Grand Valley State University
Seymour and Esther Padnos College of Engineering

Bachelor of Science in Engineering (B.S.E.)

Biomedical Engineering:
Product Design & Manufacturing Emphasis

MTH 124 Start, 5 Year Plan

Secondary Admission Required

2024 – 2025 Catalog Year

1st Year

Fall		Winter		Spring/Summer	
MTH 124: Precalculus	5	*MTH 201: Calculus 1	4		
*WRT 150: Strategies in Writing or WRT 120 and WRT 130	4	*CHM 115: Chemistry 1	4		
*EGR 100: Intro to Engineering	1	*EGR 108: Appl Program for EGR 2	2		
*EGR 111: Intro to Engineering Graphics	1	*EGR 113: Intro to CAD/CAM	1		
*EGR 104: Appl Program for EGR 1	2	General Education	3		
Total	**13**	**Total**	**14**		

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 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 & Physiology	4				
Total	**13**	**Total**	**13**		

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 1	3
*EGR 209: Mechanics & Machines	4	*EGR 250: Materials Science & EGR	3		
*EGR 214: Circuit Analysis 1	3	*EGR 251: Materials Science & EGR Lab	1		
*EGR 215: Circuit Analysis 1 Lab	1	*EGR 309: Machine Design 1	3		
*EGR 289: EGR Professionalism	1	*EGR 310: Machine Design 1 Lab	1		
		General Education	3		
Total	**13-14**	**Total**	**15**	**Total**	**3**

4th Year ~ Admission Required

Fall		Winter		Spring/Summer	
EGR 345: Dynamic System Modeling	4	EGR 390: Engineering Co-Op 2	3	EGR 362: Thermal & Fluid Sys	4
EGR 367: Manufacturing Processes	3	EGR 403: Medical Device Design	3	CHM 230: Intro Org & Biochem	4
EGR 368: Manufacturing Processes Lab	1			ECO 210 or 211: Economics	3
EGR 453: Biomedical Materials	3			General Education	3
General Education (Consider EGR 302)	3				
Total	**14**	**Total**	**6**	**Total**	**14**

5th 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
General Education	3	EGR 401: Advanced Product Design	4	BME Elective	3-4
		EGR 435: Math Model of Physiologic Sys.	3	General Education	3
		BME Elective	3-4		
		General Education	3		
Total	**6**	**Total**	**14-15**	**Total**	**8-9**

- 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 Student Services Office
101 Eberhard Center
(616) 331-6025 or online at www.gvsu.edu/pce/advising

BME - PDM 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 289	EGR 226+227
EGR 209	EGR 309+310	EGR 250+251	EGR 214+215

General Education Requirements	
WRT 150: Strategies in Writing (grade of "C" or higher required) **or** WRT 120 and WRT 130 (grade of "C" or higher required in both)	Life Sciences (BMS 202)
Physical Sciences (CHM 115)	Philosophy and Literature
Arts	Mathematical Sciences (MTH 201)
2 Social Behavioral Sciences (one must be ECO 210 or 211)	Social Behavioral Sciences
Historical Analysis (consider HSC 202)	Global Perspectives
2 Issues Courses (prerequisite: must have 55+ credits)	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:

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

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***.

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.