



## Registration Information (SS21, F21 and W22)

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## Co-op I/II/III Students

Co-op students should review the School of Engineering student resources at the following link to ensure that co-op planning is proactive, timely, and in accordance with the established co-op policies: [Co-op Student Resources](#)

Note, professionalism and accountability are a major course objective of the co-op program. As such, students are expected to provide timely email responses regarding all co-op surveys, meeting, and inquiries regarding course enrollment, work placement, or supervisor contact information. The industry standard for an email response is 24 hours after receipt. All students enrolled in the co-op program are expected to maintain this level of professionalism to ensure that co-op records are accurately maintained. If your academic plan of study is revised, and there is an associated impact to your co-op plan, please notify accordingly (Diane LaFreniere, Sebastian Chair, [lafrenid@gvsu.edu](mailto:lafrenid@gvsu.edu)).

Students should not self-advise regarding co-op rotations, as the graduation timeline may be at risk of being significantly affected. Students enrolled in a co-op course are expected to be proactive in all communications with the academic advisor, Sebastian Chair (co-op coordinator), and workplace supervisor regarding planning efforts for the three mandatory co-op rotations.

The following individual advising sessions are available within the **Career Center** to inquire about developing a career search plan or securing employment.

- ❑ **Securing Co-op Employment (Individual Appointment)** – securing co-op employment and (or) developing career search materials/strategy – Contact Chris Babbitt ([babbittc1@gvsu.edu](mailto:babbittc1@gvsu.edu)) at the career center to schedule an appointment.
- ❑ **Negotiating Co-op Offers (Individual Appointment)** - negotiating job offers or the terms of the employment – Contact Chris Babbitt ([babbittc1@gvsu.edu](mailto:babbittc1@gvsu.edu)) at the career center to schedule an appointment.

The following advising group sessions are available within the **School of Engineering** to inquire about co-op questions related to the required academic or professional components of the program:

- ❑ **Thursday, March 25, 3:00 PM to 4:15 PM – 90 minutes per session**  
**Co-op Related Academics 101 (Group Appointment)** – informational session regarding the academic component of the co-op courses, specifically for students who are unable to attend the co-op start-up meeting on Friday, March 26 (11:00 to 12:30 pm or 12:30 to 2:00 pm) to review the EGR 290 course syllabus and requirements. Note, the online meeting link for the Friday, March 26th start-up meetings will be emailed to students in early-March.
- ❑ **Thursday, March 25, 4:20 PM to 4:40 PM – 20 minutes per session**  
**Career Exploration 101 (Group Appointment)** - advising related to engineering positions, responsibilities, and career paths (prerequisite is a first draft of the co-op student agreement, located at student resource link above).
- ❑ **Thursday, March 25, 4:40 PM to 5:00 PM – 20 minutes per session**  
**Co-op Plan Development 101 (Individual Appointment)** – advising related to the development of a co-op plan that meets a specified graduation timeline (prerequisite is a previous academic advisor session to discuss the development of an academic plan of study, which includes three mandatory co-op rotations).

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.

### Special Notes:

- ❑ All off-sequence co-op students must have a program-approved plan of study that includes three co-op rotations. The approved plan of study will include a final EGR 490 rotation in the fall, following enrollment in EGR 485/486. The approved plan of study must be signed by the Program Chair and submitted to the Sebastian Chair, Diane LaFreniere, prior to co-op course enrollment.
- ❑ Co-op students may register for no more than one EGR (or CIS) course during a work semester. This course must be an evening offering (after 4:00 p.m.) to avoid a time conflict with the co-op work hours.
- ❑ Co-op students are not permitted to concurrently enroll in a co-op course with EGR 485/486 (senior project).

For any questions regarding an extenuating circumstance and need for an alternative work plan, please email the Sebastian Chair, Diane LaFreniere at [lafrenid@gvsu.edu](mailto:lafrenid@gvsu.edu).

## Summer Advising Tips for Pre-Secondary Admit Students

Declared majors can choose to lighten the Fall and Winter semester course load by taking required engineering foundation or general education classes during the summer term. The classes available in Summer 2021 are shown in Table 1.

**Table 1: Summer 2021 Classes of Interest to Pre-Engineering Students**

Subj	Crse	Sec	Cr	Title	Days	Times		Location
EGR	111	101	1	Introduction to Engineering Graphics	M	10:00 AM	12:20 PM	KEN 244
EGR	112	10	2	Applied Programming for Engineers	M	3:00 PM	4:15 PM	IDC 135
EGR	112	101	0	Applied Programming for Engineers	M	4:30 PM	6:50 PM	IDC 135
EGR	113	01	1	Introduction to CAD/CAM	F	10:00 AM	11:15 AM	KEN 244
EGR	185	10	2	First-Year Engineering Design	F	11:30 AM	12:45 PM	IDC 135
EGR	185	101	0	First-Year Engineering Design	F	1:00 PM	3:20 PM	IDC 135
EGR	214	10	4	Circuit Analysis I	TR	4:00 PM	5:30 PM	DEV 122E
EGR	214	901	0	Circuit Analysis I	T	6:00 PM	9:20 PM	KEN 236
EGR	214	902	0	Circuit Analysis I	W	6:00 PM	9:20 PM	KEN 236
EGR	220	901	1	Engineering Measurement & Data Analysis	T	3:00 PM	6:15 PM	KEN 322
EGR	223	01	3	Probability and Signal Analysis	MW	4:00 PM	6:15 PM	KEN 244
EGR	226	10	4	Introduction to Digital Systems	MW	4:00 PM	5:30 PM	KEN 322
EGR	226	901	0	Introduction to Digital Systems	W	6:00 PM	9:20 PM	KEN 330
EGR	250	10	4	Materials Science and Engineering	TR	4:00 PM	5:30 PM	KEN 222
EGR	250	901	0	Materials Science and Engineering	T	6:00 PM	9:20 PM	KEB 203
EGR	257	10	4	Electronic Materials and Devices	TR	4:00 PM	5:30 PM	KEN 244
EGR	257	901	0	Electronic Materials and Devices	R	6:00 PM	9:20 PM	KEN 135
EGR	309	10	4	Machine Design I	TR	4:00 PM	5:30 PM	KEN 124
EGR	309	901	0	Machine Design I	T	6:00 PM	9:20 PM	KEN 258
EGR	309	902	0	Machine Design I	R	6:00 PM	9:20 PM	KEN 258
EGR	312	01	3	Dynamics	MW	4:00 PM	5:50 PM	KEN 124

Other courses of interest:

- CIS 162 Computer Science I
- CIS 163 Computer Science II
- CHM 115 Principles of Chemistry I
- MTH 201 Calculus I (1<sup>st</sup> 6 Weeks)
- MTH 202 Calculus II (1<sup>st</sup> 6 Weeks)
- MTH 203 Calculus III (2<sup>nd</sup> 6 Weeks)
- PHY 230 Principles of Physics I (1<sup>st</sup> 6 Weeks)
- PHY 231 Principles of Physics II (2<sup>nd</sup> 6 Weeks)
- STA 220: Statistical Modeling for Engineers (1<sup>st</sup> 6 Weeks)

### Study Abroad:

Students can take EGR 214 and/or EGR 226 in Rome at John Cabot University during Summer 2021!

These are the GVSU courses taught by GVSU faculty and will satisfy the requirements of the respective course.

See Prof. Ward, Prof. Parikh, Prof. Krug, or an academic advisor for more information.

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.

### **Special Notes:**

- The above classes are subject to change.
- The science and mathematics classes meet for only part of the summer and require 25-40 hours per week of meeting time and homework.

## Advising Tips for Biomedical Engineering Students

### Pending Admit Students

You will be able to enroll in Summer 2021 classes when your enrollment period opens. However, you will not be allowed to enroll in upper division engineering courses until you have been admitted to the engineering program. If you are admitted at the end of Winter 2022, you will be able to enroll 1 – 2 days after you receive your acceptance letter in late April/early May. If you are admitted at the end of Summer 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in early August.

### Engineering Ethics Course

*EGR 302: Engineering Decision-Making in Society*

**Description:** Engineering decisions affect almost everyone in the modern world. This course studies the potential broad impacts of these decisions within social, economic, environmental and global contexts. This course, through case-studies, places engineering in a wider context, emphasizing the application of ethical models to recognize professional responsibilities in engineering situations.

This course will fulfill the Engineering Ethics requirement as well as an Issues Course in the Information, Innovation or Technology Issue. It is an SWS course.

### Registration Notes:

- Students pursuing the Biomedical Engineering major must choose between three emphasis areas – Electrical, Mechanical, or Product Design and Manufacturing.
- Foundation courses for these three emphasis areas are the same as the corresponding majors so BME students in the Electrical emphasis will complete the foundation courses required for EE majors, BME students in the Mechanical emphasis will complete the foundation courses required for ME majors, and BME students in the Product Design and Manufacturing emphasis will complete the foundation courses required for PDM majors.

Students in the Biomedical Engineering (BME) major pursuing the **Electrical Emphasis** must complete the following required courses: EGR 314, EGR 315, EGR 323, EGR 326, and EGR 434.

Students in the Biomedical Engineering (BME) major pursuing the **Electrical Emphasis** must complete **three** elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 2. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 2: Elective Courses for Biomedical Engineering Students – Electrical Emphasis**

Semester	Course	Title
Summer 2021	EGR 343	Applied Electromagnetics
	EGR 455	Automatic Control
Winter 2022	EGR 433	Electronic Instrumentation for Biomedical Applications
	EGR 436	Embedded Systems Interface

Students in the Biomedical Engineering (BME) major pursuing the **Mechanical Emphasis** must complete the following required courses: EGR 250, EGR 346, EGR 362, EGR 447, and EGR 453.

Students in the Biomedical Engineering (BME) major pursuing the **Mechanical Emphasis** must complete **two** elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 3. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 3: Elective Courses for Biomedical Engineering Students – Mechanical Emphasis**

Semester	Course	Title
Summer 2021	EGR 329	Introduction to Finite Element Analysis
	EGR 409	Machine Design II
	EGR 445	Robotics Systems Engineering
Winter 2022	EGR 465	Computational Fluid Dynamics (CFD)
	EGR 468	Heat Transfer*

*\*by permit only*

Students in the Biomedical Engineering (BME) major pursuing the **Product Design and Manufacturing Emphasis** must complete the following required courses: EGR 301, EGR 345, EGR 362, EGR 367, and EGR 453.

Students in the Biomedical Engineering (BME) major pursuing the **Product Design and Manufacturing Emphasis** must complete **two** elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 4. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 4: Elective Courses for Biomedical Engineering Students – Product Design and Manufacturing Emphasis**

Semester	Course	Title
Summer 2021	EGR 440	Introduction to Production
	EGR 445	Robotics Systems Engineering
	EGR 450	Manufacturing Control Systems
Winter 2022	EGR 465	Computational Fluid Dynamics (CFD)

For more information about the Biomedical Engineering Program, please contact Dr. Samhita Rhodes at [rhodesam@gvsu.edu](mailto:rhodesam@gvsu.edu).

**Combined BSE/MSE:** Junior students with a GPA of 3.3 or more are invited to consider a combined degree. [Click here](#) for more info.

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.

## Biomedical Engineering Minor

Students pursuing a minor in Biomedical Engineering must complete six courses: four required courses and 2 electives. All of these courses are listed below

### Required Courses:

- BMS 202 Anatomy and Physiology, 4 Credits, Gen Ed LS
- CHM 115 Principles of Chemistry I, 5 Credits
- CHM 230 Introduction to Organic and Biochemistry, 4 Credits
- EGR 435 Mathematical Modeling of Physiological Systems, 3 Credits

### Elective Courses (choose any **two** courses from among the following ones):

- EGR 403 Medical Device Design, 3 Credits (PDM senior elective)
- EGR 432 Biomedical Imaging and Image Processing, 3 Credits (EE and CE senior elective)
- EGR 433 Electronic Instrumentation for Biomedical Applications, 3 Credits (EE senior elective)
- EGR 434 Bioelectric Potentials, 3 Credits (EE senior elective)
- EGR 447 Engineering Mechanics of Human Motion, 3 Credits (ME and PDM senior elective)
- EGR 453 Biomaterials, 3 Credits (PDM senior elective)
- EGR 465 Computational Fluid Dynamics, 4 credits (ME senior elective)

For Spring/Summer 2021 and the 2021-2022 academic year, the offerings of courses in this minor are shown in Table 5. Besides the ones in this table, other elective courses may be offered in subsequent years since distinct electives are offered in different years.

**Table 5: Biomedical Minor Engineering Course Offerings AY 2021-2022**

Semester	Course	Title
Summer 2021	BMS 202	Anatomy and Physiology
	CHM 115	Principles of Chemistry I
Fall 2021	BMS 202	Anatomy and Physiology
	CHM 115	Principles of Chemistry I
	CHM 230	Introduction to Organic and Biochemistry
	EGR 434	Bioelectrical Potentials
	EGR 453	Biomedical Materials
Winter 2022	BMS 202	Anatomy and Physiology
	CHM 115	Principles of Chemistry I
	CHM 230	Introduction to Organic and Biochemistry
	EGR 403	Medical Device Design
	EGR 435	Mathematical Modeling of Physiologic Systems
	EGR 447	Engineering Mechanics of Human Motion
	EGR 433	Electronic Instrumentation for Biomedical Applications
	EGR 465	Computational Fluid Dynamics

For more information about the Biomedical Engineering minor, please contact Dr. Samhita Rhodes at [rhodesam@gvsu.edu](mailto:rhodesam@gvsu.edu).

## Advising Tips for Computer Engineering Students

### Pending Admit Students

You will be able to enroll in Summer 2021 classes when your enrollment period opens. However, you will not be allowed to enroll in upper division engineering courses until you have been admitted to the engineering program. If you are admitted at the end of Winter 2022, you will be able to enroll 1 – 2 days after you receive your acceptance letter in late April/early May. If you are admitted at the end of Summer 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in early August.

### Engineering Ethics Course

*EGR 302: Engineering Decision-Making in Society*

**Description:** Engineering decisions affect almost everyone in the modern world. This course studies the potential broad impacts of these decisions within social, economic, environmental and global contexts. This course, through case-studies, places engineering in a wider context, emphasizing the application of ethical models to recognize professional responsibilities in engineering situations.

This course will fulfill the Engineering Ethics requirement as well as an Issues Course in the Information, Innovation or Technology Issue. It is an SWS course.

### Registration Notes:

- For pre-secondary admit students, you should take CIS 159 Intro to Java for C Programmer (1 credit) in Fall of 2021 instead of CIS 162 Computer Science I (4 credits). Please see Dr. Parikh if you feel you should take CIS 162 instead to discuss.
- Additionally, pre-secondary students should take EGR 224 Introduction to Digital System Design (3 credits – pre-requisite of EGR 112 C or better) in the Fall of 2021.
- CE juniors should take CIS 263, CIS 350 and CIS 241 during the summer.

Students in the Computer Engineering (CE) major must complete three elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 6. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 6: Elective Courses for Computer Engineering Students**

Semester	Course	Title
Summer 2021	EGR 323	Signals and Systems Analysis
	EGR 424	Design of Microcontroller Applications ( <b>Offered online in S21</b> )
	EGR 480	MIPS FPGA
Fall 2021		
	CIS 451	Computer Architecture (pre-reqs have changed) Check with Dr. Parikh
	CIS 457	Data Communications
Winter 2022		
	EGR 426	Integrated Circuit Systems Design
	EGR 436	Embedded Systems Interface
	CIS 451	Computer Architecture (pre-reqs have changed) Check with Dr. Parikh
	CIS 457	Data Communications

For more information about the Computer Engineering Program, please contact Dr. Chirag Parikh at [parikhc@gvsu.edu](mailto:parikhc@gvsu.edu).

**Combined BSE/MSE:** Junior students with a GPA of 3.3 or more are invited to consider a combined degree. [Click here](#) for more info.

**Biomedical Engineering Minor** [Click here](#) for more info.

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.

## Advising Tips for Electrical Engineering Students

### Pending Admit Students

You will be able to enroll in Summer 2021 classes when your enrollment period opens. However, you will not be allowed to enroll in upper division engineering courses until you have been admitted to the engineering program. If you are admitted at the end of Winter 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in late April/early May. If you are admitted at the end of Summer 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in early August.

### Engineering Ethics Course

*EGR 302: Engineering Decision-Making in Society*

**Description:** Engineering decisions affect almost everyone in the modern world. This course studies the potential broad impacts of these decisions within social, economic, environmental and global contexts. This course, through case-studies, places engineering in a wider context, emphasizing the application of ethical models to recognize professional responsibilities in engineering situations.

This course will fulfill the Engineering Ethics requirement as well as an Issues Course in the Information, Innovation or Technology Issue. It is an SWS course.

### Registration Notes:

- Pre-secondary admit students no longer take EGR 209 Mechanics and Machines. Instead, pre-secondary admit students are to enroll in EGR 224 Introduction to Digital System Design (3 credits – pre-requisite of EGR 112 C or better) in the Fall of 2021, normally while simultaneously being enrolled in EGR 226.

Students in the Electrical Engineering (EE) major must complete four elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 7. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 7: Electives for Electrical Engineering Students**

Semester	Course	Title
Summer 2021	EGR 424	Design of Microcontroller Applications
	EGR 450	Manufacturing Control Systems
	EGR 455	Automatic Control
	EGR 480	Special Topics – MIPS FPGA
Fall 2021	EGR 434	Bioelectric Potentials
	EGR 458	Introduction to Fiber Optics
	EGR 480	Microgrid
Winter 2022	EGR 423	Digital Signal Processing Systems
	EGR 426	Integrated Circuit Systems Design
	EGR 430	Electromechanics
	EGR 433	Electronic Instrumentation for Biomedical Applications
	EGR 436	Embedded Systems Interface
	EGR 443	Electromagnetic Compatibility
	EGR 450	Manufacturing Control Systems

For more information about the Electrical Engineering Program, please contact Dr. Heidi Jiao at [jiaoh@gvsu.edu](mailto:jiaoh@gvsu.edu).

**Combined BSE/MSE:** Junior students with a GPA of 3.3 or more are invited to consider a combined degree. [Click here](#) for more info.

**Biomedical Engineering Minor** [Click here](#) for more info.

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.



## Advising Tips for Mechanical Engineering Students

### Pending Admit Students

You will be able to enroll in Summer 2021 classes when your enrollment period opens. However, YOU WILL NOT BE ALLOWED TO ENROLL IN UPPER DIVISION ENGINEERING COURSES UNTIL YOU HAVE BEEN ADMITTED TO THE ENGINEERING PROGRAM. If you are admitted at the end of Winter 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in late April/early May. If you are admitted at the end of Summer 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in early August.

### Engineering Ethics Course

*EGR 302: Engineering Decision-Making in Society*

**Description:** Engineering decisions affect almost everyone in the modern world. This course studies the potential broad impacts of these decisions within social, economic, environmental and global contexts. This course, through case-studies, places engineering in a wider context, emphasizing the application of ethical models to recognize professional responsibilities in engineering situations.

This course will fulfill the Engineering Ethics requirement as well as an Issues Course in the Information, Innovation or Technology Issue. It is an SWS course.

### Registration Notes:

- Students in the Mechanical Engineering (ME) major must complete three elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 8. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 8: Electives for Mechanical Engineering Students**

Semester	Course	Title
Summer 2021	EGR 350	Vibration
	EGR 405**	Materials Failure Analysis & Selection
	EGR 445	Robotics Systems Engineering
	EGR 450**	Manufacturing Control Systems
	EGR 475	Design of HVAC Systems
Fall 2021	EGR 352	Kinematics and Dynamics of Machinery
	EGR 367**	Manufacturing Processes
	EGR 463	Alternative Energy Systems & Applications
Winter 2022	EGR 311	Intermediate Computer Aided Design and Manufacturing
	EGR 367**	Manufacturing Processes
	EGR 447	Engineering Mechanics of Human Motion
	EGR 450**	Manufacturing Control Systems
	EGR 465	Computational Fluid Dynamics
	EGR 466	Turbomachinery
	EGR 480-01	Mechanics of Composite Materials

**\*\*No more than two of these courses may be applied toward fulfilling the elective requirements of the ME major**

For more information about the Mechanical Engineering Program, please contact Dr. Wendy Reffeor [reffeorw@gvsu.edu](mailto:reffeorw@gvsu.edu).

**Combined BSE/MSE:** Junior students with a GPA of 3.3 or more are invited to consider a combined degree. [Click here](#) for more info.

**Biomedical Engineering Minor** [Click here](#) for more info.

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.

## Advising Tips for Product Design and Manufacturing Engineering Students

### Pending Admit Students

You will be able to enroll in Summer 2021 classes when your enrollment period opens. However, you will not be allowed to enroll in upper division engineering courses until you have been admitted to the engineering program. If you are admitted at the end of Winter 2022, you will be able to enroll 1 – 2 days after you receive your acceptance letter in late April/early May. If you are admitted at the end of Summer 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in early August.

### Engineering Ethics Course

*EGR 302: Engineering Decision-Making in Society*

**Description:** Engineering decisions affect almost everyone in the modern world. This course studies the potential broad impacts of these decisions within social, economic, environmental and global contexts. This course, through case-studies, places engineering in a wider context, emphasizing the application of ethical models to recognize professional responsibilities in engineering situations.

This course will fulfill the Engineering Ethics requirement as well as an Issues Course in the Information, Innovation or Technology Issue. It is an SWS course.

### Registration Notes:

- EGR 445 Robotics Systems may be selected as a PDM elective.

Students in the Product Design & Manufacturing Engineering (PDM) major pursuing the **General Emphasis** must complete three elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 9. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 9: Elective Courses for Product Design and Manufacturing Engineering Students - General**

Semester	Course	Title
Summer 2021	EGR 405	Materials Failure Analysis and Selection
	EGR 409	Machine Design II
	EGR 445	Robotics Systems Engineering
	EGR 441	Quality, Economics, and Operations
Fall 2021	EGR 453	Biomedical Materials
	EGR 463	Alternative Energy Systems & Applications
	STA 315	Design of Experiments
Winter 2022	EGR 404	Polymer Science and Processing
	EGR 413	Materials for Energy Storage
	EGR 403	Medical Device Design
	EGR 447	Engineering Mechanics of Human Motion

Students in the Product Design & Manufacturing Engineering (PDM) major pursuing the **Design Emphasis** must complete two elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 10. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 10: Elective Courses for Product Design and Manufacturing Engineering Students - Design**

Semester	Course	Title
Summer 2021	EGR 409	Machine Design II
	EGR 441	Quality, Economics, and Operations
Fall 2021	EGR 453	Biomedical Materials
	STA 315	Design of Experiments
Winter 2022	EGR 404	Polymer Science and Processing
	EGR 403	Medical Device Design
	STA 315	Design of Experiments
	EGR 311	Intermediate CAD

Students in the Product Design & Manufacturing Engineering (PDM) major pursuing the **Manufacturing Systems Emphasis** must complete two elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 11. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 11: Elective Courses for Product Design and Manufacturing Engineering Students - Manufacturing**

Semester	Course	Title
Summer 2021	EGR 445	Robotics Systems Engineering
Fall 2021	STA 315	Design of Experiments
Winter 2022	EGR 413	Materials for Energy Storage
	MGT 337	Supply Chain Management
	STA 315	Design of Experiments

Students in the Product Design & Manufacturing Engineering (PDM) major pursuing the **Robotics and Controls Emphasis** must complete two elective courses. For this major, the electives offered for 2021-2022 academic year are shown in Table 12. Please check the GVSU online schedule for any last-minute additions and changes.

**Table 12: Elective Courses for Product Design and Manufacturing Engineering Students - Robotics**

Semester	Course	Title
Summer 2021	EGR 312	Dynamics
	EGR 441	Quality, Economics, and Operations
	EGR 405	Materials Failure Analysis and Selection
Fall 2021	EGR 352	Kinematics and Dynamics of Machinery
Winter 2022	EGR 312	Dynamics

For more information about Product Design & Manufacturing Engineering Program, please contact Dr. Chris Pung at [pungc@gvsu.edu](mailto:pungc@gvsu.edu).

**Combined BSE/MSE:** Junior students with a GPA of 3.3 or more are invited to consider a combined degree. [Click here](#) for more info.

**Biomedical Engineering Minor** [Click here](#) for more info.

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.

## **Advising Tips for Interdisciplinary Engineering Students**

*All Interdisciplinary Engineering students should have a program plan approved from the Interdisciplinary Engineering chair before enrolling.*

### **Pending Admit Students**

You will be able to enroll in Summer 2021 classes when your enrollment period opens. However, you will not be allowed to enroll in upper division engineering courses until you have been admitted to the engineering program. If you are admitted at the end of Winter 2022, you will be able to enroll 1 – 2 days after you receive your acceptance letter in late April/early May. If you are admitted at the end of Summer 2021, you will be able to enroll 1 – 2 days after you receive your acceptance letter in early August.

### **Engineering Ethics Course**

*EGR 302: Engineering Decision-Making in Society*

**Description:** Engineering decisions affect almost everyone in the modern world. This course studies the potential broad impacts of these decisions within social, economic, environmental and global contexts. This course, through case-studies, places engineering in a wider context, emphasizing the application of ethical models to recognize professional responsibilities in engineering situations.

This course will fulfill the Engineering Ethics requirement as well as an Issues Course in the Information, Innovation or Technology Issue. It is an SWS course.

For more information about the Interdisciplinary Engineering Program, please contact Dr. Ryan Krauss at [kraussry@gvsu.edu](mailto:kraussry@gvsu.edu).

**Combined BSE/MSE:** Junior students with a GPA of 3.3 or more are invited to consider a combined degree. [Click here](#) for more info.

**Biomedical Engineering Minor** [Click here](#) for more info.

**SWS Requirement:** EGR 390 is no longer offered as an SWS option. EGR 302 – SWS Engineering Decision Making in Society is an SWS course that is offered in the Fall semester and will meet the engineering ethics requirement, as well as a general education Issues course in the Information, Innovation or Technology Issue category. Otherwise, there are general education courses that can be used to meet the two SWS requirements for graduation. Please see an academic advisor for more information.

## **Advising Tips about the Combined BSE / MSE Program**

The combined BSE / MSE program is an efficient course sequence that allows students to earn both a BSE and an MSE.

In this program, students enjoy many advantages:

- Time to earn an M.S.E. degree potentially reduced by 50%
- Number of required M.S.E. credits may be reduced by at least nine credits
- Opportunity for additional co-op industry assignment
- Scholarship opportunities

For more information about the Combined BSE / MSE Program, please contact the Graduate Program Director, Dr. Shabbir Choudhuri at [choudhus@gvsu.edu](mailto:choudhus@gvsu.edu).