

# Interdisciplinary Engineering (Mechatronics Emphasis)

Grand Valley State University 2020-21 Catalog

MTH 201 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 201      Calculus 1

\*WRT 150      Writing Strategies

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

\*EGR 100      Introduction to Engineering

\*EGR 111      Introduction to Engineering Graphics

\*EGR 112      Applied Programming for Engineers

General Education Course

## 2nd Semester Winter: 14 credits

\*MTH 202      Calculus 2

\*CHM 115      Chemistry 1

\*EGR 113      Introduction to CAD/CAM

\*EGR 185      First-Year Engineering Design

ECO 210 **OR** 211 Economics

## 3rd Semester Fall: 13 credits

\*MTH 203      Calculus 3

\*STA 220      Statistical Modeling for Engineers

\*EGR 220      Egr Measurement and Data Analysis

General Education Courses (Select 2)

## 4th Semester Winter: 12 credits

\*MTH 302      Linear Algebra and Differential Equations

\*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 214      Circuit Analysis 1

\*EGR 289      Engineering Co-op Preparation

## 6th Winter Semester: 10-12 credits

\*EGR 250      Materials Science and Engineering

IE Track      (See Chart for Course Selection)

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## Spring/Summer Semester: 6-7 credits

EGR 290      Engineering Co-op 1

IE Track      (See Chart for Course Selection)

## 7th Fall Semester: 12 credits

EGR 314 Circuit Analysis 2

EGR 315 Electronic Circuits 1

IE Track      (See Chart for Course Selection)

## Winter Semester: 6 credits

EGR 390      Engineering Co-op 2

EGR 312 Dynamics (Sensor Track Only)

## 8th Semester Spring/Summer: 12 credits

EGR 445 Robotics Systems Engineering

EGR 455 Automatic Control

IE Track      (See Chart for Course Selection)

## Fall Semester: 6 credits

EGR 490      Engineering Co-op 3

EGR 352      Kinematics and Dynamics of Machinery

(Mechanical Track Only)

## 9th Semester Winter: 12-15 credits

EGR 485      Senior Engineering Project 1

IE Track      (See Chart for Course Selection)

IE Track Elec.      (See Chart for Course Selection)

**AND/OR** General Education Courses (Select 3)

## 10th Semester Spring/Summer: 12 credits

EGR 486      Senior Engineering Project 2

IE Track Elec.      (See Chart for Course Selection)

**AND/OR** 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 Interdisciplinary Engineering major. Emphasis areas include: Data Science, Design & Innovation, Engineering Management, Environmental Engineering, Mechatronics and Renewable Energy.

- 1) To declare this emphasis, login to MyBanner, select “Student Records” and then “Change Major.”
- 2) Click on “Change Major 1” and select **Interdisciplinary Engineering – Mechatronics Emphasis**.
- 3) Click “Submit” and then “Change to New Program.”
- 4) Students are required to complete one IE Track Elective. Please plan ahead! Course descriptions are listed in the

[GVSU Academic Catalog](#).

Mechanical Track	
EGR 226	6 <sup>th</sup> Semester Winter (foundation course)
EGR 309	6 <sup>th</sup> Semester Winter
EGR 312	Spring/Summer Co-op
EGR 346	7 <sup>th</sup> Semester Fall
EGR 409	8 <sup>th</sup> Semester Spring/Summer
EGR 352	Fall Co-op
EGR 450	9 <sup>th</sup> Semester Winter
Mechanical Track Electives	
EGR 224	Introduction to Digital System Design
EGR 436	Embedded Systems Interface
EGR 424	Design of Microcontroller Applications
EGR 350	Vibrations

Sensor- Controls Track	
EGR 224	6 <sup>th</sup> Semester Winter
EGR 223	6 <sup>th</sup> Semester Winter
EGR 226	Spring/Summer Co-op (Foundation Course)
EGR 326	7 <sup>th</sup> Semester Fall
EGR 312	Winter Co-op
EGR 309	8 <sup>th</sup> Semester Spring/Summer
EGR 436	9 <sup>th</sup> Semester Winter
Sensor-Controls Track Electives	
EGR 409	Machine Design 2
EGR 450	Manufacturing Controls
EGR 352	Kinematics and Dynamics of Machinery
EGR 424	Design of Microcontroller Applications

## 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.**

## PCEC Advisors

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