

Product Design and Manufacturing Engineering (Robotics and Control Emphasis)

Grand Valley State University 2021-22 Catalog

MTH 124 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: 14 credits

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|---|-----------------------|-----------|
| MTH 124 | Precalculus: F & M | 5 credits |
| *WRT 150 | Writing Strategies | 4 credits |
| OR WRT 120/WRT 130 (may change timeline) | | |
| *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

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

3rd Semester Fall: 15 credits

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| *MTH 202 | Calculus 2 | 4 credits |
| *EGR 185 | First-Year EGR Design | 2 credits |
| General Education Courses (Select 3) | | 9 credits |

4th Semester Winter: 15 credits

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|--------------------------|-----------------------|-----------|
| *MTH 203 | Calculus 3 | 4 credits |
| *STA 220 | Stat Modeling for EGR | 2 credits |
| *EGR 220 | EGR Measure & Data | 1 credit |
| *PHY 230 | Physics 1 | 5 credits |
| General Education Course | | 3 credits |

5th Semester Fall: 13-14 credits

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|-----------------|-----------------------------|-------------|
| *PHY 234 or 231 | Physics 2 | 4/5 credits |
| *EGR 209 | Mechanics and Machines | 4 credits |
| *EGR 226 | Microcontroller Program | 3 credits |
| *EGR 227 | Microcontroller Program Lab | 1 credit |
| *EGR 289 | EGR Professionalism | 1 credit |

6th Semester Winter: 16 credits

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|----------|-----------------------------|-----------|
| *MTH 302 | Linear Algebra/Diffy Q | 4 credits |
| *EGR 309 | Machine Design I | 3 credits |
| *EGR 310 | Machine Design I Lab | 1 credit |
| *EGR 250 | Materials Science & EGR | 3 credits |
| *EGR 251 | Materials Science & EGR Lab | 1 credit |
| *EGR 214 | Circuit Analysis 1 | 3 credits |
| *EGR 215 | Circuit Analysis 1 Lab | 1 credit |

Spring/Summer Semester: 3 credits

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| EGR 290 | Engineering Co-op 1 | 3 credits |
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7th Semester Fall: 15 credits

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|--------------------------|--------------------------|-----------|
| EGR 301 | Analytical Tools for PDM | 4 credits |
| EGR 345 | Dynamic System Model | 4 credits |
| EGR 367 | Mfg Processes | 3 credits |
| EGR 368 | Mfg Processes Lab | 1 credit |
| General Education Course | | 3 credits |

Winter Semester: 3 credits

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| EGR 390 | Engineering Co-op 2 | 3 credits |
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8th Semester Spring/Summer: 14 credits

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|---------------------------------|-------------------------|-----------|
| EGR 362 | Thermal & Fluid Systems | 4 credits |
| EGR 440 | Intro to Production | 3 credits |
| EGR 445 | Robotic Systems EGR | 4 credits |
| ECO 210 OR 211 Economics | | 3 credits |

Fall Semester: 3 credits

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| EGR 490 | Engineering Co-op 3 | 3 credits |
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9th Semester Winter: 11-13 credits

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|--------------------------|----------------------|-------------|
| EGR 485 | Senior EGR Project 1 | 1 credit |
| EGR 450 | Mfg Control Systems | 4 credits |
| PDM Electives (Select 2) | | 6-8 credits |

10th Semester Spring/Summer: 12 credits

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|--------------------------------------|----------------------|-----------|
| EGR 486 | Senior EGR Project 2 | 2 credits |
| EGR 409 | Machine Design 2 | 4 credits |
| General Education Courses (Select 2) | | 6 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 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

| <u>Category</u> | <u>Completed?</u> | <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 124) | | Global Perspectives | | Writing (WRT 130 or 150) | |
| Life Sciences | | 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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