

REQUIREMENTS FOR THE BACHELOR OF SCIENCE/MASTER OF SCIENCE
GALLOGLY COLLEGE OF ENGINEERING
THE UNIVERSITY OF OKLAHOMA

Academic Year
For Students Entering the Oklahoma State System for Higher Education Summer 2024 through Spring 2025

General Requirements	
Minimum Total Credit Hours	145-151
Minimum Retention/Graduation Grade Point Averages:	
Overall - Combined and OU	3.25
Major - Combined and OU	3.25
Curriculum - Combined and OU	3.25

Program
Mechanical Engineering (Standard)/ Mechanical Engineering
A675/F675
Bachelor of Science/Master of Science

OU encourages students to complete at least 29 hours of applicable coursework each year to have the opportunity to graduate in 5 years.

GENERAL EDUCATION AND COLLEGE REQUIREMENTS

Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list, including at least one upper-division Gen. Ed. course outside of the student's major. Courses graded P/NP will not apply.

A grade of C or better is required in each course in the curriculum, including all prerequisite courses.

UNIVERSITY-WIDE GENERAL EDUCATION (MINIMUM 40 HOURS)

Code	Title	Credit Hours
Core Area I: Symbolic and Oral Communication		
<i>English Composition</i>		
ENGL 1113	Principles of English Composition	3
ENGL 1213	Principles of English Composition	3
or EXPO 1213	Expository Writing	
<i>Language (0-10 hours in the same language)</i>		
This requirement can be met by two years of the same language in high school:		0-10
Beginning Course (0-5 hours)		
Beginning Course, continued (0-5 hours)		
<i>Mathematics</i>		
MATH 1914	Differential and Integral Calculus I (Core I) ^{1,2}	4
Core Area II: Natural Science (including one laboratory)		
PHYS 2514	General Physics for Engineering and Science Majors (Core II) ²	4
CHEM 1315	General Chemistry (Core II-Lab) ²	5
or CHEM 1335	General Chemistry I: Signature Course	
Core Area III: Social Science		
P SC 1113	American Federal Government	3
Choose one course ³		3
Core Area IV: Arts & Humanities		
<i>Artistic Forms</i>		
Choose one course ³		3
<i>Western Culture</i>		
HIST 1483	United States to 1865	3
or HIST 1493	United States, 1865 to the Present	
Choose one approved elective: Western Culture (Core IV-WC) ³		3
<i>World Culture</i>		
Choose one approved elective: World Culture (Core IV-WDC) ³		3
Core Area V: First Year Experience		
ENGR 1413	Pathways to Engineering Thinking (Core V-FYE) ⁴	3
Total Credit Hours		40-50

- MATH 1914, MATH 2924, and MATH 2934 can be substituted with MATH 1823, MATH 2423, MATH 2433, and MATH 2443.
- Major support requirements that also satisfy University General Education requirements.
- To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000).
- Transfer students will need to meet the requirements of the first-year experience course as well as the engineering transfer course. Please see your advisor for your specific enrollment.

FREE ELECTIVES

Electives to bring total applicable hours to the minimum total required for the degree including a minimum of 40 upper-division hours.

Bachelor of Science in Mechanical Engineering accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Mechanical and Similarly Named Engineering Programs Program Criteria.

MAJOR REQUIREMENTS

Code	Title	Credit Hours
Required Courses		
AME 2102	Engineering Design Graphics	2
AME 2113	Statics	3
AME 2213	Thermodynamics	3
AME 2402	Engineering Computing	2
AME 2303	Materials, Design and Manufacturing Processes	3
AME 2533	Dynamics	3
AME 3112	Solid Mechanics Lab	2
AME 3143	Solid Mechanics	3
AME 3153	Fluid Mechanics	3
AME 3723	Numerical Methods For Engineering Computation	3
AME 3122	Heat Transfer and Fluid Mechanics Lab	2
AME 3173	Heat Transfer	3
AME 3353	Design of Mechanical Components	3
AME 3363	Design of Thermal-Fluid Systems	3
AME 4163	Principles of Engineering Design	3
AME 4553	Design Practicum	3
AME Electives		
Choose 6 hours of AME graduate level electives from a list of approved courses maintained by the department ¹		6
Experimental Elective		
Choose a 2 hour experimental elective from the list of approved courses maintained by the department ²		2
Simulation Elective		
Choose a 3 hour simulation elective from the list of approved courses maintained by the department ²		3
Total Credit Hours		55

¹ Shared courses between the BS and MS degrees.

² Refer to the department-maintained list of Technical, Experimental, Simulation, and Math/Science electives for course options.

MAJOR SUPPORT REQUIREMENTS

Code	Title	Credit Hours
Math and Science		
MATH 2924	Differential and Integral Calculus II	4
MATH 2934	Differential and Integral Calculus III	4
MATH 3113	Introduction to Ordinary Differential Equations	3
PHYS 2524	General Physics for Engineering and Science Majors	4
Math/Science Elective		
Choose a 3 hour math/science elective from the list of approved courses ¹		3
Technical Elective		
Choose a 3 hour technical elective from the list of approved courses ¹		3
Additional College Requirements		
ENGR 2431	Electrical Circuits	1
ENGR 2531	Electrical Circuits II	1
ENGR 3431	Electromechanical Systems	1
ENGR 2002	Professional Responsibilities and Skills of Engineers and Scientists	2
Total Credit Hours		26

¹ Refer to the department-maintained list of Technical, Experimental, Simulation, and Math/Science electives for course options.

GRADUATE REQUIREMENTS

Up to 6 hours of graduate-level electives that satisfy MS in mechanical engineering requirements can be shared between the BS and MS degrees.

THESIS OPTION

Code	Title	Credit Hours
Course Requirements		
Choose 24 hours of graduate level coursework from the following:		24
At least 3 hours of graduate-level coursework in mathematics or advanced engineering analysis		
At least 12 hours of AME courses at the 5000 level or higher ¹		
Up to 9 hours of approved graduate-level courses ²		
Thesis		
AME 5980	Research for Master's Thesis	6
Total Credit Hours		30

- 1 No more than 3 hours in Special Projects, Guided Individual Studies, or other non-competitively graded enrollments.
- 2 Approved graduate-level courses chosen from other fields of engineering, the physical sciences, and mathematics; or AME courses, including G4000-level courses not required for the B.S. degree in the major field. Thesis students who elect a 2-hour laboratory course may include 1 additional hour of Special Projects of Guided Individual Studies in their program.

NON-THESIS OPTION

Code	Title	Credit Hours
Course Requirements		
Choose 36 hours of graduate level coursework from the following:		36
At least 3 hours of graduate-level coursework in mathematics or advanced engineering analysis		
At least 18 hours of AME courses at the 5000 level or higher ¹		
Up to 12 hours of approved graduate level courses ²		
Total Credit Hours		36

- 1 AME hours may include up to 3 hours Special Projects and up to 3 hours Guided Independent Studies. (Students who elect a 2-hour laboratory course may include 1 additional hour of either of these individual instruction enrollments.)
- 2 Approved graduate-level courses chosen from other fields of engineering, the physical sciences, and mathematics; or AME courses, including G4000-level courses not required for the B.S. degree in the major field. For non-thesis students, the 12 hours may include up to 3 hours of additional enrollment in non-competitively graded courses, and up to 6 hours of G4000-level AME courses not required for the B.S. degree in the major field.

More information in the catalog: (<http://ou-public.courseleaf.com/gallogly-engineering/aerospace-mechanical-engineering/mechanical-engineering-standard-bachelor-science-mechanical-engineering-master-science/>).

SUGGESTED SEMESTER PLAN OF STUDY

Bachelor of Science in Mechanical Engineering accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Mechanical and Similarly Named Engineering Programs Program Criteria.

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum, including all prerequisite courses. AME courses are sequential and usually offered only in the semester shown; note prerequisites.

Approval for admission to the accelerated BS/MS program must be initiated at the beginning of the second semester of the junior year. Students may enter the accelerated program based on the undergraduate degree pattern offered in the year they first enrolled in the Oklahoma State System of Higher Education or later. Students are eligible for graduate status upon graduation with the Bachelor of Science in Mechanical Engineering.

Year	FIRST SEMESTER		Hours	SECOND SEMESTER		Hours
FRESHMAN	ENGL 1113	Principles of English Composition (Core I)	3	ENGL 1213 or EXPO 1213	Principles of English Composition (Core I) or Expository Writing	3
	CHEM 1315	General Chemistry (Core II-Lab) ¹	5	MATH 2924	Differential and Integral Calculus II ²	4
	MATH 1914	Differential and Integral Calculus I (Core I) ²	4	PHYS 2514	General Physics for Engineering and Science Majors (Core II)	4
	ENGR 1413	Pathways to Engineering Thinking (Core V-FYE) ³	3	HIST 1483 or HIST 1493	United States to 1865 or United States, 1865 to the Present	3
	CREDIT HOURS		15	CREDIT HOURS		14
SOPHOMORE	MATH 2934	Differential and Integral Calculus III ²	4	MATH 3113	Introduction to Ordinary Differential Equations	3
	PHYS 2524	General Physics for Engineering and Science Majors	4	AME 2102	Engineering Design Graphics	2
	AME 2113	Statics	3	AME 2303	Materials, Design and Manufacturing Processes	3
	AME 2213	Thermodynamics	3	AME 2533	Dynamics	3
	AME 2402	Engineering Computing	2	ENGR 2431	Electrical Circuits	1
				ENGR 2531	Electrical Circuits II	1
				ENGR 3431	Electromechanical Systems	1
			ENGR 2002	Professional Responsibilities and Skills of Engineers and Scientists	2	
CREDIT HOURS		16	CREDIT HOURS		16	
JUNIOR	AME 3112	Solid Mechanics Lab	2	AME 3122	Heat Transfer and Fluid Mechanics Lab	2
	AME 3143	Solid Mechanics	3	AME 3173	Heat Transfer	3
	AME 3153	Fluid Mechanics	3	AME 3353	Design of Mechanical Components	3
	AME 3723	Numerical Methods For Engineering Computation	3	P SC 1113	American Federal Government (Core III)	3
		Approved Elective: Social Science(Core III) ⁴	3		Approved Simulation Elective ⁵	3
		Approved Technical Elective ⁵	3			
CREDIT HOURS		17	CREDIT HOURS		14	
SENIOR	AME 3363	Design of Thermal-Fluid Systems	3	AME 4553	Design Practicum	3
	AME 4163	Principles of Engineering Design	3		Approved Elective: Western Culture (Core IV) ⁴	3
		Approved Math/Science Elective ⁵	3		Approved Elective: World Culture (Core IV) ⁴	3
		Approved Experimental Elective ⁵	2		Approved Elective: Artistic Forms (Core IV) ⁴	3
		AME Graduate-level Elective ^{6,7}	3		AME Graduate Level Elective ^{6,7}	3
	CREDIT HOURS		14	CREDIT HOURS		15
	SUMMER					
		Non-Thesis Option Requirements				
		AME Graduate-level Elective ^{7,8}	0-3			
	AME 5990	Special Projects ⁸	0-3			
CREDIT HOURS		0-6				
FIFTH YEAR		Choose one of the following: ⁷	3		AME Graduate-level Elective ⁷	3
	AME 5573	Advanced Engineering Analysis I			AME Graduate-level Elective ⁷	3
		MATH Graduate-level Elective			AME Graduate-level Elective ⁷	3
		AME Graduate-level Elective ⁷	3		Choose one of the following: ⁸	3-4
		AME Graduate-level Elective ⁷	3	AME 5980	Research for Master's Thesis (thesis option only)	
		Choose one of the following: ⁸	2-3		AME Graduate-level Elective ⁷	
	AME 5980	Research for Master's Thesis (Thesis Option)				
	AME Graduate-level Elective (Non-Thesis Option) ⁸					
CREDIT HOURS		12	CREDIT HOURS		12	

1 CHEM 1315 can be substituted with CHEM 1335 (Fall only).

2 MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.

3 Transfer students will need to meet the requirements of the first-year experience course as well as the engineering transfer course. Please see your advisor for your specific enrollment.

4 To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000). See list in the Class Schedule.

5 Refer to the department-maintained list of Technical, Experimental, Simulation, and Math/Science electives for course options.

6 Courses applied to both BS and MS degrees.

7 Fourth and fifth year graduate electives must satisfy MS in mechanical engineering requirements.

8 Dependent upon whether a student chooses the thesis or non-thesis option. Non-thesis option additionally requires: **AME Graduate-level Elective** (3 hrs.) and AME 5990 (3 hrs.) to be taken in the Summer between the Senior and the Fifth Year, and **Comprehensive Exam** to be taken in the last semester of study.

Two college-level courses in a single world language are required; this may be satisfied by successful completion of 2 years in a single world language in high school. Students who must take a language at the University will have an additional 6-10 hours of coursework.

Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.