

**Interdisciplinary Engineering:  
Mechatronics Engineering Emphasis**

**MTH 124 Start, 5 Year Plan**

Secondary Admission Required

| 1st Year  |              |  |              |                               |              |
|---|--------------|--|--------------|-------------------------------|--------------|
| Fall  |              | Winter                                   |              | Spring/Summer                 |              |
| MTH 124: Precalculus                                      | 5            | *MTH 201: Calculus I                     | 4            |                               |              |
| *WRT 150: Strategies in Writing<br>or WRT 120 and WRT 130 | 4            | *CHM 115: Chemistry I                    | 4            |                               |              |
| *EGR 100: Intro to Engineering                            | 1            | *EGR 108: Appl Program for EGR II        | 2            |                               |              |
| *EGR 111: Intro to Engineering Graphics                   | 1            | *EGR 113: Intro to CAD/CAM               | 1            |                               |              |
| *EGR 104: Appl Program for EGR I                          | 2            | General Education                        | 3            |                               |              |
| <b>Total</b>  | <b>13</b>    | <b>Total</b>                             | <b>14</b>    |                               |              |
| 2nd Year  |              |  |              |                               |              |
| Fall  |              | Winter                                   |              | Spring/Summer                 |              |
| *MTH 202: Calculus 2                                      | 4            | *MTH 203: Calculus 3                     | 4            |                               |              |
| *EGR 185: First-Year EGR Design                           | 2            | *PHY 230: Physics I                      | 5            |                               |              |
| *STA 220: Statistical Modeling for EGR                    | 2            | ECO 210 or 211: Economics                | 3            |                               |              |
| *EGR 220: EGR Measure & Data                              | 1            | General Education                        | 3            |                               |              |
| General Education   | 3            |  |              |                               |              |
| <b>Total</b>  | <b>12</b>    | <b>Total</b>                             | <b>15</b>    |                               |              |
| 3rd Year  |              |  |              |                               |              |
| Fall  |              | Winter                                   |              | Spring/Summer                 |              |
| *PHY 234 or 231: Physics 2                                | 4-5          | *MTH 302: Linear Algebra/Differential EQ | 4            | EGR 290: Engineering Co-Op I  | 3            |
| *EGR 209: Mechanics & Machines                            | 4            | *EGR 250: Materials Science & EGR        | 3            | IE Track (see chart)          | 3            |
| *EGR 214: Circuit Analysis 1                              | 3            | *EGR 251: Materials Science & EGR Lab    | 1            |                               |              |
| *EGR 215: Circuit Analysis 1 Lab                          | 1            | IE Track (see chart)                     | 3-4          |                               |              |
| *EGR 289: EGR Professionalism                             | 1            | IE Track (see chart)                     | 3-4          |                               |              |
| <b>Total</b>  | <b>13-14</b> | <b>Total</b>                             | <b>14-16</b> | <b>Total</b>                  | <b>6</b>     |
| 4 <sup>th</sup> Year ~ Admission Required                 |              |  |              |                               |              |
| Fall  |              | Winter                                   |              | Spring/Summer                 |              |
| EGR 314: Circuit Analysis 2                               | 4            | EGR 390: Engineering Co-Op 2             | 3            | EGR 445: Robotics Systems EGR | 4            |
| EGR 315: Electronic Circuits 1                            | 4            | EGR 312: Dynamics (Sensor Track)         | 3            | EGR 455: Automatic Control    | 4            |
| IE Track (see chart)                                      | 4            |  |              | IE Track (see chart)          | 4            |
| <b>Total</b>  | <b>12</b>    | <b>Total</b>                             | <b>6</b>     | <b>Total</b>                  | <b>12</b>    |
| 5 <sup>th</sup> Year ~ Admission Required                 |              |  |              |                               |              |
| Fall  |              | Winter                                   |              | Spring/Summer                 |              |
| EGR 490: Engineering Co-Op 3                              | 3            | EGR 485: Senior EGR Project 1            | 1            | EGR 486: Senior EGR Project 2 | 2            |
| EGR 352: Kin & Dynamics (Mech. Track)                     | 4            | IE Track (see chart)                     | 4            | IE Track (see chart)          | 3-4          |
|   |              | IE Track (see chart)                     | 3-4          | General Education             | 3            |
|   |              | General Education                        | 3            | General Education             | 3            |
|   |              | General Education                        | 3            | General Education             | 3            |
| <b>Total</b>  | <b>7</b>     | <b>Total</b>                             | <b>14-15</b> | <b>Total</b>                  | <b>14-15</b> |

- This is a suggested curriculum guide that might not be applicable to every student
- Foundation courses are required for secondary admission and are designated by an asterisk (\*) on this guide
- Student must have a **minimum of 120 credits** to graduate, with **58 of the 120 credits** being from a senior level institution and the **final 30 of the 120 credits** completed at GVSU

**Padnos College of Engineering and Computing ~ Student Services Office**

B-3-241 Mackinac Hall and 101 Eberhard Center  
(616) 331-6025 or online at [www.gvsu.edu/pcec/advising](http://www.gvsu.edu/pcec/advising)

| √ | IE-Mechatronics Foundation Requirements | √ | General Education Requirements  |
|---|---|---|---|
|   | MTH 201                                 |   | WRT 150: Strategies in Writing (grade of "C" or higher required)<br><b>or</b> WRT 120 and WRT 130 |
|   | MTH 202                                 |   | Life Sciences (consider BIO 105)  |
|   | MTH 203                                 |   | Physical Sciences (CHM 115)   |
|   | MTH 302                                 |   | Philosophy and Literature (consider PHI 102)  |
|   | CHM 115                                 |   | Arts  |
|   | PHY 230                                 |   | Mathematical Sciences (MTH 201)   |
|   | PHY 231 or 234                          |   | Social Behavioral Sciences (ECO 210 or 211)   |
|   | WRT 150                                 |   | Social Behavioral Sciences  |
|   | EGR 100                                 |   | Historical Analysis (consider HSC 202)  |
|   | EGR 111                                 |   | U.S. Diversity  |
|   | EGR 112 or EGR 104 + EGR 108            |   | Global Perspectives   |
|   | EGR 113                                 |   | 2 Supplemental Writing Skills Courses (prerequisite: WRT 130 or 150)                              |
|   | EGR 185                                 |   | 2 Issues Courses (must have 55+ credits)  |
|   | EGR 289                                 |   |   |
|   | EGR 220+STA 220                         |   |   |
|   | EGR 214+215                             |   |   |
|   | EGR 226+227                             |   |   |
|   | EGR 209                                 |   |   |
|   | EGR 309+310                             |   |   |
|   | EGR 250+251                             |   |   |

#### Secondary Admission Requirements:

Detailed application and admission requirements available at <https://www.gvsu.edu/engineering/secondary-admission-to-engineering-majors-44.htm>

- ✓ A GPA of 2.7 or above in Engineering Foundation courses. Foundation courses are designated by an asterisk (\*) on this guide.
- ✓ Completion of each course in the Engineering Foundation with a grade of C (2.0) or above, with no more than one repeat.
- ✓ Completion of preparation for placement in the cooperative engineering education course, EGR 289.

#### Major Declaration Steps:

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 (see below). Please plan ahead! Course descriptions are listed in the GVSU Academic Catalog.

#### Major Notes:

- 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.

| Mechanical Track           |   |
|----------------------------|---|
| EGR 226/227                | 6 <sup>th</sup> Semester Winter (foundation course) |
| EGR 309/310                | 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 226/227                     | Spring/Summer Co-op (foundation course) |
| EGR 326                         | 7 <sup>th</sup> Semester Fall           |
| EGR 312                         | Winter Co-op                            |
| EGR 309/310                     | 8 <sup>th</sup> Semester Spring/Summer  |
| Sensor-Controls Track Electives |   |
| EGR 436                         | 9 <sup>th</sup> Semester Winter         |
| EGR 409                         | Machine Design 2                        |
| EGR 450                         | Manufacturing Controls                  |
| EGR 352                         | Kinematics and Dynamics of Machinery    |
| EGR 424                         | Design of Microcontroller Applications  |

