

**Bachelor of Science in Engineering (B.S.E.)**  
**Biomedical Engineering: Electrical Emphasis**  
**MTH 124 Start, 5 Year Plan**  
Secondary Admission Required

**2025 – 2026**  
**Catalog Year**

| 1st Year                                                  |           |                                            |              |                                    |              |
|-----------------------------------------------------------|-----------|--------------------------------------------|--------------|------------------------------------|--------------|
| <b>Fall</b>                                               |           | <b>Winter</b>                              |              | <b>Spring/Summer</b>               |              |
| MTH 124: Precalculus: F & M                               | 5         | *MTH 201: Calculus 1                       | 4            |                                    |              |
| *WRT 150: Strategies in Writing<br>or WRT 120 and WRT 130 | 4         | *CHM 125 + 126: Chemistry 1                | 4            |                                    |              |
| *EGR 100: Intro to EGR                                    | 1         | *EGR 108: Appl Program for EGR 2           | 2            |                                    |              |
| *EGR 111: Intro to EGR Graphics                           | 1         | *EGR 113: Intro to CAD/CAM                 | 1            |                                    |              |
| *EGR 104: Appl Program for EGR 1                          | 2         | General Education Course                   | 3            |                                    |              |
| <b>Total</b>                                              | <b>13</b> | <b>Total</b>                               | <b>14</b>    |                                    |              |
| 2nd Year                                                  |           |                                            |              |                                    |              |
| <b>Fall</b>                                               |           | <b>Winter</b>                              |              | <b>Spring/Summer</b>               |              |
| *MTH 202: Calculus 2                                      | 4         | *MTH 203: Calculus 3                       | 4            |                                    |              |
| *EGR 185: First-Year EGR Design                           | 2         | *PHY 230: Physics 1                        | 5            |                                    |              |
| *STA 220: Statistical Modeling for EGR                    | 2         | *EGR 226: Microcontroller Program          | 3            |                                    |              |
| *EGR 220: EGR Measure & Data                              | 1         | *EGR 227: Microcontroller Program Lab      | 1            |                                    |              |
| BMS 202: Anatomy and Physiology                           | 4         |                                            |              |                                    |              |
| <b>Total</b>                                              | <b>13</b> | <b>Total</b>                               | <b>13</b>    |                                    |              |
| 3rd Year                                                  |           |                                            |              |                                    |              |
| <b>Fall</b>                                               |           | <b>Winter</b>                              |              | <b>Spring/Summer</b>               |              |
| *PHY 231: Physics 2                                       | 5         | *MTH 302: Linear Algebra/Differential EQ   | 4            | EGR 290: Engineering Co-Op 1       | 3            |
| *EGR 224: Intro to Digital Systems                        | 3         | *EGR 223: Probability and Signal Analysis  | 3            |                                    |              |
| *EGR 214: Circuit Analysis 1                              | 3         | *EGR 257: Electronic Materials and Devices | 4            |                                    |              |
| *EGR 215: Circuit Analysis 1 Lab                          | 1         | General Education                          | 3            |                                    |              |
| *EGR 289: EGR Professionalism                             | 1         |                                            |              |                                    |              |
| <b>Total</b>                                              | <b>13</b> | <b>Total</b>                               | <b>14</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            | CHM 234: Introductory Biochemistry | 4            |
| EGR 315: Electronic Circuits 1                            | 4         | EGR 403: Medical Device Design             | 4            | EGR 323: Signals & Systems         | 3            |
| EGR 326: Embedded System Design                           | 4         |                                            |              | EGR 435: Math Model of Phys Sys    | 3            |
|                                                           |           |                                            |              | General Education                  | 3            |
| <b>Total</b>                                              | <b>12</b> | <b>Total</b>                               | <b>7</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            |
| General Education (consider EGR 302)                      | 3         | EGR 434: Bioelectric Potentials            | 3            | BME Elective                       | 3-4          |
|                                                           |           | General Education (select 2 courses)       | 6            | General Education                  | 3            |
|                                                           |           | BME Elective                               | 3-4          | ECO 210 or 211: Economics          | 3            |
| <b>Total</b>                                              | <b>6</b>  | <b>Total</b>                               | <b>13-14</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 | CHM 125 + 126            |
| 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 (BMS 202)                                                  |
| Physical Sciences (CHM 125 + 126)                                                                                                    | Philosophy and Literature                                                |
| Arts                                                                                                                                 | Mathematical Sciences (MTH 201)                                          |
| 2 Social Behavioral Sciences (one must be ECO 210 or 211)                                                                            | Global Perspectives                                                      |
| Historical Analysis (consider HSC 202)                                                                                               | U.S. Diversity                                                           |
| 2 Issues Courses (prerequisite: must have 55+ credits. Consider EGR 302, ART 373 or ART 394)                                         | 2 Supplemental Writing Skills Courses (prerequisite: WRT 130 or WRT 150) |

### 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 both the U.S. Diversity category and one non-ECO Social and Behavioral Science course.
- 3) Consider taking a course that fulfills both 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 Sciences 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.**
- 7) STA 215 can substitute for the STA 220 requirement.
- 8) Students may take MTH 204 and MTH 304 in place of the MTH 302 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.