

MECHATRONICS AND ROBOTICS ENGINEERING

125-127 Semester Hours

LOWER-DIVISION COURSES

FALL		SPRING	
*FST 101 – Succeeding & Engaging at SIUE	1	ENG 102 – English Composition II ³	3
IE 106 – Engineering Problem Solving	3	CS 145 – Intro to Computing for Engineers ⁴	3
CHEM 131 – Engineering Chemistry ⁺ (BPS)	4	MATH 152 – Calculus II (BPS)	5
CHEM 135 – Engineering Chemistry Lab ⁺ (EL)	1	PHYS 141 – Physics I for Engineering (BPS) ⁺⁺	3
ENG 101 – English Composition I ¹	3	PHYS 151L – University Physics I Lab ⁺⁺ (EL)	1
MATH 150 – Calculus I ² (QR)	5		
TOTAL	17	TOTAL	15
FALL			
FALL		SPRING	
ACS 103 – Interpersonal Comm. Skills ⁵ (EUSC)	3	ME 262 – Dynamics	3
CE 240 – Statics	3	CE 242 – Mechanics of Solids	3
ECE 210 – Circuit Analysis I	3	ECE 211 – Circuit Analysis II	4
MATH 250 – Calculus III (BPS)	4	ECON 111 – Principles of Macroeconomics (BSS)	3
PHYS 142 – Physics II for Engineering ⁺⁺ (BPS)	3	MATH 305 – Differential Equations I (BPS)	3
PHYS 152L – University Physics II Lab ⁺⁺ (EL)	1	Application for Upper Division	0
TOTAL	17	TOTAL	16

Admission to upper-division requires satisfactory completion of lower-division core courses (see reverse side and/or catalog for specific requirements). An ‘APPLICATION FOR ADMISSION TO UPPER-DIVISION’ must also be completed and approved. This application is available online and in the Engineering Student Services Office.

UPPER-DIVISION COURSES

FALL		SPRING	
ECE 282 – Digital System Design	4	MRE 358 – Introduction to Mechatronics	3
ME 356 – Dynamic Systems Modeling	3	MRE 320 – Sensors and Actuators	3
ME 354 – Numerical Simulation	1	ME 450 – Automatic Control ⁶	3
MRE 380 – Design of Machine Elements	3	ECE 381 – Microcontroller	3
Math 321 – Linear Algebra	3	PHIL 323 – Engr, Ethics, and Prof (BHUM) ⁷	3
Breadth-Fine & Performing Arts (BFPA)	3		
TOTAL	17	TOTAL	15
FALL			
FALL		SPRING	
MRE 454 – Robotics, Dynamics, & Control ⁸	3	Technical Elective II	3
MRE 480 – Design in Mechatronics & Rob I	2	MRE 477 – Computer-Integ Manufacturing Sys ¹¹	3
Technical Elective I	3	MRE 481 – Design in Mechatronics & Rob II	2
IE 345 – Engineering Economic Analysis	3	Breadth-Life Science (BLS) ¹⁰	3
Interdisciplinary Studies (IS) ⁹ (EGC) ⁹ (EUSC) ⁹	3	STAT 380 – Statistics for Application ¹² (BICS)	3
Health Experience ¹⁰ (EH)	0/2		
TOTAL	14/16	TOTAL	14

Declaration of Major: Students interested in any of the majors offered by the School of Engineering should seek advisement from the School of Engineering when they initially enroll in the University and should declare a major as soon as possible. Students admitted to programs offered by the School of Engineering shall have met University admission requirements, successfully completed any required academic development and high school deficiency

courses, eligibility to enroll in MATH 125 – Pre-Calculus, and have a cumulative GPA of 2.0 or better in any completed University course work.

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION.

Effective Fall 2019

*FST 101 – for first time freshmen only. Must be taken in the first semester.

*CHEM 121A and CHEM 125A are acceptable substitutes in lieu of CHEM 131 and CHEM 135.

**Physics I for Engineering - co-requisites: MATH 152 and PHYS 151L. prerequisites: ACT Math subscore of 28 or higher *or* high school physics grade of B or higher *or* Physics Readiness Exam Score 09 *or* PHYS 140.

**Physics II for Engineering - prerequisites: PHYS 141 with a grade of C or higher *or* PHYS 151 with a grade of C or higher; MATH 152 with a grade of C or higher; PHYS 151L with a grade of C or higher.

¹ENG 101 must be successfully completed within the First 30 Hours.

²Quantitative Reasoning (QR) 101 must be successfully completed within the First 60 Hours. MATH 150 successfully completed (with a grade of 'C' or better) will fulfill this requirement.

³ENG 102 must be successfully completed within the First 45 Hours.

⁴CS 140 is an acceptable substitute in lieu of CS 145.

⁵ACS 103 must be successfully completed within the First 30 Hours. ACS 103 can be used as a Foundations course, and will also fulfill the EUSC requirement. If ACS 101 is taken instead of ACS 103, the EUSC requirement will have to be met by another appropriate course.

⁶ME 450 may be substituted by the two-course series ECE 365 – Control Systems and ECE 465 – Control Systems Design.

⁷PHIL 323 will fulfill the RA 101 requirement.

⁸MRE 454 (same as ECE 467 and ME 454).

⁹Interdisciplinary Studies (IS) Courses must be taken at the junior/senior level class standing. This requirement is not waived with completion of transfer associate degree or IAI-GECC. It is recommended that students choose a course to meet this general education requirement and Global Cultures (EGC). Selecting one of the following: IS 324, 326, 336, 340, 352, 353, 363, 375, 377, 400 or 401 will satisfy both the requirement of an IS course and the GLOBAL CULTURES (GC) requirements. In addition, IS 352 and 375 will fulfill the EGC, EUSC and IS requirements. If a course is not selected that meets two general education requirements, then a course from the list of GC courses must also be taken.

¹⁰Students may be able to complete the Health Experience (EH) as an approved project or activity; if so, an additional course is not needed. (See academic advisor for approved project or activity). In addition, *BIOL 203 or *BIOL 205 will fulfill a BLS and EH requirement. *Prerequisite/s required courses.

¹¹MRE 477 (same as IE 477) are cross listed with the existing courses.

¹²Other BICS courses are acceptable substitute in lieu of STAT 380; however, STAT 380 is a good option for students who are also pursuing a Math minor.

MRE ELECTIVES

Not all elective courses are offered every year. The courses to be offered are selected from the list below on the basis of student demand and faculty availability.

ECE 351 – Signals and Systems; ECE 466 – Digital Control; ECE 492 – PLC Design; IE 415 – Operations Research-Deterministic Models; IE 475 – CAD/CAM/CAE; IE 476 – Plantwide Process Control; MATH 462 – Engineering Numerical Analysis; ME 310 – Thermodynamics I; ME 452 – Vibrations; ME 492 – Integrated Mechatronic Systems Using Raspberry Pi; ME 492 – Autonomous Ground Vehicles; ME 492 – Systems Engineering

ENROLLMENT IN UPPER-DIVISION COURSES

A student must be admitted to Upper-Division before taking upper-division courses. An **APPLICATION FOR ADMISSION TO UPPER-DIVISION** must be submitted by the deadline, to the academic advisor. A student enrolled in any upper-division course of the program may be asked to drop if he or she has not been admitted to Upper-Division by the time the class starts.

The criteria for admission to the Upper-Division Mechatronics and Robotics Engineering Program are:

1. A completed application for upper-division;
2. Satisfactory completion of all university and School of Engineering admission requirements;
3. Satisfactory completion of English, speech, chemistry, mathematics, and physics courses shown in the first two years of the program with a GPA of 2.0 for non-transfer students, transfer students from articulated programs and Illinois resident transfer students, or a GPA of 2.25 for other transfer students;
4. A GPA of 2.0 or better in ME 262, CE 240, CE 242 and ECE 210;
5. A grade of C or better in ME 262, CE 240, ENG 101 and ENG 102.

University Requirements (Non-General Education)

- Bachelor of Science Degree Requires completion of 8 lecture courses in life (BLS* or LS*), physical (BPS* or PS*) or social science (BSS* or SS*) including 2 with labs (EL*)
- Minimum of 120 semester hours must be completed.
- Minimum GPA of 2.0 must be achieved.

***Approved courses are identified in the catalog with this designation. Lists of approved classes may also be obtained at: siue.edu/registrar/genedguides.shtml.**

**FOR MORE INFORMATION CONTACT
THE MECHANICAL AND INDUSTRIAL ENGINEERING DEPARTMENT OFFICE: (618) 650-3389.**

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