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Engineers Create Unique Designs. At ECU we Create Unique Engineers.

East Carolina University Engineering Transfer Program

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ECU Engineering—Skills for the Future

- Interdisciplinary problem solvers
- Broad base of technical engineering skills.
- Project management and economic analysis skills.
- Ability to analyze system relationships

Overview– ECU Engineering Transfer Program

Growth in the number of engineers is a critical factor for North Carolina economic development and national global competitiveness. The Department of Engineering at East Carolina University is committed to providing access to an engineering career for students from the community college system, our university partners in the UNC system, and other regional colleges and universities.

The ECU Engineering transfer program has been developed to integrate with the AA and AS degree and diploma programs found in North Carolina Community Colleges. In addition, the program also integrates with baccalaureate programs in science and mathematics areas in partner colleges and universities, both private and public. This transfer brochure provides information for both students and advisors.

BS in Engineering

Rapid changes in technology will characterize the engineering workplace of the 21st century. Studies by the National Academy of Engineering and the National Science Foundation found that the work place of the future will require engineers who have skills to cross several disciplines. Advanced products and systems require integration of diverse technologies and 21st century engineering requires strong interdisciplinary designers and problem solvers.

The ECU BS in Engineering provides the advanced skills needed for career success in a technology-driven, global economy. ECU engineers learn the range of skills needed for a 21st century career in engineering.

The 128 credits required for degree completion are divided into four categories:

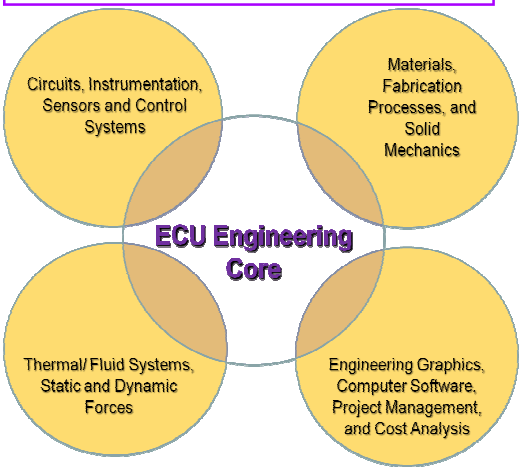
- General education required by ECU: 31 credits
- Science and mathematics: 32 credits beginning with calculus I and including two semesters of calculus based physics.
- Common engineering core—courses required by all concentrations : 40 credits.
- Concentration specific courses: 25 credits.

These four categories of credit form the basis for transfer planning.

Concentrations are selected in:

- Bioprocess Engineering
- Biomedical Engineering
- Industrial and Systems Engineering
- Mechanical Engineering

21st Century Foundation



Topics

ECU Engineering Concentrations

ECU Engineers choose from one of four concentration areas:

Biomedical engineering focuses on improving medical systems to enhance human health. Biomedical engineers are prepared for broad career options, including graduate study and medical school, careers in hospital and research operations and in biomedical production and sales.

Bioprocess engineering design and develop equipment, methods, and systems for the efficient and environmentally sound manufacturing of medicines, vaccines, diagnostics, and biologically based products. ECU bioprocess engineering leads to careers ranging from pharmaceutical manufacturing to biofuels, foods, and environmental engineering.

Industrial and Systems Engineering work on the design, analysis, and operation of systems ranging from a single piece of equipment to large business, social and environmental systems. 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 and develops skills to support the design and improvement of a wide range of products from supersonic aircraft to consumer products. Mechanical engineers work in areas such as thermal systems, machine design, and robotics or cross over into advanced technologies such as artificial limbs and nanotechnology. Career opportunities are broad including manufacturing, consulting engineering, product design, and research.

What Employers say....

"The general basis of the ECU engineering program meets an emerging need...for engineers who can address multidisciplinary technical problems as well as project management challenges..."

General Manager of Engineering

Science and Technology Building
Home of ECU Engineering

ECU Engineering Transfer Admission Policy

Transfer students must first be admitted to the university. Pending success in admission to ECU, the Department of Engineering Admissions Committee will evaluate the applicant to determine the potential of the student to succeed. It is essential that applicants complete the required essay which describes the student's interest in ECU and reasons for pursing an engineering career.

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.

Planning Transfer Credit for ECU Engineering

Up to 64 credit hours may be applied toward the degree and it is important for each student to plan the credit hours which are best for each situation. There are four curricular areas for transfer credit planning:

1) General Education or Foundations Curriculum: Unless an AA, AS, or transfer core diploma are completed, courses must conform to ECU requirements (31 hours).
2) Mathematics and Science courses: Depending on the time of transfer, up to 31 hours may be completed.
3) The Engineering Core contains 40 hours which are common to all concentrations. Some of these credits may be transferred.
4) Concentration specific courses apply to individual concentrations and build the depth and expertise in critical knowledge areas

Since different courses may be available at various community colleges, the following sections provide a broad overview of these four areas.

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Transfer Planning Orientation

Each ECU Engineering concentration has a flow chart which provides a roadmap for your transfer credit planning. They are found at www.tecs.ecu.edu/engineering/advising/. We encourage you to use them with the following information to develop your transfer plans.

1. ECU General Education / Foundations Transfer (31 credits)

This section provides information on selecting general education courses for transfer. Unless the AA, AS, or diploma of transfer readiness are completed, we encourage 31 credits of general education courses as noted below to conform to ECU requirements. The suggested courses listed are found at many NC community colleges. Complete listings are available on the ECU web site at www.onestop.ecu.edu and then select the "tools" tab and "course equivalencies."

English composition (ECU ENGL 1100, 1200)

- ENG 111, ENG 112 or ENG 113 or ENG 114 _____ (6 cr.)

Humanities / Fine Arts (10 credits with at least one hour in each area) _____ (10 cr.)

- **Fine Arts**: ART 111, 114, 115; COM 120, 231; DAN 110, 211, 212; DRA 111, 112, 115, 122, 126, 211,212: MUS 110, 112, 113, 114.
- **Humanities**: ENG 131, 231, 232, 233, 241, 242, 243, 261, 262; HUM 110, 120, 121, 122, 130, 150, 160, 161, 211, 212, 220; PHI 210, 215, 220, 221, 230, 250; REL 110, 111, 112, 211, 212, 221.
- **ECU Engineering requires: PHI 240 or take PHIL 2274 or 2275 at ECU**

Social Sciences (12 credits in at least three different areas) _____(12 cr.)

- ANT 210, 220, 221;
- COM 110;
- ECO 251, 252; **(ECU Engineering requires ECO 251)**
- GEO 111, 112, 113;
- HIS 111, 112, 114, 115, 131, 132, 225, 236;
- POL 110, 120, 210, 220.
- PSY 150, 237, 239.
- SOC 210, 213, 220, 225, 240.

Health Education and Exercise Science (3 credits with at least one in each area) _____ (3 cr.)

- Health Education: HEA 110, 120
- Exercise Science: PED 110 - 171, 173 - 189, 210, 211, 212

2. ECU Engineering Mathematics / Science Transfer Courses

The table below describes the preferred and acceptable transfer mathematics and science courses. Up to 31 hours may be transferred in this area. In addition to two semesters of calculus based physics, ECU Engineering prefers that students take one semester of biology and one semester of chemistry, both with laboratory. ECU Engineering also prefers students take differential equations at ECU since that course integrates MatLAB programming skills.

Curricular Area Description	Preferred	Accepted
Natural Science: With calculus based physics, ECU Engineering prefers **one biology and one chemistry** course in lieu of two chemistry semesters.	PHY 251 and 252 BIO 110 or 111, w/lab CHM 151 w/lab	CHM 151 w/ lab and CHM 152 w/ lab PHY 251 and PHY 252
Mathematics: ECU Engineering prefers students **take the ECU differential equations course** (which contains use of MatLAB) in lieu of MAT 285.	MAT 271, 272, 273 MAT 285 at ECU	MAT 271, 272, 273, 285

ECU Engineering– Excellence in Undergraduate Engineering Education

What do students say?

"ECU Engineering professors are very good teachers and go out of their way to help you understand."

Class of 2008 graduate

3. Transfer Course Planning–Engineering Core Courses

Depending on availability of courses at the community college, a range of engineering transfer courses may be possible. The table below summarizes the options which can be applied to the ECU Engineering core courses which are common to all concentrations.

ECU Course	Topical Area	Preferred	Accepted
ENGR 1012	Engineering Graphics	DFT 170	Engineering graphics course with 3D modeling component[3]
ENGR 1014	Introduction to Engineering	EGR 150	
ENGR 2050	Computer Applications in Engineering	Take at ECU[1]	Programming course such as CSC 134, 136, or 151[3]
ENGR 2022	Statics	EGR 220, MAE 206[2]	
ENGR 3004	Dynamics	Take at ECU[1]	EGR 225, MAE 208[2]
ENGR 2070	Materials and Processes	EGR 230	MSE 201[2] or MSE 200[2]
ENGR 3024	Solid Mechanics	EGR 228 or MAE 314[2]	
ENGR 3014	Circuit Analysis	EGR 213	

Note 1: ECU Engineers begin computer applications using MatLAB in freshman year. Use of this tool continues in other engineering courses such as dynamics.
Note 2: NCSU course number.
Note 3: Students may be required to take a Solid Works or MatLAB overview supplement.

4. Transfer Courses for Concentration Requirements

Some concentration related courses may be taken at the community college, if available. Primarily this opportunity is limited to the bioprocess and biomedical engineering concentrations.

Bioprocess Engineering
The bioprocess engineering concentration requires the following courses which can be found at community colleges:

- CHM 152: General Chemistry II
- BIO 175: Microbiology

Biomedical Engineering
The biomedical engineering concentration requires the following courses which can be found at community colleges:

- CHM 152: General Chemistry II
- CHM 251: Organic Chemistry

Steps in Planning Your ECU Engineering Transfer Program

As you consider your engineering plans, it is important for you to:

- Download program flow charts from the ECU Engineering web site at www.tecs.ecu.edu/engineering/advising/
- Compare the courses offered at your community college to those listed in this brochure and the courses on the ECU flow charts.
- Talk to your community college academic advisor.
- Select up to 64 credits for your transfer plan.
- Contact the ECU Engineering academic advisor to find out more information. Consider scheduling a visit.

Questions? Contact us:
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ECU Engineering Baja Team Competition