

## Interdisciplinary Engineering (Renewable Energy Emphasis – Wind Turbine/Alternative Cars Track)

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: 12 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

### 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: 13 credits

\*MTH 302      Linear Algebra and Differential Equations  
\*PHY 230      Physics 1  
\*EGR 226      Microcontroller Programming & Applications

### 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 Semester Winter: 14 credits

\*EGR 309      Machine Design 1  
\*EGR 250      Materials Science and Engineering  
EGR 312      Dynamics  
General Education Course

### Spring/Summer Semester: 3 credits

EGR 290      Engineering Co-op 1

### 7th Semester Fall: 12 credits

EGR 360 **OR** IE Track Elec. (See Chart for Course Selection)  
EGR 345 **OR** 346 Dynamic Sys./Mechatronic Sys.  
IE Track Elec.      (EGR 352 Recommended)

### Winter Semester: 7 credits

EGR 390      Engineering Co-op 2  
IE Track Elec.      (EGR 450 Recommended)

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

EGR 362 or IE Track Elec. (See Chart for Course Selection)  
EGR 365 or IE Track Elec. (See Chart for Course Selection)  
General Education Courses (Select 2)

### Fall Semester: 7 credits

EGR 490      Engineering Co-op 3  
EGR 463      Alternative Energy Systems and  
Applications

### 9th Semester Winter: 14 credits

EGR 485      Senior Engineering Project 1  
EGR 406      Renewable Energy Systems: Structure,  
Policy, and Analysis  
EGR 413      Materials for Energy Storage  
GEO 360      Earth Resources in Transition:  
Conventional to Sustainable  
IE Track Elec.      (EGR 465 Recommended)

### 10th Semester Spring/Summer: 8 credits

EGR 486      Senior Engineering Project 2  
IE Track Elec.      (EGR 405 Recommended)  
BIO 105      Environmental Science

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 – Renewable Energy Emphasis**.
- 3) Click “Submit” and then “Change to New Program.”
- 4) EGR 312 and EGR 365 are prerequisite courses for selected upper-level IE Track electives. Students are required to take **four** IE Track electives. **Please plan ahead!** Course descriptions are listed in the [GVSU Academic Catalog](#).

<u>Electives</u>	<u>Credits</u>	<u>Title</u>	<u>Semester</u>	<u>Course Prerequisites</u>	<u>Energy Focus</u>
EGR 352	4	Kinematics and Dynamics	Fall	EGR 312	Wind Turbine, Alternative Cars
EGR 405	3	Materials Failure Analysis	Summer	EGR 250	Wind Turbine, Alternative Cars
EGR 435	3	Mathematical Modeling of Physiologic Systems	Winter	MTH 302	All
EGR 450	4	Manufacturing Control Systems	Winter	EGR 345 or 346	Wind Turbine
EGR 465	4	Computational Fluid Dynamics	Winter	EGR 365	Wind Turbine

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 201)		Global Perspectives (EGR 406)	
Life Sciences (BIO 105)		Social & Behavioral Sciences (ECO 210/211)		U.S. Diversity	
Arts		Social & Behavioral Sciences		Issues (EGR 406)	
Philosophy & Literature		Historical Perspectives		Issues (GEO 360)	

- 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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