Mechanical Engineering Curriculum
2025-2026 Catalog

Name _____   ULID_____   Advisor _____

IMPORTANT NOTES: A minimum grade of "C" is required in all major department and engineering courses that apply to a degree. However, with the recommendation of the Department Head and the approval of the Dean, two major department and/or engineering courses with a passing grade lower than "C" may be applied towards graduation provided that these courses are not required prerequisites and not designated as a capstone or senior design course in the curriculum. Contact hour designation refers to (lecture, lab), or lecture hours/week and lab hours/week. Example: MCHE 201 (2,3) infers 2 hours lecture, 3 hours lab each week.

Fall Courses	Contact Hrs/Wk	Description	Cr	Pre-requisites (Co-requisites), Notes	Sem.	Gr.	Spring Courses	Contact Hrs/Wk	Description	Cr	Pre-requisites (Co-requisites), Notes	Sem.	Gr.
Freshman													
CHEM 107	(3,0)	Gen Chemistry I	3	(MATH 109 or higher)			ENGL 102	(3,0)	Composition & Lit.	3	English ACT ≥ 28 or ENGL 101		
ENGL 101	(3,0)	Rhetoric & Comp.	3	English ACT ≥ 18 or ENGL 90			MATH 301	(3,0)	Calculus II	4	MATH 270 or 272		
MATH 270	(4,0)	Calculus I	4	Math ACT ≥ 28 or Math SAT ≥ 660; or MATH 109 & 110; or MATH 143			Gen Ed Elec.	(3,0)	Life Science[1]	3	Check Gen Ed Core Courses, Biology Recommended		
MCHE 101	(3,1)	Intro to MCHE	2	(MATH 110 or MATH 143 or MATH 270)			PHYS 201	(4,0)	General Physics I	4	MATH 270 or 272, (MATH 301)		
UNIV 100	(3,0)	Freshman Seminar	3	Restriction: Completed ≤ 62 hours			MCHE 103*	(2,3)	Engineering Graphics Communication and CAD	3	MCHE 101, (MATH 270)		
		Total	15						**Total**	17			
Sophomore													
CHEE 317	(3,0)	Materials of ENGR	3	CHEM 107, MATH 270			Gen Ed Elec.	(3,0)	Comm. Elective	3	Choose either CMCN 310 or THEA 261		
ENGR 211	(3,0)	Statics	3	PHYS 201, MATH 301			ENGR 201	(3,0)	Electrical Circuits	3	PHYS 201		
MATH 302	(4,0)	Calculus III	4	MATH 301			ENGR 219	(3,0)	Mech. of Mat'ls.	3	ENGR 211		
PHYS 202	(4,0)	General Physics II	4	PHYS 201 (MATH 302 or 350)			MATH 350	(3,0)	Differential Eqns.	3	MATH 301 or 309		
Gen Ed Elec.	(3,0)	Lit. Elective[3]	3	Check Gen Ed Core Courses			ENGR 301	(3,0)	Thermodynamics	3	PHYS 201 or CHEM 108		
Gen Ed Elec.	(0,3)	General Science Lab[4]	1	[PHYS, CHEM, or BIOL] Check Gen Ed Core Courses			MCHE 201*	(2,3)	Introduction to Engineering Design and Mechatronics	3	MCHE 103, ENGR 211		
		Total	18						**Total**	18			
Junior													
ENGR 313	(3,0)	Dynamics	3	ENGR 211			Gen Ed Elec.	(3,0)	Soc & Beh. Sc.[5]	3	Check Gen Ed Core Courses, Any level		
ENGR 304	(3,0)	Fluid Mechanics	3	(ENGR 313)			MCHE 357*	(1,2)	Mechatronics	2	MCHE 320, ENGR 201, PHYS 202		
MCHE 320*	(1,2)	Mechanics of Materials Lab	2	ENGR 219, ENGL 102 or 115, MCHE 201, MATH 302			MCHE 365*	(2,3)	Manufacturing Processes	3	CHEE 317, MCHE 320		
MCHE 301*	(2,3)	Engineering Analysis	3	ENGR 201,211, MATH 302, (MATH 350)			MCHE 367	(3,0)	Machine Design I	3	CHEE 317, ENGR 219, MCHE 320, MCHE 103, MCHE 301		
MCHE 362	(3,0)	Thermal Engineering	3	ENGR 301			MCHE 374*	(2,3)	System Dynamics Modeling and Analysis	3	MATH 350, MCHE 301, ENGR 304, ENGR 313 (MCHE 357)		
PHIL 316	(3,0)	Prof Ethics	3	ENGL 102 or ENGL 115			MCHE 363	(3,0)	Kinematics of Machines	3	ENGR 313, MCHE 201, MCHE 301		
		Total	17						**Total**	17			
Senior													
Tech. Elec.	varies	Tech Elective[7]	3	Upper Division MCHE or ENGR			Tech. Elec.	varies	Tech Elective[7]	3	Upper Division MCHE or ENGR		
MCHE 469	(3,0)	Heat Transfer	3	ENGR 201, 301, 304, MATH 350			Tech. Elec.	varies	Tech Elective[7]	3	Upper Division MCHE or ENGR		
MCHE 482*	(2,3)	Projects I	3	(MCHE 358, 363, 365, 367), Restriction: Senior Standing			MCHE 484*	(1,3)	Projects II	2	MCHE 482; Restriction: Must be taken the semester after MCHE 482		
MCHE 358	(1,2)	Energy Systems Lab	2	MCHE 301, 357, 362, ENGR 304			Gen Ed Elec.	(3,0)	Fine Arts Elective[2]	3	Check Gen Ed Core Courses		
Gen Ed Elec.	(3,0)	History Elective[6]	3	Check Gen Ed Core Courses			ECON 430G	(3,0)	Engineering Econ.	3	MATH 301, ENGR 219		
		Total	14						**Total**	14			

*Indicates linked course with X-credit lecture section(s) and 0-credit lab section(s). Both the lecture section and a lab section must be scheduled together.

TOTAL CREDIT HOURS = 130

Footnotes and Notes for Electives

[1] Choose from the General Education Core list of *Life Science, Biology Recommended*.

[2] Choose from the General Education Core list of *Fine Arts* courses.

[3] Choose from the General Education Core list of *Literature* courses.

[4] Choose from **BIOL** 123, **BIOL** 124, **CHEM** 112, **CHEM** 115, **PHYS** 215, or **PHYS** 216.

[5] Choose from the General Education Core list of *Social/Behavioral Science* courses (**ANTH**, **ECON**, **GEOG**, **POLS**, **PSYC**, **SOCI**, **CJUS**).

[6] Choose from the General Education Core list of *History* courses.

[7] Choose courses from the list below in consultation with advisor. ENGR courses may be taken at the 400 level only or by approval of the Department Head.

MCHE Senior Electives – Solid Mechanics (Note: some not offered every semester)

MCHE 380	Introductory Composite Manufacturing	3 Credits	(3,0)
MCHE 399	Internship	3 Credits	varies
MCHE 463G*	Computer-Aided Manufacturing I	3 Credits	(2,3)
MCHE 464G*	Computer-Aided Manufacturing II	3 Credits	(2,3)
MCHE 468*	Machine Design II	3 Credits	(3,0)
MCHE 470	Special Topics	3 Credits	varies
MCHE 473	Operations Management	3 Credits	(2,3)
MCHE 474G	Control Systems Design	3 Credit	(3,0)
MCHE 477G	Advanced Computer-Aided Design	3 Credits	(2,3)
MCHE 478G*	Finite Element Analysis	3 Credits	(2,3)
MCHE 479G	Practical Applications of Machine Learning in Engineering Design	3 Credits	(3,0)
MCHE 480G	Composite Materials	3 Credits	(2,3)
MCHE 485G	Mechanical Vibrations	3 Credits	(3,0)
MCHE 486G	Principles of Welding Engineering and Fabrication	3 Credits	(3,0)
MCHE 487	Introduction to Metal Forming	3 Credits	(2,3)
MCHE 488G	Biomechanics I	3 Credits	(2,3)
MCHE 489G	Robot Dynamics and Control	3 Credits	(3,0)
ENGR 350	Robotics for Advanced Manufacturing	3 Credits	(3,0)
ENGR 400G	Advanced Engineering Methods	3 Credits	varies

MCHE Senior Electives – Thermal/Fluids (Note: some not offered every semester)

MCHE 399	Internship	3 Credits	varies
MCHE 458G	Energy Systems & Sustainability	3 Credits	(3,0)
MCHE 461	Energy Systems Process Design	3 Credits	(2,3)
MCHE 462	Energy Conversion	3 Credits	(3,0)
MCHE 465G	Combustion	3 Credits	(3,0)
MCHE 466G	Environmental Engineering	3 Credits	(2,3)
MCHE 470	Special Topics	3 Credits	varies
MCHE 471	Fluid Dynamics	3 Credits	(3,0)
MCHE 479G	Practical Applications of Machine Learning in Engineering Design	3 Credits	(3,0)
MCHE 483	Energy Systems Design	3 Credits	(2,3)
ENGR 400G	Advanced Engineering Methods	3 Credits	varies
ENGR 430G	Introductions to Solar Energy System Design	3 Credits	(3,0)
ENGR 431G	Utility-Scale Thermal Energy System Design	3 Credits	(3,0)
ENGR 432G	Modeling and Simulation of Solar Energy Systems	3 Credits	(3,0)
ENGR 433G	Solar Manufacturing	3 Credits	(3,0)
ENGR 437G	Industrial Energy Management	3 Credits	(3,0)

MCHE Senior Electives – Cyber-Physical-Systems (CPS)/Machine Learning (ML) (Note: some not offered every semester)

ENGR 480	Applied Machine Learning	3 Credits	(3,0)
ENGR 481	Internet of Things	3 Credits	(3,0)
MCHE 470	Special Topics	3 Credits	varies
ENGR 400G	Advanced Engineering Methods	3 Credits	varies