Mechanical Engineering 2023–2024 Undergraduate Curriculum

Total Credits: 124/125 *(updated March 2023)*

1st Year	**FALL** 16 Credits	**MATH 171** [3-3-**4**] **(C) *** Calculus I {ALEKS Placement = 83%}	**CHEM 105** [3-3-**4**] **(C) *** Principles of Chemistry I {ALEKS Placement = 80%}	**ENGR 120** [1-3-**2**] ***** Innovation in Design {ALEKS Placement = 70%}	**HIST 105** [3-0-**3**] Roots of Contemporary Issues	**UCORE Inquiry** Any Course Under UCORE[1]
	SPRING 15 Credits	**MATH 172** [3-3-**4**] **(C) *** Calculus II {MATH 171}	**ECONS 102** [3-0-**3**] Macro-Economics {ALEKS Placement = 40%}	**ME 116** [0-6-**2**] **(C) *** Engineering CAD & Visualizations {MATH 171 or c//}	**ENGL 101** [3-0-**3**] College Composition {Writing Placement}	**UCORE Inquiry** Any Course Under UCORE[1]
2nd Year	**FALL** 17/18 Credits	**MATH 220** [2-0-**2**] **(C) *** Linear Algebra {MATH 171 or c//}	**MATH 273** [2-0-**2**] **(C) *** Calculus III {MATH 172}	**PHYSICS 201** [3-0-**3**] **(C) *** Physics for Scientists & Engineers I {MATH 172 or c//}	**PHYSICS 211** [0-3-**1**] **(C) *** Physics Lab for Scientists & Engineers {MATH 172 or c//, PHYSICS 201 or c//}	**CE 211** [3-0-**3**] **(C) *** Statics {MATH 172 or c//, PHYSICS 201 or c//}	**ME 241** [3-0-**3**] **(C) *** Engineering Computations, **CPT_S 121** [3-3-**4**] **(C) *** Program Design & Development C++, ***or* CPT_S 131** [3-3-**4**] **(C) *** Program Design & Development Java (See Catalog)	**MSE 201** [3-0-**3**] **(C) *** Materials Science {CHEM 105 or c//}
	SPRING 16 Credits	**MATH 315** [3-0-**3**] **(C) *** Differential Equations {MATH 273, MATH 220 or c//}	**PHYSICS 202** [3-0-**3**] **(C) *** Physics for Scientists & Engineers II { PHYSICS 201 & 211; MATH 172}	**PHYSICS 212** [0-3-**1**] **(C) *** Physics Lab for Scientists & Engineers II {PHYS 202 or c//}	**CE 215** [3-0-**3**] **(C) *** Mechanics of Materials {CE 211}	**ME 212** [3-0-**3**] **(C) *** Dynamics {MATH 172, CE 211}	**ME 216** [0-6-**2**] **(C) *** Integrated CAD Design {ME 116, CE 215 or c//}	**ME 220** [0-3-**1**] **(C) *** Materials Lab {CE 215 or c//}
3rd Year	**FALL** 16 Credits	**STAT 370** [3-0-**3**] **(C) *** Engineering Statistics {MATH 172}	**EE 261** [3-0-**3**] **(C) *** Electrical Circuits I {MATH 315 or c//, PHYSICS 202}	**EE 262** [0-3-**1**] **(C) *** Electrical Circuits Lab I {EE 261 or c//}	**ME 301** [3-0-**3**] **(C) *** Fundamentals of Thermodynamics {PHYSICS 201 & 211}	**ME 303** [3-0-**3**] **(C) *** Fluid Mechanics {ME 212}	**ME 313** [2-3-**3**] **(C) *** Engineering Analysis {MATH 315 or c//, CE 215, ME 116; ME/MSE 241, EE 221 or CPT_S 121 or CPT_S 131}	
	SPRING 17 Credits	**ENGL 402** [3-0-**3**] Technical Writing {Junior Standing [60 Credits]}	**ME 304** [3-0-**3**] **(C) *** Heat Transfer {ME 301, ME 303, MIE}	**ME 306** [1-3-**2**] **(C) *** Thermal & Fluids Lab {ME 301, ME 303, STAT 370 or c//, MIE}	**ME 316** [3-0-**3**] **(C) *** Mechanical Comp. Analysis & Design {CE 215, ME 216 or c//, ME 220 or c//, MIE}	**ME 348** [3-0-**3**] **(C) *** Dynamic Systems {ME 212, ME 313, MIE}	**ME Restricted Elective** [3-0-**3**] **(C) *** ME 312, ME 401, or ME 405. See Concentrations	
4th Year	**FALL** 15 Credits	**UCORE Inquiry** Any Course Under UCORE[1]	**ME 415** [3-0-**3**] **(C) *** Engineering Design {ME 304 or c//, ME 316 or c//, ME 348 or c//, MIE}	**ME Restricted Elective** [3-0-**3**] **(C) *** ME 312, ME 401, or ME 405. See Concentrations	**ME Technical Elective** [3-0-**3**] **(C) *** ME or MSE (400–500), BE 425, or EECS not in major. See List Below[2]	**ME Technical Elective** [3-0-**3**] **(C) *** ME or MSE (400–500), BE 425, or EECS not in major. See List Below[2]		
	SPRING 12 Credits	**UCORE Inquiry** Any Course Under UCORE[1]	**ME 406** [1-6-**3**] **(C) *** Experimental Design {ME 220, ME 304, ME 306, ME 348, MIE}	**ME Technical Elective** [3-0-**3**] **(C) *** ME or MSE (400–500), BE 425, or EECS not in major. See List Below[2]	**ME 416** [1-6-**3**] **(C) *** Mechanical Systems Design {ME 415, MIE}			

Admit to Major Requirements: MATH 171 ready (A minimum of 83% ALEKS, AP Calculus test score of 2, or MATH 106 and 108 with a C)
Benchmarks to Stay in the Major: Earn a C or higher in all major classes and a maintain a 2.60 or higher major GPA[4]

Concentrations for Mechanical Engineering

After taking general educational courses and required mechanical engineering (ME) core courses, students can follow a general path, or seek a concentration in thermo-fluids, manufacturing, or autonomous control. Students must take two restricted electives and then at least three technical electives, two of which must be from their concentration of choice.

	Restricted Electives: Take 2	Technical Electives for Concentrations: Take 2	Technical Elective of Student's Choice: Take 1
General Path	ME 312, ME 401, or ME 405	Any technical electives allowed for ME program; see catalog.	Any technical electives allowed for ME program; see catalog.
Thermo-fluids	ME 405, Thermal Systems Design (required), ME 312 or ME 401	ME 432, Wind Energy Engineering, ME 436, Combustion Engines, ME 439, Applied Aerodynamics ME 461/ 462, Intro to Nuclear Engineering 1/2	Any technical electives allowed for ME program; see catalog.
Manufacturing	ME 312, Manufacturing Engineering (required), ME 401 or ME 405	ME 474, Design for Mfg. & Modern Mfg. Strategies, ME 475, Manufacturing Enterprise Systems – Automation and Product Realization	Any technical electives allowed for ME program; see catalog.
Autonomous Systems	ME 401, Mechatronics (required), ME 312 or ME 405	ME 481, Control Systems, ME 485, Intro to Robotics & Artificial Intelligence, CPT_S 122, C++, CPT_S 132, Java	Any technical electives allowed for ME program; see catalog.

See next page for footnotes and table key. This document is for unofficial planning purposes.

Notes

Review the Washington State University Catalog for course pre-requisites and grade requirements.

[1] WSU Undergraduate Education UCORE

[2] ME Technical Electives: ME or MSE (400–500 level), BIO_ENG 425, or any EECS courses not in the major (students must choose 9 credits). ME 407, 413, 419, 431, 432, 436, 439, 449, 461, 474, 475, 481, 483, 485, 501, 502, 503, 507, 509, 513, 514, 515, 516, 517, 520, 521, 525, 526, 527, 530, 531, 532, 534, 537, 540, 556, 565, 574, 575, 581. MSE 401, 404, 406, 413, 505, 506, 507, 508, 509, 513, 514, 515, 516, 517, 520, 521, 523, 530, 532, 534, 544, 545, 546, 547, 548, 592

[3] ME Restricted Electives: ME 312, ME 401, ME 405 (students must choose 6 credits)

[4] Major courses required for the ME degree include all engineering, physics, chemistry, and math courses listed in the schedule of studies. Only one repeat of MME courses is allowed.

ME majors are required to complete the Fundamentals of Engineering (FE) Exam.

MME students are required to complete the senior exit survey.

Key

* = Grade calculated for ENGR GPA

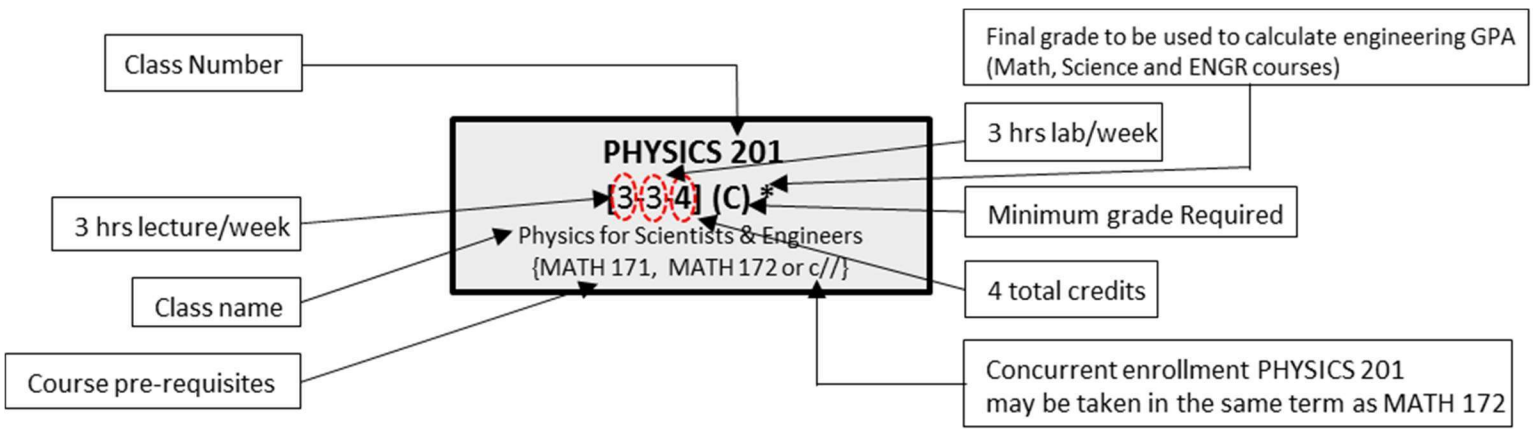
[ ] = Lecture Hours – Lab Hours – **Total Credits**

( ) = Minimum Grade Required

{ } = Course Pre-requisites

c// = Concurrent Enrollment

MIE = Admitted to the Mechanical Engineering Major



Typical Course Offerings for MME Technical Electives (See Catalog for EECS not in major, and BE 425)

	Fall	Spring	Restricted Elective	Concentration Requirement	Pre-Reqs
ME 312, Manufacturing Engineering	✓	✓	Yes	Manufacturing	MSE 201; Admitted to Major
ME 401, Mechatronics	✓	✓	Yes	Autonomous Systems	EE 262; ME 348; Admitted to Major
ME 405, Thermal Systems Design	✓	✓	Yes	Thermo- Fluids	ME 304; Admitted to Major
ME/MSE 413, Mechanical Behavior of Materials	✓				CE 215 and MSE 201; or MSE 202
ME 432, Wind Energy Engineering	✓			Thermo- Fluids	ME 304; Admitted to Major
ME 436, Combustion Engines	✓			Thermo- Fluids	ME 301; ME 303
ME 439, Applied Aerodynamics		✓		Thermo- Fluids	ME 303
ME 461, Introduction to Nuclear Engineering I	✓			Thermo- Fluids	MATH 315; Admitted to Major; Senior Standing
ME 462, Introduction to Nuclear Engineering II		✓		Thermo- Fluids	MATH 315; Admitted to Major; Senior Standing
ME 474, Design for Manufacture and Modern Manufacturing Strategies		✓		Manufacturing	ME 312
ME 475, Manufacturing Enterprise Systems-Automation & Product Realization	✓			Manufacturing	ME 312
ME 481, Control Systems	✓			Autonomous Systems	ME 348
ME 483, Special Topics in Mechanical Engineering					Pre-reqs vary per special topic.
ME 485, Intro to Robotics and Artificial Intelligence		✓		Autonomous Systems	ME 241, CPTS 121 or CPTS 131; ME 348; ME 401
MSE 404, Engineering Composites		✓			MSE 201
MSE 406, Biomaterials	✓				MSE 201
MSE 483, Special Topics in Materials Engineering					Pre-reqs vary per special topic.