

# Biomedical Engineering (Electrical Emphasis)

Grand Valley State University 2021-22 Catalog

MTH 123 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: 12 credits

MTH 123	Trigonometry	3 credits
*WRT 150	Writing Strategies	4 credits
<b>OR</b> WRT 120/WRT 130		
*EGR 100	Intro to EGR	1 credit
*EGR 111	Intro to EGR Graphics	1 credit
General Education Course		3 credits

## 2nd Semester Winter: 14 credits

*MTH 201	Calculus 1	4 credits
*CHM 115	Chemistry I	4 credits
*EGR 112	Appl Program for EGR	2 credits
*EGR 113	Intro to CAD/CAM	1 credit
General Education Course		3 credits

## 3rd Semester Fall: 14 credits

*MTH 202	Calculus 2	4 credits
*PHY 230	Physics 1	5 credits
*EGR 185	First-Year EGR Design	2 credits
*STA 220	Stat Modeling for EGR	2 credits
*EGR 220	EGR Measure & Data	1 credit

## 4th Semester Winter: 14-15 credits

*MTH 203	Calculus 3	4 credits
*PHY 234 or 231	Physics 2	4/5 credits
General Education Courses (Select 2)		6 credits

## 5th Semester Fall: 12 credits

*EGR 224	Intro to Digital System	3 credits
*EGR 226	Microcontroller Program	3 credits
*EGR 227	Microcontroller Program Lab	1 credit
*EGR 214	Circuit Analysis 1	3 credits
*EGR 215	Circuit Analysis 1 Lab	1 credit
*EGR 289	EGR Professionalism	1 credit

## 6th Semester Winter: 14 credits

*MTH 302	Linear Algebra/Diff Eq	4 credits
*EGR 223	Prob. & Signal Analysis	3 credits
*EGR 257	Elec. Materials & Devices	4 credits
ECO 210 <b>OR</b> 211	Economics	3 credits

## Spring/Summer Semester: 3 credits

EGR 290	Engineering Co-op 1	3 credits
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## 7th Semester Fall: 16 credits

EGR 314	Circuit Analysis 2	4 credits
EGR 315	Electronic Circuits 1	4 credits
EGR 326	Embedded Sys. Design	4 credits
CHM 230	Intro Organic & Biochem	4 credits

## Winter Semester: 3 credits

EGR 390	Engineering Co-op 2	3 credits
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## 8th Semester Spring/Summer: 16 credits

BMS 202	Anatomy & Physiology	4 credits
EGR 323	Signals & Sys. Analysis	3 credits
General Education Courses (Select 3)		9 credits

## Fall Semester: 6 credits

EGR 490	Engineering Co-op 3	3 credits
EGR 434	Bioelectric Potentials	3 credits

## 9th Semester Winter: 13-15 credits

EGR 485	Senior EGR Project 1	1 credit
EGR 403	Medical Device Design	3 credits
EGR 435	Math. Model Phys. Sys.	3 credits
Biomedical Engineering Electives (Select 2)		6-8 credits

## 10th Semester Spring/Summer: 5-6 credits

EGR 486	Senior EGR Project 2	2 credits
Biomedical Engineering Elective		3-4 credits

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 B-3-241 Mackinac Hall and 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

Category	Completed?	Category	Completed?	Category	Completed?	Category	Completed?
Physical Sciences (CHM 115)		Mathematical Sciences (MTH 124)		Global Perspectives		Writing (WRT 130 or 150)	
Life Sciences (BMS 202)		Social & Behavioral Sciences (ECO 210/211)		U.S. Diversity		SWS #1	
Philosophy & Literature		Social & Behavioral Sciences		Issues		SWS #2	
Arts		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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