

# MECHANICAL ENGINEERING, BACHELOR OF SCIENCE

The Mechanical Engineering program at Hamad Bin Khalifa University (HBKU) offers a comprehensive approach that blends theoretical foundations with practical applications. This approach equips students to tackle contemporary challenges in areas such as mechanics, thermodynamics, materials science, and manufacturing processes.

With an emphasis on collaborative education, training, research, and capacity-building, the program aims to prepare adaptable engineers, capable of meeting society's evolving needs and embracing leadership, social consciousness, integrity, and ethics.

## Requirements

Minimum hours required to complete program 129 CH

Code	Title	Hours
<b>Core Courses</b>		
CHEM 127	General Chemistry I	4
ECON 215	Economic Analysis for Engineering	2
ENGL 114	Composition and Rhetoric	3
ENGL 220	Technical Writing	3
ENGR 110	Introduction to Programming	3
ENGR 482	Ethics and Engineering	3
ELEN 215	Principles of Electrical Engineering	3
MATH 161	Engineering Mathematics I	4
MATH 162	Engineering Mathematics II	4
MATH 261	Engineering Mathematics III	3
MATH 318	Differential Equations	3
MEEN 210	Geometric Modeling for Mechanical Design	2
MEEN 223	Principles of Materials and Manufacturing	2
MEEN 225	Engineering Mechanics	3
MEEN 260	Mechanical Measurements	3
MEEN 315	Principles of Thermodynamics	3
MEEN 344	Fluid Mechanics	3
MEEN 345	Fluid Mechanics Laboratory	1
MEEN 357	Engineering Analysis for Mechanical Engineers	3
MEEN 360	Materials and Manufacturing Selection in Design	3
MEEN 361	Materials and Manufacturing Selection in Design Laboratory	1
MEEN 363	Dynamics and Vibrations	3
MEEN 364	Dynamic Systems and Controls	3
MEEN 365	Dynamic Systems and Control Laboratory	1
MEEN 368	Mechanics of Materials	3
MEEN 381	Seminar	1
MEEN 391	Internship	0
MEEN 401	Senior Design Project I	3
MEEN 402	Senior Design Project II	3
MEEN 404	Engineering Laboratory	3
MEEN 441	Design of Mechanical Components and Systems	3
MEEN 461	Heat Transfer	3
MEEN 464	Heat Transfer Laboratory	1
STAT 211	Principles of Statistics	3
PHYS 226	Experimental Physics & Engineering Lab I: Mechanics	2

PHYS 227	Experimental Physics & Engineering Lab II: Electricity and Magnetism	2
PHYS 216	Newtonian Mechanics for Engineering and Science	3
PHYS 217	Electricity and Magnetism for Engineering and Science	3
Subtotal		99
<b>Technical Area Electives</b>		<b>12</b>
MEEN 421	Thermal-Fluids Analysis and Design	
MEEN 423	Machine Learning for Mechanical Engineers	
MEEN 433	Principles of Mechatronics	
MEEN 435	Automation and Robotics	
MEEN 444	Finite Element Analysis in Mechanical Engineering	
MEEN 453	Advanced Manufacturing Process	
MEEN 460	Corrosion Engineering	
MEEN 467	Mechanical Behavior of Materials	
MEEN 470	Principles of Energy Conversion	
MEEN 472	Building Science, Technology, and HVAC Systems	
MEEN 474	Sustainable Energy Technologies and Systems	
MEEN 489	Selected Topics in Mechanical Engineering	
Subtotal		12
<b>UCC Electives</b>		<b>18</b>
ARAB 150	Arabic for Professional Communication	
ARAB 152	Arabic Linguistics	
BIOL 101	Biology	
ECON 110	Economic Principles	
ENGL 115	Creative and Digital Writing	
ENGR 125	AI Literacy and Critical Thinking	
ENGR 130	Sustainable Cities and Urban Mobility	
HIST 107	World History	
HUMN 105	Global Cinema	
HUMN 110	Moral Reasoning and Decision-Making	
HUMN 111	Data Methods for Digital Humanities	
HUMN 113	Art and Visual Culture	
HUMN 114	Cinema and Musical Culture in the Arab World	
HELT 115	Health and Wellness in Modern Society	
LAW 103	Law and Technology	
POLS 135	International Relations of the Gulf	
PSYC 101	Introduction to Psychology	
POLS 136	Perspectives in Gulf Studies	
POLS 137	Policy Analysis, Design and Implementation	
POLS 140	Global Grand Challenges	
ISLM 105	Scriptural Ethics	
ISLM 106	Philosophy, Theology, and Ethics	
ISLM 117	Islamic Art and Architecture	
SOCI 101	Introduction to Sociology	
SOCI 105	AI and Society	
COMM 110	Language, Identity, and Communication in Qatar	
SOCI 111	Community Service and Engagement	
SOCI 115	Comparative Theories and Methods	
SOCI 117	Technology, Innovation, and Society	
SOCI 137	Global Citizenship and Social Responsibility	
Subtotal		18
<b>Total Hours</b>		<b>129</b>

2 Mechanical Engineering, Bachelor of Science

Course	Title	Hours		
			Univ. Core Elective	3
<b>Freshman</b>			<b>Semester Hours</b>	<b>17</b>
<b>First Semester</b>				
CHEM 127	General Chemistry I	4		
MATH 161	Engineering Mathematics I	4		
ENGR 110	Introduction to Programming	3		
ENGL 114	Composition and Rhetoric	3		
Univ. Core Elective		3		
<b>Semester Hours</b>				<b>17</b>
<b>Second Semester</b>				
PHYS 216	Newtonian Mechanics for Engineering and Science	3		
PHYS 226	Experimental Physics and Engineering Laboratory I: Mechanics	2		
Univ. Core Elective		3		
MATH 162	Engineering Mathematics II	4		
Univ. Core Elective		3		
<b>Semester Hours</b>				<b>15</b>
<b>Sophomore</b>				
<b>First Semester</b>				
PHYS 217	Electricity and Magnetism for Engineering and Science	3		
PHYS 227	Experimental Physics and Engineering Laboratory II: Electricity and Magnetism	2		
MATH 261	Engineering Mathematics III	3		
MEEN 225	Engineering Mechanics	3		
STAT 211	Principles of Statistics	3		
MEEN 210	Geometric Modeling for Mechanical Design	2		
<b>Semester Hours</b>				<b>16</b>
<b>Second Semester</b>				
ELEN 215	Principles of Electrical Engineering	3		
MATH 318	Differential Equations	3		
MEEN 223	Principles of Materials and Manufacturing	2		
MEEN 260	Mechanical Measurements	3		
MEEN 315	Principles of Thermodynamics	3		
Univ. Core Elective		3		
<b>Semester Hours</b>				<b>17</b>
<b>Junior</b>				
<b>First Semester</b>				
ENGL 220	Technical Writing	3		
MEEN 344	Fluid Mechanics	3		
MEEN 345	Fluid Mechanics Laboratory	1		
MEEN 357	Engineering Analysis for Mechanical Engineers	3		
MEEN 368	Mechanics of Materials	3		
MEEN 363	Dynamics and Vibrations	3		
<b>Semester Hours</b>				<b>16</b>
<b>Second Semester</b>				
MEEN 360	Materials and Manufacturing Selection in Design	3		
MEEN 361	Materials and Manufacturing Selection in Design Laboratory	1		
MEEN 364	Dynamic Systems and Controls	3		
MEEN 365	Dynamic Systems and Control Laboratory	1		
MEEN 461	Heat Transfer	3		
MEEN 464	Heat Transfer Laboratory	1		
MEEN 381	Seminar	1		
MEEN 441	Design of Mechanical Components and Systems	3		
<b>Semester Hours</b>				<b>16</b>
<b>Third Semester</b>				
MEEN 391	Internship	0		
<b>Semester Hours</b>				<b>0</b>
<b>Senior</b>				
<b>First Semester</b>				
MEEN 401	Senior Design Project I	3		
MEEN 404	Engineering Laboratory	3		
ECON 215	Economic Analysis for Engineering	2		
Technical Area Elective		3		
ENGR 482	Ethics and Engineering	3		
<b>Semester Hours</b>				<b>15</b>
<b>Total Hours</b>				<b>129</b>