

Bachelor Degree in Mechanical Engineering

1. University Graduation Requirements

To graduate with a BME, a student must satisfactorily fulfill all requirements related to credit hours, grade point average, program of study, and courses.

2. Degree Requirements

Type of Requirement	Credit Hours
University Requirements	30
College Requirements	42
Specialization Requirements	51
Specialization Electives	12
Total	134

❖ First: University Requirements

University Requirements consist of 30 credit hours distributed as follows:

Course Number	Course Title	Credit Hours	Prerequisite
ARAB 101	Arabic Communication Skills	3	
ARAB 201	Advanced Academic Arabic	3	ARAB 101
CSC 101	Introduction to Computing	3	
ENGL 101	Basic Academic English I	3	
ENGL 102	Basic Academic English II	3	ENGL 101
ENGL 203	Advanced Academic English I	3	ENGL 102
SOCS 101	Islamic Civilization I	3	
SOCS 201	Islamic Civilization II	3	SOCS 101
MATH 101	Calculus I	3	
	Free Elective	3	
Total		30	

❖ **Second: College Requirements:** College Requirements consist of 41

credit hours distributed as follows:

Number	Title of the Course	Credit Hours	Pre-requisite
MATH 102	Calculus II	3	MATH 101
STAT 230	Probability and Statistics	3	MATH 101
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
MATH 202	Differential equations	3	MATH 102
MATH 215	Linear algebra and Numerical Techniques	3	MATH 202
PHYS 101	Physics I	3	
PHYS 102	Physics II	3	PHYS 101
PHYS 103 L	Physics Lab	1	PHYS 102
CHEM 101	Chemistry I	3	
CHEM 101 L	Chemistry Lab	1	CHEM 101
COEN 300	Engineering Economy	3	MATH 102
COEN 401	Communication skills and Ethics	1	COEN 300
ENGL 206	English Technical Writing	3	ENGL 203
CIVE 215	Computer Aided Engineering Drawing (AutoCAD)	1	CSC 101
ELEE 230	Programming for Engineers	3	CSC 101
MECH 498	Final Year Project (1)	1	ENGL 206
MECH 499	Final Year Project (2)	3	MECH 498
MECH 400	Summer Internship training	1	ENGL 206
Total			42

❖ **Third: Program Specialization Requirements:** Program Specialization requirements consist of 62 credit hours: 53 compulsory credit hours, and 9 elective credit hours distributed as follows.

➤ **A: Compulsory Specialization Requirements:** 51 credit hours

distributed as follows.

Course Number	Course Title	Credit Hours	Pre-requisite	Co-requisite
ELEE 210	Electric Circuits I	3	PHYS 102	
CIVE 210	Statics	3	MATH 102	
MECH 200	Engineering Graphics	1		
MECH 210	Thermodynamics I	3	PHYS 101	
MECH 220	Dynamics	3	MATH 201, CIVE 210	
MECH 230	Engineering Materials	3	CHEM 101	

MECH 231	Strength of Materials	3	CIVE 210	
MECH 320	Kinematics of Mechanical Systems	3	MECH 220	
MECH 330	Mechanical Design	3	MECH 200, 230 and 231	
MECH 331	Materials Lab	1	MECH 230, MECH 231	
MECH 341	Fluid Mechanics	3	MECH 220	
MECH 342	Heat Transfer	3	MECH 341, MECH 210	
MECH 350	Instrumentation and Measurements	3	MECH 341	
MECH 360	Manufacturing Processes I	3	MECH 230	
MECH 361	Manufacturing Processes Lab	1	MECH 360	
MECH 434	Mechanical Vibrations	3	MECH 220	
MECH 440	Thermodynamics II	3	MECH 210	
MECH 490	Control Systems	3	MECH 220, ELEE 210, MATH 202	
MECH 491	Control Systems Lab	1	MECH 490	
MECH 441	Thermal Fluid systems Lab	1	MECH 341, MECH 342	
Total			53	

➤ **B: Elective Specialization Requirements - 9 credit** hours to be chosen from the following list.

Course Number	Course Title	Credit Hours	Prerequisite
MECH 432	Mechanical CAD/CAE/CAM	3	MECH 200, MECH330, MECH360
MECH 433	Mechatronics System Design	3	MECH 350
MECH 444	Internal combustion Engines	3	MECH 440
MECH 445	Air Conditioning	3	MECH 440
MECH 450	Refrigeration	3	MECH 440
MECH 446	Gas turbines	3	MECH 341
MECH 447	Steam turbines	3	MECH 341
MECH 448	Aerodynamics	3	MECH 341
MECH 449	Compressible Flow	3	MECH 341
MECH 451	Solar Energy	3	MECH 342
MECH 460	Finite Element Methods in Mechanical Engineering	3	MATH 215, MATH 202
MECH 461	Mechanical Engineering Analysis	3	MATH 202, MECH 220, MECH 231
MECH 470	Mechanics of Composite Materials	3	MECH 230, MECH 231

MECH 471	Fatigue of Materials	3	MECH 231
MECH 480	Design of Mechanisms	3	MECH 320
MECH 481	Micro Electro Mechanical Systems (MEMS)	3	MECH 350
MECH 492	Robotics	3	MECH 350, MECH 490, MECH 491
MECH 499	Special Topics in Mechanical Engineering	3	

➤ **C: Free Elective Course: 3 credit hours** 3 credit hours to be chosen

from the following list.

Course Number	Course Title	Credit Hours	Prerequisite
ASTR 150	Introduction to Astronomy	3	
CHEM 150	Chemistry & Society	3	
FREN 101	Basic French 1	3	
PHED 101	Physical Education 1	3	
SOCS 102	Islamic Civilizations II	3	SOCS 101
SOCS 202	World Civilizations II	3	SOCS 201

Proposed Sequence of Study

Year I

First Semester		18 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	ARAB 101	Arabic Communication Skills	3	
	SOCS 101	Islamic Civilization I	3	
	CSC 101	Introduction to Computing	3	
	ENGL 101	Basic Academic English I	3	
	PHYS 101	Physics 101	3	
	MATH 101	Calculus I	3	
TOTAL 18				

Year I

Second Semester		18 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	ARAB 201	Advanced Academic Arabic	3	ARAB 101
	ENGL 102	Basic Academic English II	3	ENGL 101
	MATH 102	Calculus II	3	MATH 101
	PHYS 102	Physics II	3	PHYS 101
	CHEM 101	Chemistry I	3	
	ELEE 230	Programming for Engineers	3	CSC 101
TOTAL 18				

Year II

Third Semester		18 Credit hours		
	MATH 201	Calculus and Analytic Geometry III	3	MATH 102
	MECH 210	Thermodynamics I	3	PHYS 101
	ELEE 210	Electric Circuit I	3	PHYS 102
	ELEE 210 L	Electric Circuit I Lab	1	ELEE 210
	PHYS 103L	Physics Lab	1	PHYS 102
	CHEM 101 L	Chemistry Lab	1	CHEM 101
	CIVE 210	Statics	3	MATH 102
	ELEE 230	Programming For Engineers	3	CSC 101
TOTAL 18				

Year II

Fourth Semester		17 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	MATH 202	Differential Equation	3	MATH 201
	MECH 220	Dynamics	3	MATH 201, CIVE 210
	MECH 230	Engineering Materials	3	CHEM 101
	MECH 231	Strength Of Materials	3	CIVE 210
	ELEE 360	Electromechanical Devices	3	ELEE 210
	MECH 200	Engineering Graphics	1	-
	CIVE 215	Computer Aided Engineering Drawing (AutoCAD)	1	CSC 101
TOTAL 17				

Year III

Fifth Semester		16 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	STAT 230	Probability and Statistics	3	MATH 101
	ENGL 206	English Technical Writing	2	ENGL 203
	MECH 230	Engineering Materials	3	CHEM 101
	MECH 331	Materials Lab	1	MECH 230
	MECH 341	Fluid Mechanics	3	MECH 220
	MECH 411	Thermal Fluid Systems Lab	1	MECH 341
	MECH 350	Instrumentation and Measurements	3	MECH 341
Total 16				

Year III

Sixth Semester		16 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	COEN 300	Engineering Economy	3	MATH 202
	MATH 215	Linear algebra and Numerical Techniques	3	MATH 202
	MECH 330	Mechanical Design	3	MECH 200, 230 and 231
	MECH 342	Heat Transfer	3	MECH 341, MECH 210
	MECH 360	Manufacturing Processes I	3	MECH 230
	MECH 361	Manufacturing Processes Lab	1	MECH 360
Total 16				

Year III

Summer Semester		1 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	MECH 400	Summer internship training	1	
Total 1				

Year IV

Seventh Semester		17 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	MECH 401	Final Year Project (1)	1	ENGL 206
	ARAB 201	Advanced Academic Arabic	3	ARAB 101
	MECH 490	Control Systems	3	MECH 220, ELEE 210
	MECH 491	Control Systems Lab	1	MECH 490
	MECH 440	Thermodynamics II	3	MECH 210
	ME Elective	Mechanical Engineering Elective	3	-
	Free Elective	Free Elective	3	-
Total 17				

Year IV

Eighth Semester		15 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	MECH 402	Final Year Project (2)	3	MECH 401
	SOCS 202	World Civilization	3	-
	MECH 434	Mechanical Vibrations	3	MECH 220
	COEN 400	Communication skills and Ethics	3	COEN 300
	ME Elective	Mechanical Engineering Elective	3	-
TOTAL 15				

Total Program Credits**136***

Completion of Bachelor in Mechanical Engineering