

# Biomedical Engineering (Product Design & Manufacturing Emphasis)

Grand Valley State University 2020-21 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  
\*WRT 150 Writing Strategies  
OR WRT 120/WRT 130 (may change timeline)  
\*EGR 100 Introduction to Engineering  
\*EGR 111 Introduction to Engineering Graphics  
General Education Course

## 2nd Semester Winter: 14 credits

\*MTH 201 Calculus 1  
\*CHM 115 Chemistry 1  
\*EGR 112 Applied Programming for Engineers  
\*EGR 113 Introduction to CAD/CAM  
General Education Course

## 3rd Semester Fall: 13 credits

\*MTH 202 Calculus 2  
\*EGR 185 First-Year Engineering Design  
BMS 202 Anatomy & Physiology  
General Education Course

## 4th Semester Winter: 15 credits

\*MTH 203 Calculus 3  
\*PHY 230 Physics 1  
\*STA 220 Statistical Modeling for Engineers  
\*EGR 220 Egr Measurement and Data Analysis  
General Education Course

## 5th Semester Fall: 13-14 credits

\*PHY 234 or 231 Physics 2  
\*EGR 209 Mechanics and Machines  
\*EGR 226 Microcontroller Programming  
\*EGR 289 Engineering Co-op Preparation

## 6<sup>th</sup> Winter Semester: 16 credits

\*MTH 302 Linear Algebra and Differential Equations  
\*EGR 309 Machine Design I  
\*EGR 250 Materials Science and Engineering  
\*EGR 214 Circuit Analysis 1

## Spring/Summer Semester: 3 credits

EGR 290 Engineering Co-op 1

## 7<sup>th</sup> Fall Semester: 15 credits

EGR 301 Analytical Tools for Product Design  
EGR 345 Dynamic System Modeling and Control  
EGR 367 Manufacturing Processes  
ECO 210 OR 211 Economics

## Winter Semester: 3 credits

EGR 390 Engineering Co-op 2

## 8th Semester Spring/Summer: 14 credits

EGR 362 Thermal & Fluid Systems  
CHM 230 Intro to Organic and Biochemistry  
General Education Courses (Select 2)

## Fall Semester: 6 credits

EGR 490 Engineering Co-op 3  
EGR 453 Biomedical Materials

## 9th Semester Winter: 16-17 credits

EGR 485 Senior Engineering Project 1  
EGR 435 Mathematical Model of Phys Systems  
EGR 403 Medical Device Design  
Biomedical Engineering Elective  
General Education Courses (Select 2)

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

EGR 486 Senior Engineering Project 2  
Biomedical Engineering Elective

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 – Product Design and Manufacturing Emphasis**.
- 3) Click “Submit” and then “Change to New Program.”
- 4) Other emphasis areas within Biomedical Engineering include Mechanical and Electrical.

## 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 123)		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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