

# Product Design and Manufacturing Engineering (Robotics and Control 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: 15 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 Courses (Select 2)

#### 2nd Semester Winter: 14 credits

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

#### 3rd Semester Fall: 12 credits

\*MTH 202 Calculus 2  
\*EGR 185 First-Year Engineering Design  
General Education Courses (Select 2)

#### 4th Semester Winter: 15 credits

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

#### 6th Semester Winter: 16 credits

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

#### Spring/Summer Semester: 3 credits

EGR 290 Engineering Co-op 1

#### 7th Semester Fall: 15 credits

EGR 301 Analytical Tools for Product Design  
EGR 345 Dynamic System Modeling and Control  
EGR 367 Manufacturing Processes  
General Education Course

#### Winter Semester: 3 credits

EGR 390 Engineering Co-op 2

#### 8th Semester Spring/Summer: 14 credits

EGR 362 Thermal and Fluid Systems  
EGR 440 Introduction to Production  
EGR 445 Robotic Systems Engineering  
ECO 210 OR 211 Economics

#### Fall Semester: 3 credits

EGR 490 Engineering Co-op 3

#### 9th Semester Winter: 11-13 credits

EGR 485 Senior Engineering Project 1  
EGR 450 Manufacturing Control Systems  
Product Design and Manufacturing Electives (Select 2)

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

EGR 486 Senior Engineering Project 2  
EGR 409 Machine Design 2  
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 Product Design and Manufacturing Engineering major. Emphasis areas include: Design, General, Manufacturing Systems, and Robotics and Controls

- 1) To declare this emphasis, login to MyBanner, select “Student Records” and then “Change Major.”
- 2) Click on “Change Major 1” and select **Product Design and Manufacturing Engineering – Robotics and Control Emphasis.**
- 3) Click “Submit” and then “Change to New Program.”

General Education

Category	Completed?	Category	Completed?	Category	Completed?
Physical Sciences (CHM 115)		Mathematical Sciences (MTH 201)		Global Perspectives	
Life Sciences		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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