

ECU Bioprocess Engineering

(Unofficial Community Colleges to ECU Curriculum)

Degree Earned: ECU Bachelor of Engineering – Concentration in Bioprocess Engineering

Transfer GPA = 2.5

Effective: 2016

Grey Highlighted Courses – Take Courses at ECU

FRESHMAN YEAR

| Fall Semester | | Credit | Spring Semester | | Credit |
|-----------------------|---|--------|-----------------|---|--------|
| DFT 170 | ENGR 1012 Engineering Graphics | 2 | ECU | ENGR 1016 Intro to Engineering Design | 2 |
| EGR 150 | ENGR 1000 Introduction to Engineering | 1 | ECU | ENGR 2050 Computing Applications in Engineering | 3 |
| BIO 111 | BIOL 1050.1051 General Biology & Lab or BIOL 1100/1101 Principles of Biology & Lab | 4 | MAT 272 | MATH 2152 Calculus II | 3 |
| MAT 271 | MATH 2151 Calculus I | 3 | CHM 151* | CHEM 1150/1151 General Chemistry I & Lab | 4 |
| ENG 111 | ENGL 1100 Composition I | 3 | ENG 112 | ENGL 1200 Composition II ENGL 1200 | 3 |
| HIS, POL, PSY, SOC | Social Science Elective | 3 | | | |
| 16 | | | 15 | | |

SOPHOMORE YEAR

| Fall Semester | | Credit | Spring Semester | | Credit |
|---------------|------------------------------------|--------|------------------------|---|--------|
| EGR 220 | ENGR 2022 Statics | 3 | EGR 225 | ENGR 2450 Dynamics | 3 |
| ECU | ENGR 2000 Engr Design/PM I | 1 | ECU | ENGR 3800 Quality Control for Engineers | 3 |
| ECU | ENGR 2070 Materials and Processes | 3 | CHM 152 | CHEM 1160/1161 General Chemistry II | 4 |
| PHY 251 | PHYS 2350 University Physics I | 4 | MAT 285** & MAT 280 | MATH 2154 Differential Equations & Linear Algebra | 4 |
| MAT 273 | MATH 2153 Calculus III | 3 | PHY 252 | PHYS 2360 University Physics II | 4 |
| ECU | MATH 3307 Engineering Statistics I | 3 | | | |
| 17 | | | 18 | | |

JUNIOR YEAR

| Fall Semester | | Credit | Spring Semester | | Credit |
|---------------|--------------------------------------|--------|-----------------|--|--------|
| ECU | ENGR 3024 Mechanics of Materials | 3 | ECU | ENGR 3012 Thermal and Fluid Systems | 4 |
| ECU | ENGR 2514 Circuit Analysis | 4 | ECU | ENGR 3050 Sensors, Meas, and Controls | 3 |
| ECU | ENGR 3420 Engr Economics | 2 | ECU | ENGR 3000 Engr. Design & PM II | 2 |
| CHM 251 | CHEM 2753 Organic Chemistry | 5 | ECU | BIOE 3250 Bioprocess Engineering Systems | 3 |
| ECU | BIOE 3016 Microbiology for Engineers | 2 | ECO 251 | ECON 2113 Microeconomics | 3 |
| PED 110 | EXSS 1000 Lifetime Physical Activity | 1 | | Humanities | 2 |
| 17 | | | 17 | | |

SENIOR YEAR

| Fall Semester | | Credit | Spring Semester | | Credit |
|---------------|---|--------|-------------------------|--|--------|
| ECU | ENGR 4010 Senior Capstone Design Project I | 2 | ECU | ENGR 4020 Senior Capstone Design Project II | 2 |
| ECU | BIOE 4006 Bioprocess Engineering Validation | 2 | ECU | BIOE 4020 Bioprocess Plant Design, Simulation and Analysis | 3 |
| ECU | BIOE 4010 Bioprocess Separation Engineering | 3 | ENG 231/232, REL 110 | Humanities and Fine Arts Elective | 3 |
| PHI 240 | Social Science Elective | 3 | HIS, POL, PSY, SOC | Social Science Elective | 3 |
| PED 110 | HLTH 1000 Health in Modern Society | 2 | HUM 110 | Social Science Elective | 3 |
| | Humanities and Fine Arts Elective | 2 | | | |
| 15 | | | 14 | | |

ECU - Minimum Credit Hours Required for Graduation in Bioprocess Engineering:

128

Major/Program Requirements and Footnotes

It is the responsibility of the student to meet all General Ed Requirements for this degree. The requirements are listed in the ECU

Undergraduate Catalog. If you have questions contact the Department of Engineering advisor.

As with any transfer credits, 100% match-up of course content is not always possible. In any event, if a student is given credit for transfer courses, that student will be required to learn any concepts/skills that were missed.

* - CHM 151 and CHM 152 must be substituted for CHEM 1500/1510/1511 for the Bioprocess and Biomedical Engineering concentrations.

** - MAT 285 may be substituted for MATH 2151 if the MAT 271/272/273/285 sequence was completed before transferring to ECU.

Admission into the Department of Engineering for Transfer Students

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.

Other Notes:

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.

Please note that this is a **recommended** sequence and should only be used as a guide.

Check the catalog for prerequisites. Course availability may vary from semester to semester.

Please contact ECU's Department of Engineering early in your community college track to ensure a smooth transition.