

**Al Ghurair University**  
**College of Engineering and Computing**  
**Bachelor of Science in Mechanical Engineering**

**Eight-Semester Curriculum Plan**

Freshman Year							
Fall Semester				Winter Semester			
Course Code	Course Title	Cr*	Pre-requisite	Course Code	Course Title	Cr*	Pre-requisite
CHM 111	General Chemistry	3-2-2	None	ENL 102	Communication Skills	3-3-0	None
MAT 111	Calculus I	3-3-0	None	MAT 112	Calculus II	3-3-0	MAT 111
PHY 111	Engineering Physics I	3-2-2	None	MAT 113	Linear Algebra and Complex Variables	3-3-0	MAT 111
SAT 103	Computer Application and Technology	3-3-0	None	ENL 101	English Composition	3-3-0	None
SAT 102	Fundamentals of Statistics	3-3-0	None	PHY 112	Engineering Physics II	3-2-2	PHY 111
SAT 105	General Science	3-3-0	None	ENL 103	Technical Writing	3-3-0	None
<b>TOTAL CREDITS</b>		<b>18</b>		<b>TOTAL CREDITS</b>		<b>18</b>	
Sophomore Year							
MEC 210L	Engineering Drawing and Workshop	2-0-4	None	MEC 222	Dynamics	3-3-0	MEC 220
MEC 220	Statics	3-3-0	PHY 111	MEC 232	Mechanics of Materials	3-3-0	<b>MEC 220</b> <b>MEC 230</b>
SAH 103	Reasoning and Critical Thinking	3-3-0	None	MAT 216	Introduction to MATLAB	1-0-2	MAT 113
MEC 230	Materials Science	3-3-0	CHM 111	ENL 104	Research and Learning Skills	3-3-0	None
MEC 240	Thermodynamics	3-3-0	PHY 111	MEC 242	Fluid Mechanics	3-3-0	MAT 112
MAT 214	Differential Equations	3-3-0	MAT 112	ELE 220	Electric Circuits and Devices	3-2-2	PHY 112
<b>TOTAL CREDITS</b>		<b>17</b>		<b>TOTAL CREDITS</b>		<b>16</b>	
Junior Year							
MEC 310	Engineering Measurements	3-2-2	MEC 240, MEC 242, ELE 220	MEC 312	Mechanical Vibrations	3-3-0	MEC 222, MEC 340
MEC 320	Mechanical Design I	3-3-0	MEC 232, MEC 210L	MEC 322	Mechanical Design II	3-3-0	MEC 320
MEC 342	Heat Transfer (Co-req: MEC 344L)	3-3-0	MEC 240, MEC 242	MEC 330	Manufacturing Processes (Co-req: MEC 332L)	3-3-0	MEC 232, MEC 210L
MEC 344L	Thermo fluids Laboratory (Co-req: MEC 342)	2-0-4	MEC 240, MEC 242	MEC 332L	Materials Science and Manufacturing laboratory (Co-req: MEC 330)	2-0-4	MEC 210L
MEC 340	Numerical Methods in Engineering	3-2-2	MAT 216	MAT 317	Probability Theory	3-3-0	SAT 102
MAT 318	Mathematical Methods	3-3-0	MAT 214	MEC 346	Energy Systems	3-3-0	MEC 342
<b>TOTAL CREDITS</b>		<b>17</b>		<b>TOTAL CREDITS</b>		<b>17</b>	
Senior Year							
MEC 410	System Dynamics and Control	3-2-2	MEC 310, MEC 312	MEC 440	Refrigeration and Air Conditioning	3-3-0	MEC 346
MEC 441	Advanced Fluid Mechanics	3-3-0	MEC 340, MEC 344L	MEC 442	Turbo Machinery	3-3-0	MEC 342
MEC 396	Internship	3-3-0	≥80 Credits	SAH 102	Islamic Studies	3-3-0	None
MEC 490	Design Project	3-1-4	MEC 322, MEC 342	SAH 101	UAE Society	3-3-0	None
MEC 4xx	Major Elective 1	3-3-0		MEC 4xx	Major Elective 3	3-3-0	
MEC 4xx	Major Elective 2	3-3-0		MEC 4xx	Major Elective 4	3-3-0	
<b>TOTAL CREDITS</b>		<b>18</b>		<b>TOTAL CREDITS</b>		<b>18</b>	

\* (Credit-Lecture Hours-Lab Hours)

## List of Electives (BSME Program)

Table - List of elective courses of BSME Program

Course Code	Course Title	Credit	Prerequisite	Co-requisite
MEC 420	Introduction to Robotics	3-3-0	MEC 410	-
MEC 422	Vehicle Dynamics	3-3-0	MEC 312	-
MEC 432	Advanced Mechanics of Materials	3-3-0	MEC 320	-
MEC 434	Composite Materials	3-3-0	MEC 320, MEC 340	-
MEC 436	Applied Finite Element Analysis	3-3-0	MEC 320 MEC 342	-
MEC 438	Micro-electromechanical Systems	3-3-0	MEC 322	-
MEC 444	Internal Combustion Engines	3-3-0	MEC 346	-
MEC 446	Renewable Energy Systems	3-3-0	MEC 346	-
MEC 448	Piping Systems	3-3-0	MEC 320, MEC 342	-
MEC 450	Computational Fluid Dynamics	3-3-0	MEC 342	-
MEC 452	Fuel Cells	3-3-0	MEC 346	-
MEC 454	Energy Conservation and Management	3-3-0	MEC 346	-

### NOTES:

1. MEC 396 will be offered in Fall and Winter semesters.
2. The prerequisites of the Elective courses will be as per in the syllabus of the elective offered.
3. The students has to complete required number of hours as per written in the syllabus of work in an organization recommended by the CAPPS.