

# Biomedical Engineering (Electrical Emphasis)

Grand Valley State University 2020-21 Catalog

MTH 110 Placement – 5 year program

## Secondary Admission Criteria

1) A GPA of 2.7 or above in the Engineering Foundation courses. Engineering Foundation courses are designated by an asterisk (\*) on this guide.

2) Completion of each course in the Engineering Foundation with a grade of C (2.0) or above, with no more than one repeat.

3) Completion of preparation for placement in the cooperative engineering education course, EGR 289

## 1st Semester Fall: 14 credits

MTH 110 College Algebra

\*WRT 150 Writing Strategies

**OR** WRT 120/WRT 130 (may change timeline)

General Education Courses (Select 2)

## 2nd Semester Winter: 14 credits

MTH 124 Precalculus: Functions & Models

\*CHM 115 Chemistry I

\*EGR 100 Introduction to Engineering

\*EGR 111 Introduction to Engineering Graphics

ECO 210 **OR** 211 Economics

## 3rd Semester Fall: 13 credits

\*MTH 201 Calculus 1

\*EGR 112 Applied Programming for Engineers

\*EGR 113 Introduction to CAD/CAM

General Education Courses (Select 2)

## 4th Semester Winter: 14 credits

\*MTH 202 Calculus 2

\*PHY 230 Physics 1

\*EGR 185 First-Year Engineering Design

\*STA 220 Statistical Modeling for Engineers

\*EGR 220 Egr Measurement and Data Analysis

## 5th Semester Fall: 16/17 credits

\*MTH 203 Calculus 3

\*PHY 234 or 231 Physics 2

\*EGR 224 Introduction to Digital System

\*EGR 226 Microcontroller Programming

\*EGR 289 Engineering Co-op Preparation

## 6th Semester Winter: 15 credits

\*MTH 302 Linear Algebra and Differential Equations

\*EGR 223 Probability & Signal Analysis

\*EGR 257 Electronic Materials & Devices

\*EGR 214 Circuit Analysis 1

## Spring/Summer Semester: 3 credits

EGR 290 Engineering Co-op 1

## 7th Semester Fall: 16 credits

EGR 314 Circuit Analysis 2

EGR 315 Electronic Circuits 1

EGR 326 Embedded System Design

CHM 230 Intro to Organic and Biochemistry

## Winter Semester: 3 credits

EGR 390 Engineering Co-op 2

## 8th Semester Spring/Summer: 13 credits

BMS 202 Anatomy & Physiology

EGR 323 Signals & Systems Analysis

General Education Courses (Select 2)

## Fall Semester: 6 credits

EGR 490 Engineering Co-op 3

EGR 434 Bioelectric Potentials

## 9th Semester Winter: 13 credits

EGR 485 Senior Engineering Project 1

EGR 403 Medical Device Design

EGR 435 Mathematical Modeling of Physiologic Systems

Biomedical Engineering Electives (Select 2)

## 10th Semester Spring/Summer: 11/12 credits

EGR 486 Senior Engineering Project 2

Biomedical Engineering Elective

General Education Courses (Select 2)

It is important to meet with a professional advisor in the PCEC Advising Center on a regular basis. The PCEC Advising Center is located in 101 Eberhard Center. Please call 616-331-6025 or go online at [www.gvsu.edu/pcec/advising](http://www.gvsu.edu/pcec/advising) to schedule an appointment.

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## Major Notes

An emphasis area is required for the Biomedical Engineering major. A list of major elective options is listed in the [GVSU Academic Catalog](#).

- 1) To declare this emphasis, login to MyBanner, select “Student Records” and then “Change Major.”
- 2) Click on “Change Major 1” and select **Biomedical Engineering – Electrical Emphasis**.
- 3) Click “Submit” and then “Change to New Program.”
- 4) Other emphasis areas within Biomedical Engineering include Mechanical and Product Design and Manufacturing.

## General Education

| <u>Category</u>             | <u>Completed?</u> | <u>Category</u>                            | <u>Completed?</u> | <u>Category</u>     | <u>Completed?</u> |
|-----------------------------|-------------------|--|-------------------|---------------------|-------------------|
| Physical Sciences (CHM 115) |                   | Mathematical Sciences (MTH 124)            |                   | Global Perspectives |                   |
| Life Sciences (BMS 202)     |                   | Social & Behavioral Sciences (ECO 210/211) |                   | U.S. Diversity      |                   |
| Arts                        |                   | Social & Behavioral Sciences               |                   | Issues              |                   |
| Philosophy & Literature     |                   | Historical Perspectives                    |                   | Issues              |                   |

- 1) Consider taking a course that fulfills the U.S. Diversity category and one non-ECO Social and Behavioral Science course
- 2) Consider taking a course that fulfills the Global Perspectives category and one Issues course
- 3) An ethics course is required in the engineering program. It is recommended to take **ONE** of the following:
  - a. PHI 102 in the Philosophy and Literature category
  - b. BIO 328, BIO 338, COM 438, EGR 302, MGT 340, MGT 438, MKT 375, PHI 325 OR PLS 338 in the Issues category
  - c. For Honors College students, the ethics requirement is fulfilled by completion of the Honors Curriculum
- 4) ECO 210 or 211 is required for the engineering major AND fulfills one Social and Behavioral Science course.
- 5) Two Supplemental Writing Skills (SWS) courses are required for graduation. These can be fulfilled via other general education categories. **For example, EGR 302 will fulfill ONE SWS requirement, one Issues requirement AND the engineering ethics requirement.**

## Recommendations

It is strongly encouraged that students do not begin or break curriculum thread by taking courses at other institutions. *For example:*

Taking MTH 201 equivalent elsewhere, then return to Grand Valley and continuing in the math thread with MTH 202.

### PCEC Advisors

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