

**MTH 122 Start, 5 Year Plan**

Secondary Admission Required

| 1st Year  |              |  |              |                                |               |
|---|--------------|--|--------------|--------------------------------|---------------|
| <b>Fall</b>   |              | <b>Winter</b>                              |              | <b>Spring/Summer</b>           |               |
| MTH 122: College Algebra                                  | 3            | MTH 123: Trigonometry                      | 3            |                                |               |
| *WRT 150: Strategies in Writing<br>or WRT 120 and WRT 130 | 4            | *CHM 115: Chemistry 1                      | 4            |                                |               |
| General Education   | 3            | *EGR 111: Intro to Engineering Graphics    | 1            |                                |               |
| General Education   | 3            | *EGR 104: Appl Program for EGR I           | 2            |                                |               |
| *EGR 100: Intro to Engineering                            | 1            | General Education                          | 3            |                                |               |
| <b>Total</b>  | <b>14</b>    | <b>Total</b>                               | <b>13</b>    |                                |               |
| 2nd Year  |              |  |              |                                |               |
| <b>Fall</b>   |              | <b>Winter</b>                              |              | <b>Spring/Summer</b>           |               |
| *MTH 201: Calculus 1                                      | 4            | *MTH 202: Calculus 2                       | 4            |                                |               |
| *EGR 108: Appl Program for EGR II                         | 2            | *PHY 230: Physics 1                        | 5            |                                |               |
| *EGR 113: Intro to CAD/CAM                                | 1            | *EGR 185: First-Year EGR Design            | 2            |                                |               |
| General Education   | 3            | *STA 220: Statistical Modeling for EGR     | 2            |                                |               |
| General Education   | 3            | *EGR 220: EGR Measure & Data               | 1            |                                |               |
| <b>Total</b>  | <b>13</b>    | <b>Total</b>                               | <b>14</b>    |                                |               |
| 3rd Year  |              |  |              |                                |               |
| <b>Fall</b>   |              | <b>Winter</b>                              |              | <b>Spring/Summer</b>           |               |
| *MTH 203: Calculus 3                                      | 4            | *MTH 302: Linear Algebra/Differential EQ   | 4            | EGR 290: Engineering Co-Op 1   | 3             |
| *PHY 234 or 231: Physics 2                                | 4-5          | *EGR 214: Circuit Analysis 1               | 3            |                                |               |
| *EGR 226: Microcontroller Program                         | 3            | *EGR 215: Circuit Analysis 1 Lab           | 1            |                                |               |
| *EGR 227: Microcontroller Program Lab                     | 1            | *EGR 223: Probability and Signal Analysis  | 3            |                                |               |
| *EGR 224: Intro to Digital Systems                        | 3            | *EGR 257: Electronic Materials and Devices | 4            |                                |               |
| *EGR 289: EGR Professionalism                             | 1            |  |              |                                |               |
| <b>Total</b>  | <b>16-17</b> | <b>Total</b>                               | <b>15</b>    | <b>Total</b>                   | <b>3</b>      |
| 4 <sup>th</sup> Year ~ Admission Required                 |              |  |              |                                |               |
| <b>Fall</b>   |              | <b>Winter</b>                              |              | <b>Spring/Summer</b>           |               |
| EGR 314: Circuit Analysis 2                               | 4            | EGR 390: Engineering Co-Op 2               | 3            | EGR 323: Sig. & Sys. Analysis  | 3             |
| EGR 315: Electronic Circuits 1                            | 4            |  |              | CHM 230: Intro Org & Biochem   | 4             |
| EGR 326: Embedded System Design                           | 4            |  |              | ECO 210 or 211: Economics      | 3             |
| BMS 202: Anatomy and Physiology                           | 4            |  |              | EGR 403: Medical Device Design | 3             |
| <b>Total</b>  | <b>16</b>    | <b>Total</b>                               | <b>3</b>     | <b>Total</b>                   | <b>13</b>     |
| 5 <sup>th</sup> Year ~ Admission Required                 |              |  |              |                                |               |
| <b>Fall</b>   |              | <b>Winter</b>                              |              | <b>Spring/Summer</b>           |               |
| EGR 490: Engineering Co-Op 3                              | 3            | EGR 485: Senior EGR Project 1              | 1            | EGR 486: Senior EGR Project 2  | 2             |
| EGR 434: Bioelectric Potentials                           | 3            | EGR 435: Math Model of Physiologic Sys.    | 3            | BME Elective                   | 3-4           |
|   |              | General Education                          | 3            | General Education              | 3             |
|   |              | BME Elective                               | 3-4          | General Education              | 3             |
| <b>Total</b>  | <b>6</b>     | <b>Total</b>                               | <b>10-11</b> | <b>Total</b>                   | <b>11 -12</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

| BME - EE Foundation Course Requirements |         |                    |                          |
|---|---------|--------------------|--------------------------|
| WRT 150 (or WRT 130)                    | MTH 201 | MTH 202            | MTH 203                  |
| MTH 302                                 | PHY 230 | PHY 231 or PHY 234 | CHM 115                  |
| STA 220+EGR 220                         | EGR 100 | EGR 111            | EGR 112 (or EGR 104+108) |
| EGR 113                                 | EGR 185 | EGR 224            | EGR 226+227              |
| EGR 289                                 | EGR 223 | EGR 257            | EGR 214+215              |

| General Education Requirements   |  |
|--|--|
| WRT 150: Strategies in Writing (grade of "C" or higher required)<br>or WRT 120 and WRT 130 (grade of "C" or higher required in both) | Life Sciences (consider BIO 105)   |
| Physical Sciences (CHM 115)  | Philosophy and Literature  |
| Arts   | Mathematical Sciences (MTH 201)  |
| Social Behavioral Sciences (ECO 210 or 211)  | Social Behavioral Sciences   |
| Historical Analysis (consider HSC 202)   | U.S. Diversity   |
| Global Perspectives  | 2 Supplemental Writing Skills Courses (prerequisite: WRT 130 or WRT 150) |
| 2 Issues Courses (prerequisite: must have 55+ credits)   |  |

#### 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:

- 1) An emphasis area is required for the Biomedical Engineering major. A list of major elective options is listed in the GVSU Academic Catalog.
- 2) To declare this emphasis, login to MyBanner, select "Student Records" and then "Change Major."
- 3) Click on "Change Major 1" and select Biomedical Engineering – Electrical Emphasis.
- 4) Click "Submit" and then "Change to New Program."
- 5) Other emphasis areas within Biomedical Engineering include Mechanical and Product Design and Manufacturing.

#### Major Notes:

- 1) It is recommended that anyone on a 5 year EGR plan complete the EGR 104+108 stretch option in place of EGR 112. Please speak with an advisor if you have questions about which option is best for you.
- 2) Consider taking a course that fulfills the U.S. Diversity category and one non-ECO Social and Behavioral Science course.
- 3) Consider taking a course that fulfills the Global Perspectives category and one Issues course.
- 4) An ethics course is required in the engineering program. It is recommended to take **ONE** of the following:
  - a. EGR 302 (Engineering Decision-Making in Society) or BIO 328 (Biomedical Ethics) in the Issues category
  - b. PHI 102, BIO 338, COM 438, MGT 340, MGT 438, MKT 375, PHI 325, or PLS 338
  - c. For Honors College students, the ethics requirement is fulfilled by completion of the Honors Curriculum
- 5) ECO 210 or 211 is required for the engineering major AND fulfills one Social and Behavioral Science course.
- 6) 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.**