

MECHANICAL ENGINEERING CURRICULUM

4-Year Program (for students starting in Fall 2023 with 2nd Year – FALL in Valencia, Spain)

Student: _____ ID: _____ Advisor: _____

1st Year – FALL (17 cr)		Grade
ENG 101 ^C	College Composition (3 cr)	
MAT 126 ^C	Calculus I (4 cr)	
MEE 101	Intro to Mech. Eng. (1 cr)	
MEE 120	Eng. Graphics & CAD (2 cr)	
PHY 121 ^{C-}	Physics for Eng. & Sci. I (4 cr)	
	HVSC Elective (3 cr)	

1st Year – SPRING (17 cr)		Grade
MAT 127 ^C	Calculus II (4 cr)	
MEE 125	Computational Tools for MEs (3 cr) or COS 220 or ECE 177	
MEE 150 ^C	Statics (3 cr)	
PHY 122	Physics for Eng. & Sci. II (4 cr)	
	HVSC Elective (3 cr)	

2nd Year – FALL (17 cr)		Grade
CHY 121/3	General Chemistry I/Lab (4 cr)	— / —
or CHY 131/3	Chemistry for Engineers/Lab (4 cr)	/
MAT 228 ^C	Calculus III (4 cr)	
MEE 230 ^C	Thermodynamics I (3 cr)	
MEE 270 ^C	Dynamics (3 cr)	
	HVSC Elective (3 cr)	

2nd Year – SPRING (16 cr)		Grade
ECE 209	Fund of Electric Circuits (3 cr)	
ENG 320	Tech. Comm. for Engineering (3 cr)	
MAT 258	Diff. Eq. & Lin. Algebra (4 cr)	
MEE 231	Thermodynamics II (3 cr)	
MEE 251 ^C	Strength of Materials (3 cr)	

3rd Year – FALL (15 cr)		Grade
MEE 320	Materials (3 cr)	—
or MEE 370	Controls (3 cr)	
MEE 330	Manufacturing Engineering (3 cr)	—
or MEE 360	Fluid Mechanics (3 cr)	
MEE 341	Mechanical Lab I (3 cr)	—
or MEE 380	Design I (3 cr)	
MEE 381	Design II (3 cr)	—
or MEE 456	Finite Element Method (3 cr)	
STS 332	Statistics for Engineers (3 cr)	—
or	Engineering Elective (3 cr)	

3rd Year – SPRING (15 cr)		Grade
MEE 320	Materials (3 cr)	—
or MEE 370	Controls (3 cr)	
MEE 330	Manufacturing Engineering (3 cr)	—
or MEE 360	Fluid Mechanics (3 cr)	
MEE 341	Mechanical Lab I (3 cr)	—
or MEE 380	Design I (3 cr)	
MEE 381	Design II (3 cr)	—
or MEE 456	Finite Element Method (3 cr)	
STS 332	Statistics for Engineers (3 cr)	—
or	Engineering Elective (3 cr)	

4th Year – FALL (15 cr)		Grade
MEE 432	Heat Transfer (3 cr)	—
or MEE 471	Mechanical Vibrations (3 cr)	
MEE 442	Mechanical Lab II (2 cr)	
MEE 487	Capstone Design I (4 cr)	
	MEE Technical Elective (3 cr)	
	MEE Technical Elective (3 cr)	

4th Year – SPRING (17 cr)		Grade
MEE 432	Heat Transfer (3 cr)	—
or MEE 471	Mechanical Vibrations (3 cr)	
MEE 443	Mechanical Lab III (2 cr)	
MEE 488	Capstone Design II (3 cr)	
	MEE Technical Elective (3 cr)	
	HVSC Elective (3 cr)	
	HVSC Elective (3 cr)	

^C and ^{C-} indicate the minimum grade required in that course.

Engineering Elective (3 cr)	
Course	Grade

MEE Technical Electives (9 cr)	
Course	Grade

	Course	HVSC credits	Grade	<u>Human Values and Social Context (HVSC) areas (18 cr)</u>					Ethics (not part of HVSC)
				Western Cultural Tradition	Social Contexts & Institutions	Cultural Diversity & International Perspectives	Population & Environment	Artistic & Creative Expression	
1.	ENG 320	3			X				
2.									
3.									
4.									
5.									
6.									
(if needed) 7.									
(if needed) 8.									

Students must complete 18 credits in the HVSC areas, and each of the 5 HVSC areas must be satisfied at least once. Students must also take a course that satisfies the Ethics requirement. Note that some courses satisfy more than one category (e.g. Ethics and an HVSC area).

MEE Technical Electives		Prerequisites
MEE 430	Digital Manufacturing	MEE 120, MEE 330
MEE 433	Solar-Thermal Engineering	MEE 230 ^C
MEE 434	Thermodynamic Design of Engines	MEE 231
MEE 441	Manufacturing and Testing of Composites	MEE 251
MEE 444	Robot Dynamics and Control	MEE 270 ^C , MEE 380
MEE 448	Aircraft Design	MEE 251 ^C , MEE 348, or instructor permission
MEE 449	Aircraft Performance	MEE 348 or instructor permission
MEE 450	Mechanics of Composite Materials	MEE 251 ^C
MEE 452	Aircraft and Automobile Structures	MEE 251 ^C
MEE 453	Experimental Mechanics	MEE 251 ^C
MEE 455	Advanced Strength of Materials	MEE 251 ^C
MEE 459	Engineering Optimization	MAT 228, MAT 258
MEE 462	Dynamics of Fluid Flows	MEE 360
MEE 463	Applied Computational Fluid Dynamics	MEE 360
MEE 475	Fuel Cell Science and Technology	MEE 230 ^C , CHY 121
MEE 477	Introduction to Structural Dynamics	MEE 251, MEE 270, MAT 258 and MEE 370, or permission
MEE 480	Wind Energy Engineering	MAT 258, MEE 251 ^C , Corequisite MEE 360
MEE 484	Power Plant Design and Engineering	MEE 230 ^C , MEE 231
MEE 486	Refrig. and Air Cond. System Design	MEE 231
MEE 489	Offshore Floating System Design	MEE 360, MEE 380
MEE 490	Modern Control Theory and Applications	MEE 370
MEE 491	Offshore Wind Farm Engineering	MEE 251 ^C , MEE 360, or instructor permission

- 400 level courses offered by other engineering programs may, with MEE Department approval, be counted as a MEE Technical Elective.
- 500 level courses in MEE or other engineering programs may, with instructor and MEE Department approval, be counted as a MEE Technical Elective.

Engineering Elective

The “Engineering Elective” (3 credits) may consist of:

- Any 300 or 400 level MEE elective course, or
- Any 300 or 400 level course in College of Engineering (BEN, CHE, CIE, CET, ECE, EET, MET, SVT), or Innovation Engineering (INV), or Pulp and Paper (PPA), except courses that have significant overlap with a required course.

A list of recommended courses, and prohibited courses, is available at: <https://umaine.edu/mecheng/undergraduate-program/>

A single course may not be counted as both the Engineering Elective and a MEE Technical Elective.

Prerequisites for Required Courses

(A prerequisite course must be taken before. A corequisite course must be taken either before or concurrently.)

Course	Prerequisites	Course	Prerequisites	Course	Prerequisites
MAT 127	MAT 126 ^C	MEE 125	Corequisite MAT 126	MEE 370	MEE 270 ^C , MAT 258, ECE 209
		COS 220	None		
		ECE 177	MAT 126		
MAT 228	MAT 127 ^C	MEE 150	MAT 126	MEE 380	MEE 270 ^C
MAT 258	MAT 127 ^C	MEE 230	MAT 127	MEE 381	MEE 120, MEE 251 ^C
STS 332	MAT 228 ^C	MEE 231	MEE 230 ^C , MEE 125 / COS 220 / ECE 177	MEE 432	MEE 360, MAT 258
PHY 121	Corequisite MAT 126	MEE 251	MAT 127, MEE 150 ^C	MEE 442	MEE 341
PHY 122	MAT 126 ^C , PHY 121 ^C	MEE 270	MEE 150 ^C , corequisite MAT 228	MEE 443	MEE 442
CHY 121/3	MAT 126 ^C (* see below)				
CHY 131/3	MAT 126 or MAT 122	MEE 320	MEE 230 ^C , MEE 251 ^C	MEE 456	MEE 251 ^C , MAT 258
ECE 209	MAT 127, coreq PHY 122	MEE 330	MEE 120	MEE 471	MEE 270 ^C , MAT 258
ENG 320	ENG 101, soph./jun./sen.	MEE 341	MEE 251 ^C , MAT 258, coreq MEE 360	MEE 487	MEE 360, MEE 381, coreq MEE 370
		MEE 360	MEE 230 ^C , MEE 270 ^C , MAT 258	MEE 488	MEE 487

^C and ^{C-} indicate the minimum grade required in that course.

* CHY 121/123 prerequisite: A grade of C or better in MAT 111, 116, 122 or 126, or no grade in any of these and a passing score on part 2 or 3 of the Math Placement Exam.