed to small components or elements. For example, a mechanical engineer may focus on design or operation of a component of a vehicle transmission. The general engineer has the background to understand a specific component but also has the technological breadth to analyze and understand how that component impacts the operational life cycle of the vehicle and address areas such as operations, performance, test, manufacturing, cost & schedule, training & support, and disposal.

Graduates from BS in Engineering programs are employed in a variety of fields within engineering and can also be found in health care, banking and finance, insurance, government, tourism, service, transportation, agriculture, and retail.
Which concentration is best for you?

ECU offers a Bachelors of Science (BS) in Engineering with five unique and innovative concentrations: Biomedical Engineering, Bioprocess Engineering, Electrical Engineering, Industrial and Systems Engineering, and Mechanical Engineering.

- **Biomedical Engineering** focuses on improving medical systems to enhance human health. This concentration includes disciplines such as medical instrumentation, imaging, biological materials, and modeling in areas such as biomechanics and the physiological systems of the body. Biomedical engineers are prepared for broad career options, including graduate study and medical school, medical research, and in clinical, sales, and engineering positions in industry.

- **Bioprocess Engineering** is one of the fastest growing segments of the economy. Bioprocess engineers design and develop equipment, methods, and systems for the efficient and environmentally sound manufacturing of medicines, vaccines, diagnostics, and biologically-based products.

- **Electrical Engineering** is a broad field involved in projects of varying scale. Electrical engineers possess the skills to work on very large scale engineering projects such as high power transformers, generators, and electrical distribution grids and very small scale products such as nanotechnology. Electrical engineers are involved in the design of any electronic device from iPods, digital cameras, and computers to robots, automotive technology, and manufacturing equipment. Electrical engineering is also vital to communication technology such as cell phones, radios, computer networks, and satellites.

- **Industrial and Systems Engineering** is the perfect blend of technical engineering skills and people orientation. Industrial and systems engineers focus on the design, analysis, and operation of systems ranging from a single piece of equipment to large business, social, and environmental systems. Industrial and systems engineering addresses overall system performance and productivity, responsiveness to customers’ needs, and the quality of the products or services produced by the enterprise. This field is not just about manufacturing but also encompasses service industries such as government, health care, transportation, logistics, and consulting.

- **Mechanical Engineering** is one of the broadest engineering disciplines. Mechanical engineers have skills to support design and improvement of a wide range of products from supersonic aircraft to toasters and bicycles. Mechanical engineers may specialize in areas like combustion, thermal systems, machine design, and robotics or cross over into advanced technologies such as artificial limbs and nanotechnology. Career opportunities for mechanical engineers range exist in a wide range of business and industry including manufacturing, consulting engineering, product design, and research.
Curriculum

This section contains information about the 4-year curriculums for each concentration and advisor information.

2011-2012 Engineering Catalog Copy

Department of Engineering

The Department of Engineering offers a BS in engineering with five concentration areas: electrical engineering, mechanical engineering, industrial and systems engineering, biomedical engineering, and bioprocess engineering. The BS in engineering program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: 410-347-7700.

The mission of the department is to provide a theory-based, application-oriented general engineering education that serves as a basis for career success and lifelong learning. Our graduates demonstrate the engineering and scientific knowledge to analyze, design, improve and evaluate integrated technology–based systems. Our program welcomes a diverse student body and provides the support to foster its success.

Graduates of the BS in engineering program will:

1. Use their education to be successful in a technical career or graduate studies, demonstrating competence in applying classical methods and modern engineering tools;
2. Analyze technical, environmental, and societal issues related to engineering designs and technology systems;
3. Be productive team members and leaders, using skills in human relations and communication;
4. Practice a lifelong commitment to learning and professional development; and
5. Demonstrate commitment to the professional and ethical standards of engineering and recognize the importance of community and professional service.

Graduates of the BS program have: (a) an ability to apply knowledge of math, science and engineering; (b) an ability to design and conduct experiments/analyze and interpret data; (c) an ability to design a system, component, or process; (d) an ability to function on multi-disciplinary teams; (e) an ability to identify, formulate, and solve engineering problems; (f) an understanding of professional and ethical responsibility; (g) an ability to communicate effectively; (h) an ability to evaluate the impact of technology in a global/societal context; (i) an appreciation for lifelong learning; (j) knowledge of contemporary issues; (k) an ability to use the techniques, skills, and modern tools for engineering practice; and (l) an ability to apply engineering concepts to an area of concentrated study, chosen from biomedical engineering, bioprocess engineering, electrical engineering, industrial and systems engineering, or mechanical engineering.

The BS program is distinctive from many other engineering programs in that it: 1) focuses on hands-on project applications of engineering, beginning with the freshman year and continuing throughout the program; 2) promotes a team-based learning approach where students work closely with each other and the faculty; and 3) integrates science, math and engineering content to assure a coordinated presentation of concepts that flow from theory to advanced practice and application. Engineering students are encouraged to pursue registration as a Professional Engineer (PE). The first step in this process is completion of the Fundamentals of Engineering (FE) Exam. Students are required to take the FE exam during their senior year. Subsequent to graduation, professional
licensure requires at least four years of progressive engineering experience and successful completion of the PE Examination.

**Admission**
Admission to the university or college does not guarantee admission to the engineering program. Students with an interest in engineering should indicate engineering as the desired major when they apply to the university and complete a separate application to the engineering program. The engineering application can be found on the Department of Engineering Web site at [http://www.tecs.ecu.edu/engineering](http://www.tecs.ecu.edu/engineering). Once students have been accepted into the university, the engineering admissions committee evaluates program applicants based on a number of success indicators including SAT/ACT scores, performance in math and science courses, high school GPA, and rank in class. The average SAT for freshmen admitted to the engineering program at ECU is typically over 1100 on mathematics and critical reading. Prior to enrolling in classes, engineering students also take an engineering mathematics placement test focused on calculus readiness. Information on this test is included in the engineering acceptance letter.

Transfer admission: Students transferring to the engineering program must first meet university transfer requirements. Once transfer students have been admitted to the university, they may apply to the engineering program and will be evaluated by the department admissions committee on the potential to succeed with particular emphasis on performance in math and science classes. Students who have completed an associate degree from an approved pre-engineering program will be directly admitted to the BS program.

**Special Department Programs**

**Internships.** All engineering students are encouraged to complete internships, service learning projects, and professional practice activities prior to graduation. The department maintains a number of internship relationships at local and regional employers. Full-time students who have completed 24 credit hours and have a 2.5 minimum cumulative GPA are eligible for these ECU internships. Transfer students must complete 12 credit hours at ECU before applying for the internship program.

**Engineering Learning Community.** Incoming freshmen are encouraged to live in the engineering learning community dormitory on campus. This program builds teamwork and collaboration skills and facilitates the transition to university life.

**Undergraduate Research.** Students are strongly encouraged to pursue undergraduate research with a faculty member. Up to 3 s.h. of undergraduate research may be applied toward degree requirements as a technical elective. Information regarding undergraduate research may be obtained from the concentration coordinator.

**BS in Engineering**
Minimum degree requirement for the engineering program is 128 s.h. credit as follows:

1. **Foundations curriculum requirements** (For information about courses that carry foundations curriculum credit see [Liberal Arts Foundations Curriculum](#)) including those listed below - 42 s.h.

   BIOL 1050. General Biology (3) (F,S,SS) (FC:SC) and BIOL 1051. General Biology Laboratory (1) (F,S,SS) (FC:SC) (C:BIOL 1030 or 1050) or BIOL 1100, 1101.
Principles of Biology and Laboratory I (3,1) (F,S,SS) (FC:SC) (P/C for 1101: BIOL 1100)

ECON 2113. Principles of Microeconomics (3) (F,S,SS) (FC:SO)

MATH 2151. Engineering Calculus I (3) (S) (FC:MA) (May not receive credit for MATH 2151 after receiving credit for MATH 2171) (P: MATH 1083 or 1085 or placement test criteria; or consent of instructor)

PHIL 2275. Professional Ethics (3) (WI*) (F,S,SS) (FC:HU) or PHIL 2274. Business Ethics (3) (WI*) (F,S,SS) (FC:HU)

PHYS 2350. University Physics (4) (F,S,SS) (FC:SC) (P for 2350: MATH 2121, 2151, or 2171)

2. Engineering Foundation - 39 s.h.

ENGR 1000. Introduction to Engineering (1) (P: Engineering major)
ENGR 1012. Engineering Graphics (2) (C: MATH 1083 or higher)
ENGR 1016. Introduction to Engineering Design (2) (P: ENGR 1000, 1012)
ENGR 2000. Engineering Design and Project Management I (1) (P: ENGR 1016 or consent of instructor)
ENGR 2022. Statics (3) (P: MATH 2152; C: PHYS 2350)
ENGR 2050. Computer Applications in Engineering (3) (P: MATH 1083 or higher)
ENGR 2070. Materials and Processes (3) (F) (WI) (P: CHEM 1150)
ENGR 2450. Dynamics (3) (Formerly ENGR 3004) (P: ENGR 2022 with minimum grade of C; MATH 2152)
ENGR 2514. Circuit Analysis (4) (P/C: MATH 2154; PHYS 2360)
ENGR 3000. Engineering Design and Project Management II (2) (WI) (P/C: ENGR 3420; P: ENGR 2000)
ENGR 3024. Mechanics of Materials (3) (WI) (P: ENGR 2022 with minimum grade of C; ENGR 2070)
ENGR 3050. Sensors, Measurements, and Controls (3) (S) (P: ENGR 2514 or 3014; MATH 2154)
ENGR 3420. Engineering Economics (2) (P: MATH 2152)
ENGR 3800. Quality Control for Engineers (3) (Formerly ENGR 4000) (P: MATH 3307)
ENGR 4010. Senior Capstone Design Project I (2) (WI) (P: ENGR 3000, consent of instructor)
ENGR 4020. Senior Capstone Design Project II (2) (WI) (P: ENGR 4010)

3. Cognates - 21 s.h.

CHEM 1150, 1151. General Chemistry and Laboratory I (3,1) (F,S,SS) (P/C: MATH 1065; C for 1150: CHEM 1151; C for 1151: CHEM 1150)

MATH 2152. Engineering Calculus II (3) (S) (FC:MA) (May not receive credit for MATH 2152 after receiving credit for MATH 2172) (P: MATH 2151 or 2171; or consent of instructor)

MATH 2153. Engineering Calculus III (3) (F) (FC:MA) (May not receive credit for MATH 2153 after receiving credit for MATH 2173) (P: MATH 2152 or 2172; or consent of instructor)

MATH 2154. Engineering Linear Algebra and Differential Equations I (4) (S) (P: ENGR 2050; MATH 2153)

MATH 3307. Mathematical Statistics I (3) (F,S) (P: MATH 2172)

PHYS 2360. University Physics (4) (F,S,SS) (FC:SC) (P: PHYS 2350)
4. Concentrations (Choose one)

**Biomedical Engineering - 26 s.h.**

BIME 3000. Foundations of Biomedical Engineering (3) (P: Consent of instructor)
BIME 4030. Biomechanics and Materials (4) (P: CHEM 2750, 2753; ENGR 2450 with minimum grade of C; ENGR 3024)
BIME 4040. Physiological Systems and Modeling for Engineering (3) (P: BIME 3000)
BIME 4200. Biomedical Instrumentation (4) (P: BIME 3000; ENGR 3050)
CHEM 1160, 1161. General Chemistry and Laboratory II (3,1) (F,S,SS) (FC:SC) (P: CHEM 1150, 1151; C for 1160: CHEM 1161; C for 1161: CHEM 1160; RC: MATH 1083 or 1085)
CHEM 2750. Organic Chemistry I (3) (F,S,SS) (P: CHEM 1160, 1161; C: CHEM 2753)
CHEM 2753. Organic Chemistry Laboratory I (1) (F,S,SS) (C: CHEM 2750)
ENGR 3012. Thermal and Fluid Systems (4) (P: ENGR 2450 with minimum grade of C; MATH 2153)

**Bioprocess Engineering - 26 s.h.**

BIOE 3016 Engineering Applications in Microbial Systems (2) (P: ENGR 2450 with minimum C; MATH 2154; C: CHEM 2650, 2651)
BIOE 3250. Bioprocess Engineering Systems (3) (Formerly BIOE 3000) (P: CHEM 2650, 2651; BIOE 3016)
BIOE 4006. Bioprocess Validation and Quality (2) (P: MATH 3307; consent of instructor)
BIOE 4010. Bioprocess Separation Engineering (3) (P: BIOE 3250; ENGR 3012)
BIOE 4020. Bioprocess Plant Design, Simulation and Analysis (3) (P: BIOE 4010; MATH 3307)
CHEM 1160, 1161. General Chemistry and Laboratory II (3,1) (F,S,SS) (FC:SC) (P: CHEM 1150, 1151; C for 1160: CHEM 1161; C for 1161: CHEM 1160; RC: MATH 1083 or 1085)
CHEM 2650. Organic Chemistry for the Life Sciences (4) (F,S) (P: CHEM 1160, 1161)
CHEM 2651. Organic Chemistry Lab for the Life Sciences (1) (F,S) (C: CHEM 2650)
ENGR 3012. Thermal and Fluid Systems (4) (P: ENGR 2450 with minimum grade of C; MATH 2153)

**Electrical Engineering 26 s.h.**

EENG 2410. Digital Electronics (3) (Same as CSCI 2410) (P: ENGR 1014 or 1016, and 2050; or CSCI 2310, 2311)
EENG 3020. Signals and Systems (3) (P: ENGR 2514, MATH 2154)
EENG 3040. Microprocessors (4) (Same as CSCI 3040) (P: ENGR 2514; CSCI 2410 or EENG 2410; or consent of instructor)
EENG 3530. Electronics (3) (P: ENGR 2514)
EENG 3750. Electric Power Systems (3) (P: ENGR 2514)
EENG 4510. Advanced Controls (3) (P: EENG 3020; ENGR 3050)
ENGR 3012. Thermal and Fluid Systems (4) (S) (P: ENGR 2450 with minimum grade of C; MATH 2153)

Technical electives, 3 s.h. as approved by the academic advisor.
**Industrial and Systems Engineering - 26 s.h.**

ISYS 3010. Principles and Methods of Industrial and Systems Engineering (3) (P: Junior standing in engineering)
ISYS 3060. Systems Optimization (3) (P: MATH 2154, 3307)
ISYS 4010. Work Measurement and Human Factors (3) (P: MATH 3307)
ISYS 4020. Analysis of Production Systems and Facility Design (3) (P: MATH 3307)
ISYS 4065. Discrete System Modeling (3) (P: ENGR 3800)
ENGR 3012. Thermal and Fluid Systems (4) (P: ENGR 2450 with minimum grade of C: MATH 2153)
Technical electives, 7 s.h. as approved by the academic advisor.

**Mechanical Engineering - 26 s.h.**

MENG 3624. Solid Mechanics (3) (P: ENGR 3024)
MENG 3070. Thermodynamics I (3) (P: MATH 2154; ENGR 2450 with minimum grade of C)
MENG 4018. Thermodynamics II (3) (P: MENG 3070)
MENG 4150. Fluid Mechanics (4) (P: ENGR 2450 with minimum grade of C; MATH 2154)
MENG 4260. Heat and Mass Transfer (3) (P: MENG 3070)
MENG 4650. Machine Design (3) (P: MENG 3624)
Technical electives, 7 s.h. as approved by the academic advisor.
Advising

ECU Engineering takes a comprehensive view of advising. The purpose of the academic advising system is to help the student define the choices that must be made and to give any needed advice related to progression through the academic steps toward graduation. Each engineering student is assigned a faculty advisor who will work with him or her on academic matters such as course registration, satisfactory academic progress, preparing for graduation, and choice of concentration and major. Students must meet with their academic advisor at least once a semester in order to track their progress and prepare for registration for the next term. The engineering curriculum flow sheets outlining the normal progression through the curriculum and catalog information are contained in this booklet.

The College of Technology and Computer Science also works closely with the ECU career center to ensure that students are properly advised about career choices and opportunities. The college has a dedicated career advisor who can address specific career needs of engineering students and can help students learn more about the engineering profession. In addition the Director of ECU Engineering, Inc. will work with each student on developing the needed career work experience prior to graduation. The section in this booklet on ECU Engineering Inc. describes this in more detail.

Student and Advisor Responsibilities

The table below outlines the division of responsibilities between the student and his or her advisor for each student’s academic success

<table>
<thead>
<tr>
<th>Advisor Responsibilities</th>
<th>Student Responsibilities</th>
</tr>
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<tbody>
<tr>
<td>• Provide advice to students about ways to be academically successful and provide information to students about available resources and academic programs</td>
<td>• Take advantage of the resources provided to you including tutoring, professors’ office hours, and library study areas.</td>
</tr>
<tr>
<td>• Meet with each advisee at least once per semester to develop a course plan for the following semester.</td>
<td>• Each student is solely responsible for his or her own success.</td>
</tr>
<tr>
<td>• Develop the master schedule of courses each semester</td>
<td>• Perform to the best of his or her abilities in each course to ensure that graduation is not delayed.</td>
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<tr>
<td></td>
<td>• Maintain good study habits</td>
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<tr>
<td></td>
<td>• Schedule meeting with advisor</td>
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<td></td>
<td>• Show up on time to the meeting</td>
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<tr>
<td></td>
<td>• Inform advisor in advance if unable to make scheduled meeting.</td>
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<td></td>
<td>• Register for the classes agreed upon in the meeting with the advisor.</td>
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<td></td>
<td>• If adjustments need to be made to the course plan, the student should inform his or her advisor of the change in plans.</td>
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<td></td>
<td>• Inform advisor of any course conflicts that prevent registration for needed coursework</td>
</tr>
<tr>
<td>Track student progress through the curriculum and provide help for students who are off track</td>
<td>Track personal progress through the courses on the flowchart to ensure that graduation occurs by goal date.</td>
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</tr>
<tr>
<td>Understand which courses are prerequisites for other courses</td>
<td>While the advisor will help the student develop a reasonable plan, it is the responsibility of the student to keep up with courses and to know when to take each class</td>
</tr>
<tr>
<td>Realize that the engineering program is sequenced in such a way that dropping or failing a single course may delay graduation a full year</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>File various forms with the university on behalf of the student including:</th>
<th>Graduating seniors must sign senior summary and course substitution form in semester prior to graduation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>o senior summary</td>
<td>Students wanting to take classes anywhere other than ECU must use the course equivalencies feature on OneStop to fill out the form located here: <a href="http://www.ecu.edu/cs-acad/registrar/upload/U-S-7-2010.doc">www.ecu.edu/cs-acad/registrar/upload/U-S-7-2010.doc</a></td>
</tr>
<tr>
<td>o course substitution</td>
<td></td>
</tr>
<tr>
<td>o permission to take classes outside of ECU</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Field questions from parents and students about academic progress</th>
<th>Complete the Buckley form online through OneStop authorizing parents or other individuals to be able to speak with university officials about academic issues if desired.</th>
</tr>
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<tbody>
<tr>
<td>Ensure that academic issues are only discussed with individuals the student has authorized</td>
<td></td>
</tr>
</tbody>
</table>

**Foundations Curriculum Requirements**

East Carolina University requires that all degree recipients develop a broad base of knowledge and critical thinking ability that extends beyond their specific area of study. In addition to engineering classes, all ECU engineering students are required to take several electives in the humanities, fine arts, social sciences, health promotion, and physical fitness. The overarching goal of the foundations curriculum is to provide students with the fundamental knowledge and abilities essential to their living worthwhile lives both private and public. For more information about the Foundations Curriculum, please consult the undergraduate catalog.

**Math Requirements**

The department accepts students with a wide array of backgrounds and abilities. For this reason, it will be imperative that some students start at different math levels. The following table depicts the three most common math approaches that can be used for this degree. Students with AP/IB or transfer credit for math courses may have different circumstances and should work with their advisor to develop a personalized plan.
<table>
<thead>
<tr>
<th>Start in:</th>
<th>Fall of Freshman Year</th>
<th>Spring of Freshman Year</th>
<th>Summer between Freshman and Sophomore</th>
<th>Fall of Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2151</td>
<td>MATH 2151</td>
<td>MATH 2152</td>
<td>-</td>
<td>MATH 2153</td>
</tr>
<tr>
<td>MATH 1083</td>
<td>MATH 1083</td>
<td>MATH 2151</td>
<td>MATH 2152</td>
<td>MATH 2153</td>
</tr>
<tr>
<td>MATH 1065 or lower</td>
<td></td>
<td></td>
<td>5 years needed to graduate</td>
<td></td>
</tr>
</tbody>
</table>

In order for a student to graduate in 4 years, they must start in MATH 2151 or MATH 1083. Starting with a lower level math will require 5 years to graduate. Students who are possibly thinking of transferring away from ECU in the future need to let that request be known to their advisor due to potential schedule changes that may need to take place. Completion of MATH 2152 prior to the start of the sophomore year is imperative for a student to stay on track with the engineering curriculum and may require some students to take summer classes as outlined in the table above or to delay graduation.

**Curriculum Flowsheets**

The attached sheets show the sequence of courses for each of the four concentrations offered by the department. Arrows indicate prerequisite courses. Courses in yellow indicate courses specific to each concentration. Courses with a bold line around the box indicate courses that contain a laboratory component. Some courses require a minimum grade of C or better in order to progress to the next course. These are indicated on the flowsheets in boxes with dashed lines around them and include MATH 2151, ENGR 2022, and ENGR 2450. Information on these sheets is based on the undergraduate catalog and is not meant to be a substitution for the catalog. These flowsheets indicate the typical sequence for students who start in MATH 2151 with no transfer credit. Students who transfer in courses or who do not start in MATH 2151 will follow a modified path toward graduation.
BSE – Biomedical Engineering (BIME) Program – Entering Class of 2011

Freshman

ENGR 1012 (2) Engineering Graphics
ENGR 1000 (1) Introduction to Engineering
ENGR 1016 (2) Intro to Eng Design
ENGR 2050 (3) Computer Applications in Engineering

Sophomore

ENGR 2022 (3) Statics
ENGR 2000 (1) Engineering Design/PM I
ENGR 2070 (3) Materials and Processes
ENGR 3116/3161 (4) General Chemistry

Junior

ENGR 2450 (3) Dynamics
ENGR 3024 (3) Mechanics of Materials
ENGR 3800 (3) Quality Control for Engineers
CHEM 1160/1161 (4) General Chemistry

Senior

ENGR 4010 (2) Senior Capstone Design I
ENGR 4020 (2) Senior Capstone Design II
ENGR 2000 (1) Engineering Design/PM II
ENGR 3050 (3) Sensors, Measurements And Controls

Core courses, 32 hours

Math/Science

MATH 2151 (3) Calculus I
MATH 2152 (3) Calculus II
MATH 2153 (3) Calculus III
MATH 2154 (4) DEQ and Linear Algebra
MATH 2152 (3) Calculus II
MATH 2153 (3) Calculus III
MATH 2154 (4) DEQ and Linear Algebra

ENGR 2450 (3) Dynamics
ENGR 3024 (3) Mechanics of Materials

BIME 4040 (3) Physiological Systems
CHEM 1150/1151 (4) General Chemistry

Seminar/Professional Development Electives, 12 hours

ENGR 3800 (3) Quality Control for Engineers
ENGR 3012 (4) Thermal and Fluid Systems

BIME 4030 (4) Biomechanics And Materials
BIME 3000 (3) Biomedical Engineering

Math/Science Electives, 12 hours

ENGL 1100 (3) Composition
ENGL 1200 (3) Composition
ENGL 3307 (3) Engineering Statistics

Credit hours per Semester

16
17/48
16/82
16/98
15/113
15/128

Cumulative Credit Hours

18/66
16/98
15/113
15/128

Revision Date: 05/24/11

Note: This chart is for planning purposes only. It is the student’s responsibility to ensure that requirements as detailed in the Undergraduate Catalog are met.
BSE – Bioprocess Engineering (BIOE) Program – Entering Class of 2011

Freshman
- ENGR 1012 (2) Engineering Graphics
- ENGR 1016 (2) Introduction to Engineering
- ENGR 2022 (3) Statics
- ENGR 1012 (2) Intro to Eng Design
- ENGR 2000 (1) Engineering Design/PM I
- ENGR 2450 (3) Dynamics
- ENGR 3800 (3) Quality Control for Engineers

Sophomore
- ENGR 2050 (3) Computer Applications in Engineering
- ENGR 2070 (3) Materials and Processes
- ENGR 3012 (4) Thermal and Fluid Systems
- CHEM 1150 (4) General Chemistry
- CHEM 1160/1161 (4) General Chemistry
- PHYS 2350 (4) University Physics I
- PHYS 2360 (4) University Physics II

Junior
- ENGR 2514 (4) Circuit Analysis
- ENGR 3050 (3) Sensors, Measurements And Controls
- CHEM 2650/2651 (4) General Chemistry
- CHEM 2650/2651 (4) General Chemistry
- BIOE 3000 (2) Bioprocess Separation Engineering
- BIOE 3016 (2) Bioprocess Engineering Validation

Senior
- ENGR 3010 (2) Senior Capstone Design I
- ENGR 4010 (2) Senior Capstone Design II
- ENGR 3000 (2) Bioprocess Engineering
- ENGR 3010 (2) Senior Capstone Design I
- ENGR 4010 (2) Senior Capstone Design II
- BIOE 3006 (2) Bioprocess Plant Design, Sim. & Analy.

Math/Science
- MATH 2151 (3) Calculus I
- MATH 2152 (3) Calculus II
- MATH 2153 (3) Calculus III
- MATH 2154 (4) DEQ and Linear Algebra
- MATH 3307 (3) Engineering Economics
- MATH 3307 (3) Engineering Economics
- MATH 3307 (3) Engineering Economics

General
- ENGL 1100 (3) Composition
- ENGL 1200 (3) Composition
- ENGL 1200 (3) Composition
- MATH 3307 (3) Engineering Statistics
- Social Sciences Elective (3)
- Social Sciences Elective (3)
- Social Sciences Elective (3)

Revision Date: 05/24/11

Note: This chart is for planning purposes only. It is the student’s responsibility to ensure that requirements as detailed in the Undergraduate Catalog are met.
Note: This chart is for planning purposes only. It is the student’s responsibility to ensure that requirements as detailed in the Undergraduate Catalog are met.

Revision Date: 05/24/11
BSE – Mechanical Engineering (MENG) Program – Entering Class of 2011

**FRESHMAN**
- ENGR 1012 (2) Engineering Graphics
- ENGR 1000 (1) Introduction to Engineering
- ENGR 1016 (2) Intro to Eng Design
- ENGR 2050 (3) Computer Applications in Engineering
- MATH 2151 (3) Calculus I
- BIOL 1050/1051 or 1000/1101 (4) General Chemistry
- CHEM 1150/1151 or 1100/1101 (4) General Chemistry
- ENGL 1100 (3) Composition
- ENGL 1200 (3) Composition
- MATH 1083 or Placement test
- MATH 2152 (3) Calculus II
- MATH 2153 (3) Calculus III
- PHYS 2350 (4) University Physics I
- PHYS 2360 (4) University Physics II
- ENGR 2022 (3) Statics
- ENGR 2450 (3) Dynamics
- ENGR 2000 (1) Engineering Design/PM I
- ENGR 3000 (2) Engr Design & PM II
- MATH 2152
- ENGR 2450

**SOPHOMORE**
- ENGR 1016 (2)
- ENGR 2022 (3)
- ENGR 2070, ENGR 2022
- ENGR 2000 P/C: ENGR 3400
- ENGR 2070, ENGR 2022
- ENGR 3024 (3) Mechanisms of Materials
- ENGR 3000 (2) Engr Design & PM II
- MATH 2154
- ENGR 3000

**JUNIOR**
- ENGR 3024 (3) Mechanisms of Materials
- ENGR 3000 (2) Engr Design & PM II
- MENG 3000 (3) Quality Control for Engineers
- MENG 4018 (3) Thermo II
- MENG 4018 (3) Thermo II
- ENGR 4260 (3) Heat and Mass Transfer
- ENGR 4260 (3) Heat and Mass Transfer
- ENGR 4260 (3) Heat and Mass Transfer
- MENG 4650 (3) Machine Design
- ENGR 3024

**SENIOR**
- ENGR 3024 (3) Mechanisms of Materials
- ENGR 3000 (2) Engr Design & PM II
- MENG 4018 (3) Thermo II
- MENG 4018 (3) Thermo II
- ENGR 4260 (3) Heat and Mass Transfer
- ENGR 4260 (3) Heat and Mass Transfer
- ENGR 4260 (3) Heat and Mass Transfer
- MENG 4650 (3) Machine Design
- ENGR 3024

**Math/Science**
- Math/Science Elective (3)
- Math/Science Elective (3)
- Math/Science Elective (3)

**General**
- Social Sciences Elective (3)
- Humanities/Fine Arts Elective (3)
- Humanities/Fine Arts Elective (3)
- Humanities/Fine Arts Elective (3)

**Revision Date: 052411**

Note: This chart is for planning purposes only. It is the student’s responsibility to ensure that requirements as detailed in the Undergraduate Catalog are met.
Electronic Devices

Computer Requirements and Software

The use of computers pervades the engineering discipline and the engineering curriculum makes use of computer technology in nearly every course. Every year the Engineering program publishes the specifications for this computer through the ACE program at www.ecu.edu/ace. We recommend purchasing from ECU since this facilitates maintenance and other issues. If you purchase a computer from another source it must have capabilities similar to the unit specified by the department. Engineering students are required to have a laptop computer running the Windows operating system with minimum graphical and computational capabilities. Students who come with Apple computers will be responsible for loading Windows on their machines and the ECU engineering department will not be responsible for any software or hardware incompatibility that results from this choice. Various courses will also either provide software to you for you to install on your computer or require you to purchase software. Details about individual course software requirements will be announced in the course syllabi. The hardware specifications on the website above showcase the minimum configuration necessary to run all of the software that will be needed throughout the four year engineering sequence.

The ECU engineering program also recommends that students purchase a comfortable laptop backpack or bag because they will be carrying their laptops around campus regularly. In many classes students will be expected to bring a laptop with them. Students should confirm with their instructor the days that it will be necessary for them to have their computer with them. Students are expected to use technology in a professional manner at all times and to abide by University policies for appropriate use of technology.

Calculators

Engineers will often have a need to perform basic computations using a calculator. Some of the latest models of graphing calculators have the ability to perform many functions. A calculator is not a substitution for learning to do mathematical operations manually. Students should also be aware that many of the more advanced calculators are prohibited on exams such as the Fundamentals of Engineering (FE) Exam (discussed in the subsequent section). Students are encouraged to purchase a calculator that is permitted on the FE exam and to become familiar with its use. A list of acceptable calculators is found here:

http://www.ncees.org/Exams/Exam-day_policies/Calculator_policy.php

Cellular Phones/ PDAs/ Smartphones

Students are also encouraged to sign up for ECU alerts. In the event of a campus emergency or weather-related closure the ECU alert system will send a text message to all registered phones allowing students to take appropriate action. The website below contains instructions for students to sign up for ECU alerts.

http://www.ecu.edu/cs-ecu/alert/Student_Instructions.cfm

It is important that students learn the proper professional use of digital technology. It is expected that when students attend class or meetings with faculty that your phone will be set to silent so that it is not a disruption. Some faculty members have very strict policies about the usage of such technology in their class and grade penalties may be given if a student is found to be using such technology inappropriately.
Preparing for Professional Practice

A major objective of the ECU Engineering program is development of the technical and communication skills required for professional practice. This is achieved through consistent and planned student involvement in engineering design projects. This section describes the specifics of the curricular plan for these projects and defines the role of Team ECU Engineering.

ECU Engineering Professional Development Program

The ECU Engineering Professional Development Program has been revised for the 2011-12 school year to emphasize development of engineering design and critical professional skills during every academic year. The design sequence begins with introductory courses showcases what design is and some basic tools to use in design, and culminates in a yearlong capstone design project in the senior year.

First Year

During the first year, several courses are structured around teamwork, engineering problem solving, and design. In ENGR 1000 Introduction to Engineering students learn about the engineering profession and the types of work engineers are involved in. During this course students are introduced to the engineering design process and engineering problem solving. In ENGR 1012 Engineering Graphics, students learn how to use graphical communication skills to convey visual information about a design. A subsequent course in the second semester, ENGR 1016 Introduction to Engineering Design builds upon the introduction in ENGR 1000 and gives students the opportunity to develop design requirements and constraints and gives students tools to determine feasible solutions to design problems.

Second Year

In the second year students expand upon their knowledge of engineering design in ENGR 2000 Engineering Design and Project Management I. This course showcases engineering achievements and failures throughout history and is a continuation of the design skills obtained during ENGR 1016 with an emphasis on project staging and proper management of resources and time.

Third Year

At this stage in the curriculum students will have completed their cognates courses and have a solid mathematical foundation to use for problem solving. In the third year students take ENGR 3000 Engineering Design and Project Management II which allows them to develop a project plan and design documentation including presentations and reports. Students now have the skills to participate in more challenging projects through Team ECU Engineering. and are well-prepared for summer industry work experiences. During the third year students are also taking several concentration specific courses allowing them to choose to develop technical competencies and work on projects within the concentration area of their choosing.

Fourth Year

Prior to graduation, each ECU engineering student must demonstrate adequate preparation to practice engineering as demonstrated by completion of a year-long capstone design project (ENGR 4010 and 4020). The capstone project involves working on a real-world project for an industry partner. Students will work with a team of senior engineering students and under the advisement of a faculty mentor and an industrial partner to complete this design project. This project serves as a culmination of the design skills learned throughout the previous three years.
Fundamentals of Engineering Exam

Engineering students are expected to take the Fundamentals of Engineering (FE) Exam during their senior year. This is a full day test and is the first step to professional license as a practicing engineer. Information on the test and professional licensing can be found at the web site of the National Council of Examiners for Engineers and Surveyors (NCEES): [http://www.ncees.org/](http://www.ncees.org/)

To prepare you for this test, the department will require that you use the NCEES book of formulas for your class tests. It is required as a freshman book in the ECU bookstore or at [http://www.ncees.org/Exams/Study_materials.php?exam=FE&product=1R](http://www.ncees.org/Exams/Study_materials.php?exam=FE&product=1R)

The NCEES only allows certain calculators to be used during the FE exam. The current list of approved calculators is available on the NCEES web site: [http://www.ncees.org/Exams/Exam-day_policies/Calculator_policy.php](http://www.ncees.org/Exams/Exam-day_policies/Calculator_policy.php). No other models of calculators or variations of the models listed below are permitted in the exam room. The following are the only calculators that will be permitted in the exam room for the 2011 exam administrations.

- Hewlett Packard – HP 33s and HP 35s models
- Casio – FX-115 models
- Texas Instruments – TI 30X or TI 36X models

Each year, NCEES will review and revise the approved calculator list and then announce the updated list by November 15. Be sure to check the NCEES website to ensure that your calculator will be permitted in the exam room. It is recommended that students buy one of the permitted calculators their freshman year so they are very accustomed to its features by the time they take the FE exam.

A review course is offered each year allowing students to review the material that will be covered on the FE exam. This is a one-credit course and can count as a technical elective. All students are encouraged to take this course.

Team ECU Engineering

Practical experience working in the engineering field is an invaluable experience for students to put the technical knowledge gained through their academic courses to use in a “real world” setting. Engineering students are strongly encouraged to seek out internship and co-op opportunities so that they can see how engineering companies operate on a day-to-day basis. These experiences can be very rewarding and have lead to future long-term employment for several of our graduates.

ECU Engineering, Inc works with various industry partners in the Eastern North Carolina region to pair teams of students with companies who need work done on short term projects as well as year-long capstone design projects. For information on current opportunities please contact Team ECU Engineering director Dr. Gene Dixon.
ECU Student Opportunities

Honors College

Advanced undergraduate students may be invited to join the East Carolina University Honors College. This college requires students to take additional advanced coursework and provides exceptional students with opportunities to enrich their education through participating in more in depth courses. Honors students should work with both their advisor in engineering and the Honor’s College advisor to develop an academic plan that meets the requirements of their major and the Honors program requirements.

Website: [http://www.ecu.edu/cs-acad/honors/](http://www.ecu.edu/cs-acad/honors/)

Pirate Tutoring Center

Located in Joyner Library, the Pirate Tutoring Center offers free tutoring to students for Math and Science courses. Students are encouraged to visit the Pirate Tutoring Center early and often.

Website: [http://www.ecu.edu/cs-acad/aa/piratetutoringcenter](http://www.ecu.edu/cs-acad/aa/piratetutoringcenter)

Reserve Officers' Training Corps (ROTC) Program

ECU Engineering students may participate in the Army or Air Force ROTC Programs. Military careers can be very rewarding and fulfilling to engineering students. Plus it is possible to defray some expenses of your BS degree. ROTC students should work closely with their academic advisor to plan their schedule because there are additional course requirements for ROTC students.

Web sites for the ROTC programs offered at ECU are:
Army ROTC: [http://www.ecu.edu/AROTC/](http://www.ecu.edu/AROTC/)
Air force ROTC: [http://www.ecu.edu/AFROTC/](http://www.ecu.edu/AFROTC/)

Services for Students with Disabilities

The ECU engineering department is happy to accommodate any student with a physical or mental disability. It is important that these disabilities be properly documented through the University so that the proper accommodations can be made. If you have a disability and need any form of accommodation on either a temporary or long-term basis please let your instructors know the first day of each class and contact the Department for Disability Support Services to begin the documentation process.

Website: [http://www.ecu.edu/cs-studentlife/dss/register.cfm](http://www.ecu.edu/cs-studentlife/dss/register.cfm)
Engineering Honor Society

Outstanding engineering upperclassmen are invited to join the Engineering Honor Society. Juniors and seniors majoring in engineering who are ranked in the top 1/8th of the junior class and 1/5th of the senior class are eligible for selection by the honor society. The ECU Engineering Honor Society is a start-up chapter of Tau Beta Pi, the universally recognized premier engineering honor society. Charter members were inducted in Fall 2010 and new members will be selected annually. After a two year probationary period, the ECU Engineering Honor Society will petition the Tau Beta Pi national organization to become a collegiate Tau Beta Pi chapter.

Tau Beta Pi’s Mission

The Tau Beta Pi Association was founded at Lehigh University in 1885 by Edward Higginson Williams, Jr., to mark in a fitting manner those who have conferred honor upon their Alma Mater by distinguished scholarship and exemplary character as students in engineering, or by their attainments as alumni in the field of engineering, and to foster a spirit of liberal culture in engineering colleges.

Tau Beta Pi’s Creed

Integrity and excellence in engineering.

Faculty contacts: Dr. Rick Williams, Dr. Evelyn Brown, Ms. Stephanie Sullivan
Engineering Student Organizations

Involvement in engineering student organizations complement the knowledge and skills students develop in the classroom and provide many benefits to students. Participation in one or more student organizations is strongly encouraged.

- They provide an opportunity to learn more about the engineering profession.
- They allow opportunities to develop leadership skills.
- They give students the opportunity to meet a wide range of engineering students across all class years.
- They provide networking opportunities with industry partners.
- They build your resume for job hunting and may lead to your first job.

Complete contact information about these societies can be found on a bulletin board in the department office area in the Slay Building.

Engineering Student Council

The ECU Engineering Student Council develops programs and activities which benefit the students in ECU Engineering. The Council is comprised of officers from each of the engineering student organizations and representatives selected from the engineering learning community.

Responsibilities of the student council include serving as a vehicle for activities that benefit engineering students and promote the program such as: representing students to the chair, the faculty, and the Engineering Advisory Board; coordinating tutoring programs; acting as a liaison between the Department of Engineering and campus organizations; coordinating service learning activities; organizing Engineer’s Week activities; and coordinating the events for the Engineering Career Fair.

Faculty Contact: Dr. Hayden Griffin

American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)

ASHRAE, founded in 1894, is an international organization of 51,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.

The purpose of an ASHRAE student branch is to get more students interested, concerned, and involved in pursuing a career in the field of heating, ventilating, refrigeration, and air conditioning.

Faculty Contact: Dr. Tarek Abdel-Salam

Biomedical Engineering Society (BIMES)

The student chapter of BIMES gives students the opportunity to explore the biomedical engineering field. This organizationarranges guest speakers in a career series outlining the various career paths for biomedical engineering students. The organization also works with the biomedical engineering concentration faculty to explore research projects and the state of the art in the field.

Faculty Contact: Dr. Purvis Bedenbaugh
ECU Robotics Club

Formed in 2010 this new club allows students with interests in robotics to explore the use of robotics technology in a variety of applications. The club is student driven and focuses on designing robotics and service to area high schools that have robotics clubs.

Faculty Contact: Dr. Ricky Castles

Engineering Ambassadors

The engineering ambassadors are a special group of students who work on service projects to the department, the college, and the community. This group leads tours for prospective students, visits regional high schools, and performs similar outreach activities. Students build their leadership, involvement, and speaking skills through this program.

Faculty Contact: Dr. Hayden Griffin and Dr. Evelyn Brown

Institute of Industrial Engineers (IIE)

The East Carolina University Chapter of the Institute of Industrial Engineers (IIE) is an organization open to all students but is primarily focused on the Industrial and Systems Engineering concentration. The objective of the Chapter is to provide students with outside resources to develop their future professional careers. The highlight of the IIE year is the Student Regional Conference held annually.

Faculty Contact: Dr. BJ Kim

International Society for Pharmaceutical Engineering (ISPE)

ISPE is the world’s largest not-for-profit society serving pharmaceutical science and manufacturing professionals. The main objectives of the ISPE ECU Student Chapter are to introduce and familiarize student members, faculty and other appropriate individuals to all aspects of the pharmaceutical and biotechnology industries and related disciplines and to promote educational exchange, career opportunities, networking, and continuing education opportunities.

Faculty Contact: Dr. Loren Limberis

Professional Engineers of North Carolina

Professional registration is essential to the career growth of practicing engineers and this student society focuses on building knowledge and expertise in this critical aspect of an engineering career. The group has close ties with the local and state organizations.

Faculty Contact: Dr. Paul Kauffmann/ Dr. Gerald Micklow

Society of Automotive Engineers (SAE)

The SAE chapter provides the opportunity to learn more about and be involved in automotive engineering. These students also have the opportunity to build and compete in the SAE Mini-Baja competition.

Faculty Contact: Dr. Gerald Micklow
Society of Women Engineers (SWE)

The SWE chapter at East Carolina University provides support for the women enrolled in the engineering program. The chapter takes part in engineering development activities as well as opportunities to volunteer in the community.

Faculty Contact: Prof. Karen DeUrquidi
Engineering Faculty Information

O. Hayden Griffin, Jr, Professor and Chair
- PhD Engineering Mechanics: Virginia Polytechnic Institute & State University
- MS Mechanical Engineering: Texas Tech University
- BS Mechanical Engineering: Texas Tech University

Tarek Abdel-Salam, Associate Professor
- PhD Mechanical Engineering: Old Dominion University
- MS Mechanical Engineering: Cairo University
- BS Mechanical Engineering: Cairo University

Chad Bossetti, Assistant Professor
- PhD Biomedical Engineering: Duke University
- BS Electrical and Computer Engineering: University of Colorado – Colorado Springs

Evelyn C. Brown, Associate Professor
- PhD Systems Engineering: University of Virginia
- MS Operations Research: North Carolina State University
- BS Mathematics: Furman University

Ricky T. Castles, Teaching Instructor
- PhD Computer Engineering: Virginia Polytechnic Institute & State University
- MS Industrial and Systems Engineering: Virginia Polytechnic Institute & State University
- MS Computer Engineering: Virginia Polytechnic Institute & State University
- BS Computer Engineering: Virginia Polytechnic Institute & State University

Karen De Urquidi, Teaching Instructor
- MS Mechanical Engineering: University of Michigan
- BS Mechanical Engineering: University of Michigan

Gene Dixon, Associate Professor
- PhD Industrial and System Engineering and Engineering Management: University of Alabama in Huntsville
- Masters of Business Administration: Nova Southeastern University
- BS Material Engineering: Auburn University

Stephanie M. George, Assistant Professor
- PhD Biomedical Engineering: Georgia Institute of Technology
- BS Engineering Science and Mechanics: Virginia Polytechnic Institute & State University

William E. Howard, Associate Professor
- PhD Mechanical Engineering: Marquette University
- MS Engineering Mechanics: Virginia Polytechnic Institute & State University
- BS Civil Engineering: Virginia Polytechnic Institute & State University

Paul Kauffmann, Professor
- PhD Industrial Engineering: Penn State University
- MENG Mechanical Engineering: Virginia Polytechnic Institute & State University
- BS Electrical Engineering: Virginia Polytechnic Institute & State University
B.J. Kim, Assistant Professor
- PhD Industrial & Management Systems Engineering: University of Nebraska
- MS Industrial & Management Systems: University of Nebraska
- MS Industrial Engineering: Han-Yang University, Seoul, Korea
- BS Industrial Engineering: Han-Yang University, Seoul, Korea

Loren Limberis, Assistant Professor
- PhD Bioengineering: University of Utah
- BS Electrical Engineering: University of Utah

Gerald J. Micklow, Professor
- PhD Mechanical Engineering: Virginia Polytechnic Institute & State University
- MS Aerospace: Penn State University
- BS Aerospace: Penn State University

Barbara Muller-Borer, Associate Professor
BS Engineering: Tufts University
MS Biomedical Engineering: University of North Carolina- Chapel Hill
PhD Biomedical Engineering: University of North Carolina- Chapel Hill

John Reis, Professor
- PhD Mechanical Engineering: Stanford University
- MS Mechanical Engineering: Stanford University
- BS Nuclear Engineering: Oregon State University

Stephanie Sullivan, Teaching Instructor
- PhD Chemical Engineering: North Carolina State University (in progress)
- MS Chemical Engineering: North Carolina State University
- BS Mechanical Engineering: University of Notre Dame

Rick Williams, Associate Professor
- PhD Mechanical Engineering: Auburn University
- MS Mechanical Engineering: Georgia Institute of Technology
- BS Mechanical Engineering: Georgia Institute of Technology

Jianchu (Jason) Yao, Associate Professor
- PhD Electrical Engineering: Kansas State University
- MS Electrical Engineering: Shaanxi University of Science and Technology
- BS Electrical Engineering: Shaanxi University of Science and Technology