

# East Carolina University—Durham Technical Community College: Engineering Transfer Program



## 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 21<sup>st</sup> 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.

These four categories of credit form the basis of a plan for completing courses in transfer planning. The graphic below represents the core courses and how they cover key engineering skills.

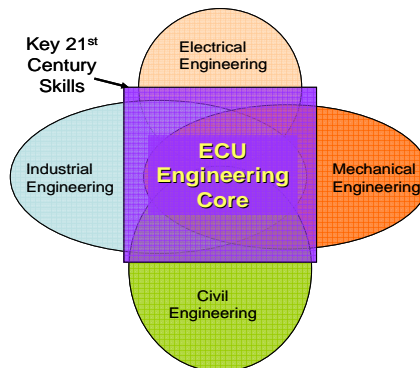
The program offers four concentrations: Biomedical engineering, Bioprocess engineering, Engineering management, and Systems engineering.

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 21<sup>st</sup> 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
- Common engineering core—courses required by all concentrations : 40 credits.
- Concentration specific courses: 25 credits.

**ECU's BS in Engineering Program selected the core 21st century skills from traditional engineering disciplines.**



Department of Engineering  
East Carolina University  
212 Slay Building  
Greenville, NC 27858  
252-737-1026

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

Topics	
Concentrations	2
Transfer Policy	2
Transfer Planning	2
General Education	3
Math and Science	3
Engineering Courses	4
Concentration Courses	4
Next Steps	4

## ECU Engineering Concentrations

The curriculum extends the core course foundation by developing competency in one of four concentrations which build specialized career knowledge:

### SYSTEMS ENGINEERING

Systems engineering embodies a problem solving approach that examines all stages of a system’s life cycle: design/development, production/construction, operation/maintenance, and retirement/disposal. Systems engineers develop cost-effective solutions to meet the needs of the customer.

### ENGINEERING MANAGEMENT

Engineering management graduates focus on design and implementation of improvements in the operations of technical systems ranging from factories, to aircraft carriers and hospitals. EM graduates ap-

ply skills in project management, production planning and control, entrepreneurship, and logistics to achieve improved performance.

### BIOPROCESS ENGINEERING

Bioprocess engineers design and develop equipment, methods, and systems for the efficient and environmentally sound operation of biological systems including areas such as food processing, pharmaceutical production, and environmental remediation.

### BIOMEDICAL ENGINEERING

Biomedical engineering draws upon broad engineering skills to deliver better patient outcomes and improve modern healthcare. Biomedical engineers accomplish this by increasing biological knowledge and facilitating the development of novel medical devices and drugs.

### 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 pursuing 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 diploma are completed, courses must conform to ECU requirements .
- 2) The Engineering Core contains 40 hours which are common to all concentrations. Some of these credits may be transferred.
- 3) 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.

## 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/](http://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

This section provides information on selecting general education courses. Unless the AA, AS, or diploma of transfer readiness are completed, general education courses must conform to ECU requirements. Complete listings are available on the ECU web site at [www.onestop.ecu.edu](http://www.onestop.ecu.edu) and then select “tools” and “equivalency.” Consult closely with your Durham Tech advisor.

#### English composition (ECU ENGL 1100, 1200)

- ENG 111, ENG 113

#### Humanities and Fine Arts (9 SHC):

- One English literature course (3 SHC) selected from—ENG 231, 232, 233, 241, 242, 243, 251, 252, 261, 262
- \*FL 112 (3 SHC)—Elementary Foreign Language II (Must be taken with the accompanying lab – see Other Required Hours below)
- HUM 110 (3 SHC)—Technology and Society (Offered fall only)
- \*Foreign languages offered at Durham Tech include French, German, Italian, Portuguese, and Spanish. Students must meet the pre-requisites for SPA 111.

#### Social and Behavioral Sciences (9 SHC):

- One history course (3 SHC) selected from—HIS 111, 112, 121, 122, 131, 132
- ECO 251 (3 SHC)—Principles of Microeconomics *or* ECO 252 (3 SHC)—Principles of Macroeconomics
- One course (3 SHC) selected from—ANT 210, 220; GEO 111, 112; POL 120, 220; PSY 150, 237, 241, 281; SOC 210, 213, 220, 225

#### Natural Sciences and Mathematics (20 SHC):

##### Natural Science (12 SHC):

- CHM 151 (4 SHC)—General Chemistry I (Offered fall and spring only)
- PHY 251 (4 SHC)—General Physics I (Offered spring only)
- PHY 252 (4 SHC)—General Physics II (Offered fall only)

##### Mathematics (8 SHC):

- MAT 271\*(4 SHC)—Calculus I (Offered fall and spring only)
  - MAT 272 (4 SHC)—Calculus II (Offered spring and summer only)
- \*Students must demonstrate competency in or complete the prerequisites for MAT 271. See Natural Science/ Mathematics Electives below.

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



ECU Engineering—  
Excellence in  
Undergraduate Engi-  
neering 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

## 2. 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
ICEE 1012	Engineering Graphics	DFT 170	Engineering graphics course with 3D modeling component <sup>3</sup>
ICEE 1014	Introduction to Engineering	EGR 150	
ICEE 2050	Computer Applications in Engineering	Take at ECU <sup>1</sup>	Programming course such as CSC 134, 136, or 151 <sup>3</sup>
ICEE 2022	Statics	EGR 220, MAE 206 <sup>2</sup>	
ICEE3004	Dynamics	Take at ECU <sup>1</sup>	EGR 225, MAE 208 <sup>2</sup>
ICEE 2070	Materials and Processes	EGR 230	MSE 201 <sup>2</sup> or MSE 200 <sup>2</sup>
ICEE 3024	Solid Mechanics	EGR 228 or MAE 314 <sup>2</sup>	
ICEE 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.



**Questions? Contact us:**  
**ECU Department of  
 Engineering  
 Coordinator of Advising  
 and Retention  
 212 Slay Building  
 Greenville, NC 27858**

## 3. 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

## Next 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 <http://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.

Phone: 252-737-1026 or  
252-737--1033

Fax: 252- 737-1041

E-mail: [engineering@ecu.edu](mailto:engineering@ecu.edu)

[www.tecs.ecu.edu/engineering](http://www.tecs.ecu.edu/engineering)



**ECU Engineering Baja Team  
Competition**