

2007/2008 Academic Year

Student Handbook
For
Bachelors of Science
In Engineering Program



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Tomorrow starts here.

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 11 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?

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.

How is the curriculum structured?

The curriculum is composed of a 43 hour common core of courses that provides a foundation in general engineering. Each concentration contains 21 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 General Engineering program for you?

Traditional engineering disciplines, such as mechanical and electrical engineering, produce engineers who focus on a limited technology area or part of a system. General engineers possess a broader engineering perspective compared to the narrow disciplines and focus more on understanding how to apply this knowledge to solve problems and to improve entire technology system 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 has the technology 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.

General Engineers are not limited to manufacturing environments. Graduates can also be found in health care, banking and finance, insurance, government, tourism, service, transportation, agriculture, and retailing. The general engineers learn technology and business rapidly and often advance into management and leadership positions early in their careers.

Which concentration is best for you?

ECU offers a Bachelors of Science (BS) in Engineering with four unique and innovative concentrations: Systems Engineering, Engineering Management, Bioprocess Engineering, and Biomedical Engineering.

- Systems Engineering is an iterative approach to problem solving that examines all stages of a systems life: design/development, production/construction, operations/maintenance, and retirement/disposal. Systems engineers develop high-quality, cost-effective solutions that meet the needs of their customers.
- Engineering Management graduates are skilled in critical technology management systems such as project management, production planning and control, entrepreneurship, and logistics. These graduates typically work for technology-driven organizations to assure that their management systems perform optimally.

- 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.
- Biomedical Engineering draws upon all fields to deliver better patient outcomes, thus impacting modern healthcare. Biomedical engineers are transdisciplinary professionals that improve healthcare by increasing biological knowledge and facilitating the development of novel devices and drugs.

Curriculum

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

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. The Coordinator of Advisement and Retention (CAR) for the engineering program performs this task. The curriculum flow sheet and catalog information which apply to you are contained in this booklet.

Every engineering student is also assigned a career advisor. This faculty member will meet with you and a small group of students periodically to help you make key career decisions and to learn more about the engineering profession. Assignments of faculty advisors will be given out at the start of your first semester. 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.

2007-2008 Engineering Catalog Copy

DEPARTMENT OF ENGINEERING

Paul J. Kauffmann, Chairperson, Slay Building

The Department of Engineering offers a BS in engineering with four concentration areas: systems engineering, engineering management, bioprocess engineering, and biomedical engineering.

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.

The engineering program accepted its first students in fall 2004, and will graduate its first class in spring 2008. At that time, we will seek accreditation from the Accreditation Board for Engineering and Technology (ABET). In accordance with ABET requirements, 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; and (k) an ability to use the techniques, skills, and modern tools for engineering practice.

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; 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. Additional evaluation elements for engineering students are described below:

Regular freshman admission: Entering freshmen should submit an ECU admission application package, high school transcript, and SAT and/or ACT scores for admission consideration. The average SAT for freshmen admitted to the engineering program at ECU is typically over 1100. Performance in math and science courses, high school GPA, and rank in class are also considered key indicators of potential success in this program.

Provisional freshman admission: Students who are not initially admitted to the engineering program, but who express a commitment to obtaining an engineering degree, are permitted to have the opportunity to succeed as a provisional engineering admission. Provisional students may still enroll in engineering courses and follow the freshman curriculum. Upon successful completion of all first-year courses (including engineering courses and at least Calculus I), with a cumulative GPA of 2.5, students can complete a change of major form and formally transfer into the engineering program.

Transfer admission: Students transferring to the engineering program must have an overall GPA of 2.5 or better in all course work attempted at the college(s) from which they are transferring in addition to meeting university transfer requirements. Students who have completed an associate degree from an approved pre-engineering program will be directly admitted to the BS program. Transfer students who do not have a 2.5 or better GPA are individually evaluated and the complete academic record is examined with particular emphasis on performance in math and science classes. These students may be admitted on a provisional basis and permitted to take certain engineering courses based on a case-by-case assessment. Provisional transfer students are expected to demonstrate the ability to succeed by completing their first semester at ECU with a 2.5 GPA.

Special Department Programs

Internships. The department encourages internships at local and regional employers and in service learning projects. Full-time students who have completed 24 credit hours and have a 2.0 minimum cumulative GPA are eligible for internships. Transfer students must complete 12 credit hours at ECU before applying for the internship program.

ECU Engineering, Inc. Projects supplied by local and regional businesses, industries and non-profits give students opportunities to gain experience. Working in teams, students learn real-world skills by defining, designing, building and testing engineering solutions.

BS in Engineering

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

- 1. Foundations curriculum requirements (See Section 4, Foundations Curriculum Requirements for all Baccalaureate Degree Programs.), including those listed below.....42 s.h.**

BIOL 1100, 1101. Principles of Biology and Laboratory I (3,1) (F,S,SS) (FC:SC)
 ECON 2113. Principles of Microeconomics (3) (F,S,SS) (FC:SO)
 MATH 2151. Engineering Calculus I (3) (S) (P: MATH 1083 or 1085 or placement test criteria; or consent of instructor)
 PHIL 2275. Professional Ethics (3) (WI*) (F,S,SS) (FC:HU)
 PHYS 2350. University Physics (4) (F,S,SS) (FC:SC) (P: MATH 2121 or 2171)

2. Engineering Foundation.....43- 44s.h.

ICEE 1012. Engineering Graphics (2) (F) (C: MATH 1083 or higher)
 ICEE 1014. Introduction to Engineering (3) (S) (C: MATH 1083 or higher)
 ICEE 2022. Statics (3) (S) (P: PHYS 2350)
 ICEE 2050. Computer Applications in Engineering (3) (S) (P: ICEE 1012)
 ICEE 2070. Materials and Processes (3) (S) (P: CHEM 1510, 1511)
 ICEE 3004. Dynamics (3) (F) (P: ICEE 2022; MATH 2153)
 ICEE 3012. Thermal and Fluid Systems (4) (S) (P: ICEE 3004)
 ICEE 3014. Circuit Analysis (3) (F) (P: MATH 2154; PHYS 2360)
 ICEE 3024. Mechanics of Materials (3) (WI) (F) (P: ICEE 2022, 2070)
 ICEE 3050. Sensors, Measurements and Controls (3) (S) (P: ICEE 3014)
 ICEE 3300. Introduction to Engineering Project Management (3) (F) (WI) (P: ENGL 1200; C: ICEE 1012)
 ICEE 3400. Engineering Economics (3) (WI) (S) (P: MATH 3307)
 ICEE 4000. Quality Systems Design (3) (S) (P: MATH 3307) or BIOE 4000. Bioprocess Validation and Quality Engineering (4) (F) (P: MATH 3307; consent of instructor)
 ICEE 4010. Senior Capstone Design Project I (2) (WI) (F) (P: Consent of instructor)
 ICEE 4020. Senior Capstone Design Project II (2) (WI) (S) (P: ICEE 4010)

3. Cognates42 s.h.

CHEM 1500. Materials Chemistry I (3) (S)
 CHEM 1510, 1511. Materials Chemistry II and Laboratory (1,1) (F) (P: CHEM 1500; C for CHEM 1510: CHEM 1511; C for CHEM 1511; CHEM 1510)
 MATH 2152. Engineering Calculus II (3) (S) (P: MATH 2151 or 2171; or consent of instructor)
 MATH 2153. Engineering Calculus III (3) (F) (P: MATH 2152 or 2172; or consent of instructor)
 MATH 2154. Engineering Linear Algebra and Differential Equations I (4) (S) (P: ICEE 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.....21 s.h.

BIME 3000. Foundations of Biomedical Engineering (3) (F) (P: Consent of instructor)
 BIME 3600. Imaging in Biomedical Engineering (3) (S) (P: BIME 3000)
 BIME 4030. Biomechanics and Materials (4) (F) (P: ICEE 3004, 3024)
 BIME 4040. Physiological Systems and Modeling for Engineering (3) (F) (P: BIME 3000)
 BIME 4200. Biomedical Instrumentation (3) (F) (P: BIME 4040; ICEE 3050)
 CHEM 2650. Organic Chemistry for the Life Sciences (4) (F) (P: CHEM 1160, 1161)
 CHEM 2651. Organic Chemistry Lab for the Life Sciences (1) (F) (C: CHEM 2650)

Bioprocess Engineering.....17 s.h.

BIOE 3000. Bioprocess Engineering Systems (3) (S) (P: BIOL 2110; CHEM 2650, 2651)
 BIOE 4010. Bioprocess Separation Engineering (3) (WI) (F) (P: BIOE 3000)
 BIOE 4020. Bioprocess Plant Design, Simulation and Analysis (3) (WI) (S) (P: BIOE 4010, MATH 3307)
 BIOL 2110. Fundamentals of Microbiology (3) (F,S) (P: BIOL 1050, 1051; or 1100, 1101; or equivalent; 8 s.h. in CHEM)
 CHEM 2650. Organic Chemistry for the Life Sciences (4) (F) (P: CHEM 1160, 1161)

CHEM 2651. Organic Chemistry Lab for the Life Sciences (1) (F) (C: CHEM 2650)

Engineering Management.....15 s.h.

- ENMA 3000. Introduction to Engineering Management (3) (F) (P: Consent of instructor)
- ENMA 4010. Entrepreneurship and Intellectual Property (3) (F) (P: ENMA 3000)
- ENMA 4020. Analysis of Production Systems (3) (S) (P: MATH 3307)
- ENMA 4030. Engineering Logistics (3) (S) (P: MATH 3307)
- SYSE 4065. Discrete System Simulation (3) (S) (P: MATH 3307)

Systems Engineering.....15 s.h.

- SYSE 3010. Principles and Methods of Systems Engineering (3) (F) (P: Consent of instructor)
- SYSE 3060. Systems Optimization (3) (F) (P: MATH 2154, 3307)
- SYSE 4000. Integrated Systems Engineering (3) (S) (P: SYSE 3010)
- SYSE 4010. Human-Machine Systems: Design and Analysis (3) (F) (P: MATH 3307; SYSE 3010; or consent of instructor)
- SYSE 4065. Discrete System Simulation (3) (S) (P: MATH 3307)

5. Technical electives to complete graduation requirements as approved by the academic advisor

Foundations Curriculum Requirements

The overarching goal of foundations curriculum is to provide students with the fundamental knowledge and abilities essential to their living worthwhile lives both private and public. The curriculum is based on the faculty’s belief that the best way to prepare students for living worthwhile lives is to provide them with a solid foundation in the core disciplines in the liberal arts (the humanities, arts, basic sciences, and basic social sciences), in conjunction with a multidisciplinary education in the specific areas of health promotion and physical activity and mastery of writing and mathematics competencies. 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 describes the different math approaches that can be used for this degree.

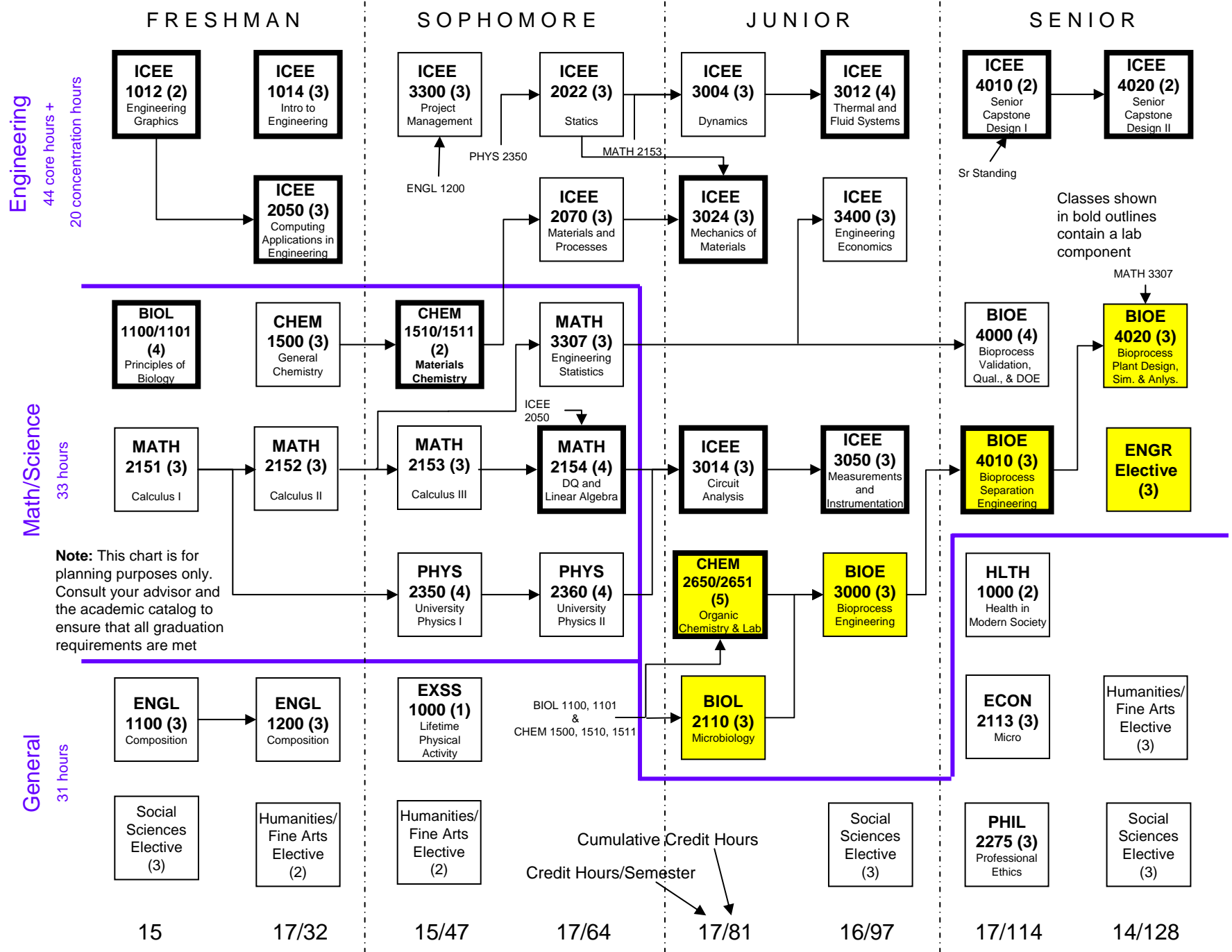
Start in:	Fall of Freshman Year	Spring of Freshman Year	Summer between Freshman and Sophomore	Fall of Sophomore Year
MATH 2151	MATH 2151	MATH 2152	-	MATH 2153
MATH 1085	MATH 1085	MATH 2151	MATH 2152	MATH 2153
MATH 1065 or lower	5 years needed top graduate			

In order for a student to graduate in 4 years, they must start in MATH 2151 or MATH 1085. Starting with a lower math will require 5 years to graduate.

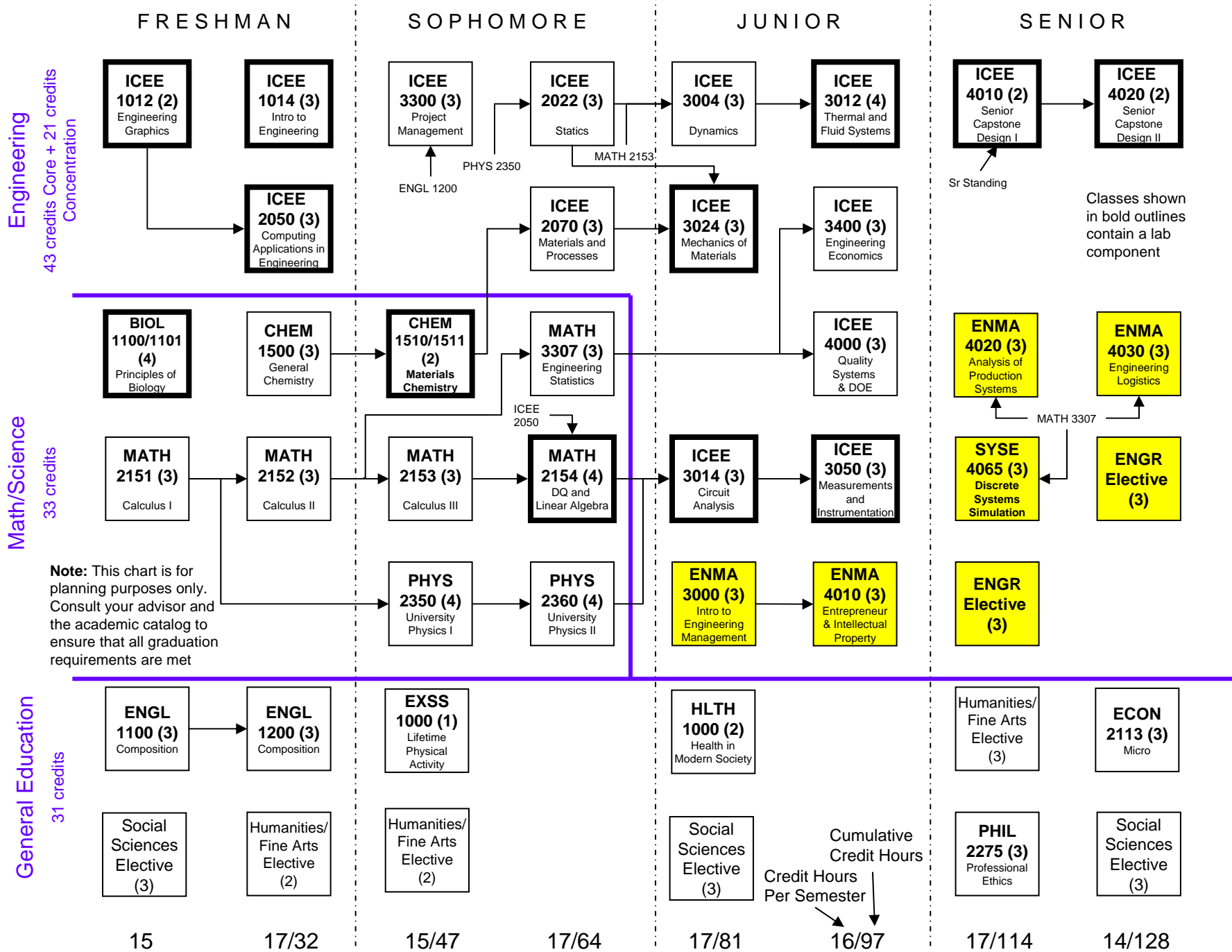
Curriculum Flowsheets

The attached sheets show the sequence of courses for each of the four concentrations offered by the department. Information on these sheets is based off of the undergraduate catalog and is not meant to be a substitution for the catalog.

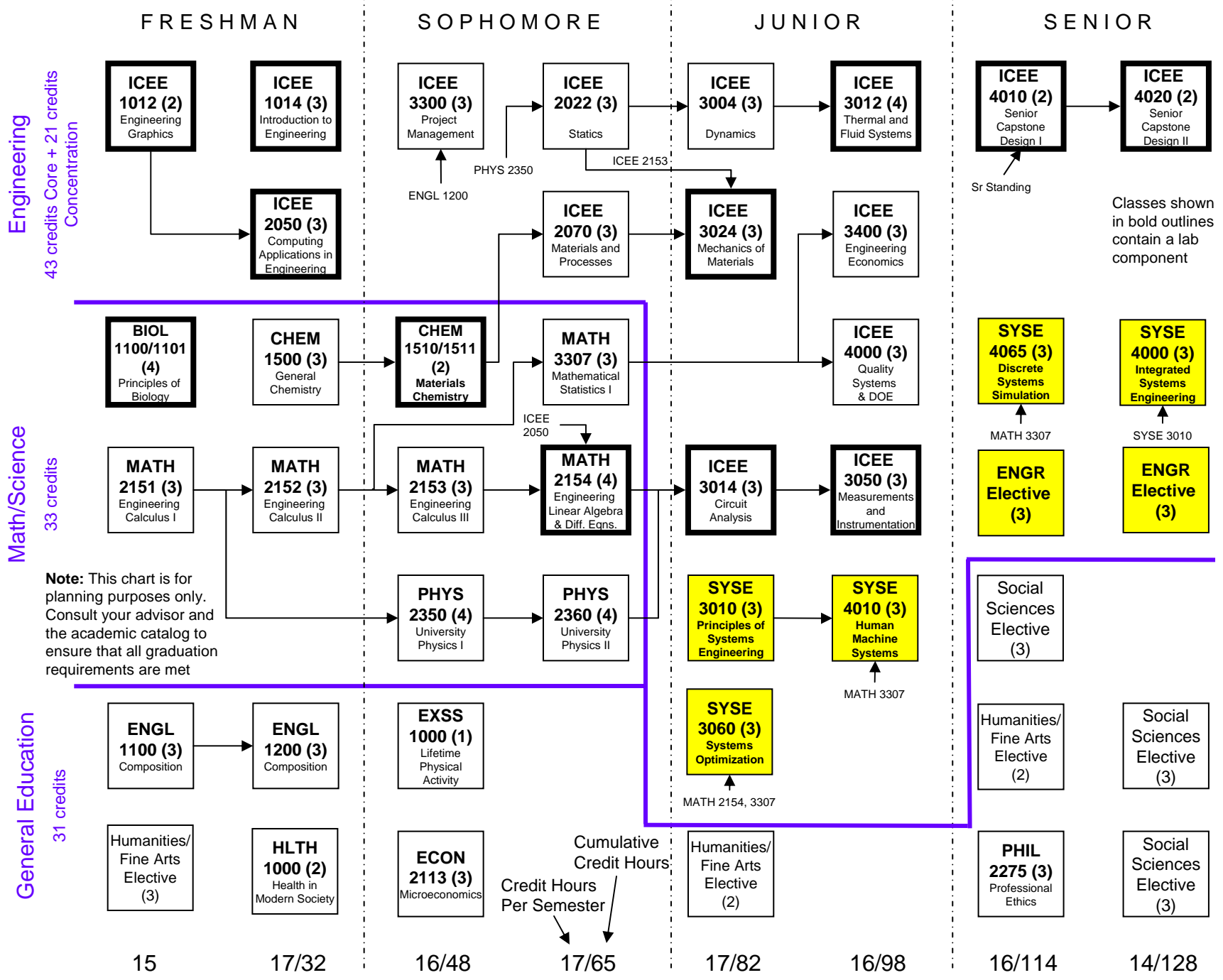
BSE - BIOE Program – Entering Classes of 2007



BSE - ENMA Program – Entering Class of 2007



BSE - SYSE Program – Entering Class of 2007



Student Projects and Employment

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 ECU Engineering Inc.

ECU Engineering Project Program

The ECU Engineering Project Program has two phases of student involvement as described below.

Phase I

The first phase of project experience begins with a structured sequence in the first and second year. The focus is development of basic team skills and demonstration of technical design skills. These first project activities are encompassed in course requirements for the first four ICEE courses. These courses include ICEE 1012, 1014, 2050, and 3300.

Phase II

Building on the Phase I base, the second project experience phase covers the third and fourth year students and develops more advanced project design skills through ECU Engineering, Inc. and summer industry work experiences. Prior to graduation, an ECU engineering student must demonstrate adequate preparation to practice engineering as demonstrated by completion of a capstone design project. The activities in these last two years are summarized below.

Time / Course	Project Related Activity Description	Major Learning Objectives
Summer after first, second or third year	Students may complete a coop or internship experience with industry	Development of background and industry knowledge for senior capstone project. Career exploration.
During junior year	As needed, Juniors may apply for and be participants in industry projects through ECU Engineering Inc.	Additional experiences involving project planning and execution.
ICEE 4010	Seniors are required to be involved in a capstone project either working with an engineering faculty member or with an ECU Engineering Inc. team.	Integrated project management skills.
ICEE 4020	Career preparation Completion of capstone design project Formal panel review of portfolio	Integrated project management skills.

ECU Engineering, Inc.

Beginning in junior year, students are eligible to apply for and be selected to participate in ECU Engineering Inc. projects. ECU Engineering Inc. projects cover two semesters beginning in the fall semester with completion in the spring.

There are three types of projects:

- Ad hoc projects: Based on faculty interest and industry need, some ECU Engineering, Inc. projects will be executed and developed on a non repetitive basis. These teams will be organized as needed and a faculty mentor assigned.
- Repetitive project teams: Some industries and businesses will become long term supporters of ECU Engineering Inc. These companies will have a consistent team project every year and students will be designated to organize and manage these operations.
- Partner – ECU Engineering Inc: yearly project(s) for partner industry.

Engineer's Week and Showcase of Project Activities

Engineer's week activities will feature a showcase of ECU engineering projects. There will be an open house for regional high schools that will feature a robotics competition. In addition, ECU engineering students will demonstrate project skills:

- Freshman: Course related project(s)
- Sophomores: Course related project(s).
- Juniors and seniors: Presentation of ECU Engineering Inc. projects.

Project, Co-op, and Internship Definitions

To clarify to business and industry the alternatives in working with the ECU Engineering program, the following definitions are provided.

Student Projects

Student projects employ student led and organized teams to address specific problems of industrial or non-profit clients. These projects are two semesters in length and are typically staffed with Juniors and Seniors along with a faculty mentor. These projects should be important to the client and should challenge the ability of the students to perform an engineering project with significant performance expectations.

Cooperative Education Positions

Cooperative education positions involve a full time summer position for a student who has completed at least two years. These positions require the student to discharge responsible engineering duties and carry up to three college credits as a technical engineering elective. Coop positions are repetitive and involve a long term relationship and partnership with the department. We encourage our clients to consider these as long term positions that can be excellent business tools to accomplish work in cost effective manner and evaluate potential employees. Students interview and compete for these positions. Pay is negotiable. Students may participate in a coop position for up to two summer semesters and one academic credit is allowed for each summer experience as a technical elective. This requires a significant report on what was accomplished and learned by the student.

Internships

Internships are paid or unpaid and have the objective of providing exposure to an engineering professional practice. Internships are less structured and less demanding in the level of responsibility than coop experiences.

Electronic Devices

Computer Requirements and Software

Engineering students are required to have a laptop computer with minimum graphical and computational capabilities. 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.

Professional Engineering 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: <http://www.ncees.org/>

To prepare you for this test, the department will require that you use the 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/fe_handbook/index.php#single

You also are required to use the calculator which is allowed during the exam. The current list of approved calculators is copied below from the NCEES web site: <http://www.ncees.org/exams/calculators/#policy>

Only models of calculators approved by NCEES are permitted in the exam room. *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 2007 exam administrations.

- Hewlett Packard – HP 33S
- Casio – FX 115MS or FX 115MSPlus
- Texas Instruments – TI 30X IIS
- Texas Instruments – TI 36X SOLAR

Each year, NCEES will review and revise the approved calculator list and then announce the updated list by November 15.

Student Associations

Student organizations serve three primary purposes. First they provide an opportunity to learn more about the engineering profession. Second, they allow opportunities to develop leadership skills, meet a wide range of engineering students across all class years. Finally, 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 engineering student council is a special group of volunteers 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 and speaking skills through this program.

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 Engineering Management and Systems Engineering concentrations. The objective of the Chapter is to provide students with outside resources to develop their future professional careers. Also, it is a way in which students can get to know each other better outside of the classroom. The highlight of the IIE year is the Student Regional Conference held annually. Historically, participation each year has been excellent.

Society of Manufacturing Engineers (SME)

The SME chapter is operated in cooperation of the technology programs. Students in this program work closely with manufacturing professionals in the state and the region. The society conducts an active program of plant tours and industry speakers.

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. www.ecumotorsports.com

ROTC Program

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. Web sites are:

Army ROTC: <http://www.ecu.edu/cs-acad/AROTC/index.cfm>

Air force ROTV: <http://www.ecu.edu/AFROTC/>

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.

Engineering Faculty Information

Paul Kauffmann, Professor and Chair

- PhD Industrial Engineering: Penn State
- MENG Mechanical Engineering: Virginia Tech
- BS Electrical Engineering: Virginia Tech

Tarek Abdel-Salam Assistant Professor

- PhD Mechanical Engineering: Old Dominion University
- MS Mechanical Engineering: Cairo University
- BS Mechanical Engineering: Cairo University

Purvis Bedenbaugh, Assistant Professor

- PhD Bioengineering: University of Pennsylvania
- MS Bioengineering: University of Clemson
- BS Biomedical Engineering: Duke University

Evelyn C. Brown, Associate Professor

- PhD Systems Engineering: University of Virginia
- MS Operations Research: North Carolina State University
- BS Mathematics: Furman University

Gene Dixon, Assistant 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

John Garner, Teaching Instructor

- PhD Biological and Agricultural Engineering: North Carolina State University (in progress)
- MS Mechanical Engineering: North Carolina State University
- BS Mechanical Engineering: North Carolina State University

William E. Howard, Assistant Professor

- PhD Mechanical Engineering: Marquette University
- MS Engineering Mechanics: Virginia Tech
- BS Civil Engineering: Virginia Tech

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, Associate Professor

- PhD Mechanical Engineering: Virginia Tech
- MS Aerospace: Penn State
- BS Aerospace: Penn State

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, Assistant Professor

- PhD Mechanical Engineering: Auburn University
- MS Mechanical Engineering: Georgia Institute of Technology
- BS Mechanical Engineering: Georgia Institute of Technology

Jianchu (Jason) Yao, Assistant 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