

B.Sc. Mechanical Engineering

(From 2019 Intake----- Onwards)

1st Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
HU-101	Functional English	2	0	Humanities	No
MS-101	Health, Safety and Environment	1	0	Management Sciences	No
NS-101	Calculus and Analytical Geometry	3	0	Natural Sciences	No
NS-102	Applied Chemistry	2	0	Natural Sciences	No
CS-101	Computer Systems and Programming	2	1	Computing	No
ME-111	Engineering Drawing and Graphics	2	1	Engineering Foundation	No
ME-131	Workshop Practice	1	1	Engineering Foundation	No
	Total	13	3		
	Semester Total for Theory & Lab	16			

2nd Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
EE-102	Electrical Engineering	2	1	Inter-Disciplinary	No
NS-103	Applied Physics	2	1	Natural Sciences	No
NS-104	Linear Algebra and Ordinary Differential Equations	3	0	Natural Sciences	No
ME-112	Engineering Mechanics-I: Statics	3	0	Engineering Foundation	No
ME-113	Engineering Materials	2	1	Engineering Foundation	No

ME-114	Computer Aided Drawing	0	1	Engineering Foundation	No
ME-121	Fluid Mechanics-I	3	0	Engineering Foundation	No
	Total	15	4		
	Semester Total for Theory & Lab	19			
	Total for 1st Year	35			

3rd Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
NS-205	Complex Variables and Transforms	3	0	Natural Sciences	No
ME-211	Engineering Mechanics-II: Dynamics	2	0	Engineering Foundation	No
ME-212	Engineering Mechanics Lab	0	1	Engineering Foundation	No
ME-213	Mechanics of Materials-I	3	0	Engineering Foundation	No
ME-221	Fluid Mechanics-II	3	0	Major Based Core (Breadth)	No
ME-222	Fluid Mechanics Lab	0	1	Major Based Core (Breadth)	No
ME-223	Thermodynamics-I	3	0	Engineering Foundation	No
ME-231	Manufacturing Processes-I	2	0	Engineering Foundation	No
	Total	16	2		
	Semester Total for Theory & Lab	18			

4th Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
HU-202	Islamic Studies	2	0	Humanities	No
NS-206	Numerical Analysis	3	0	Natural Sciences	No
ME-214	Mechanics of Materials-II	3	0	Major Based Core (Breadth)	No
ME-215	Mechanics of Materials Lab	0	1	Major Based Core (Breadth)	No
ME-216	Machine Design -I	2	0	Major Based Core (Breadth)	No
ME-224	Thermodynamics-II	2	0	Major Based Core (Breadth)	No
ME-225	Thermodynamics Lab	0	1	Major Based Core (Breadth)	No
ME-232	Manufacturing Processes-II	2	0	Major Based Core (Breadth)	No
ME-233	Manufacturing Processes Lab	0	1	Major Based Core (Breadth)	No
	Total	14	3		
	Semester Total for Theory & Lab	17			
	Total for Second Year	35			

5th Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
EE-303	Electronics Engineering	2	1	Inter-Disciplinary	No
HU-303	Communication Skills	1	1	Humanities	No
NS-307	Applied Statistics	2	0	Natural Sciences	No
ME-311	Machine Design-II	3	0	Major Based Core	No

				(Breadth)	
ME-312	Computer Aided Engineering	0	1	Major Based Core (Breadth)	No
ME-321	Heat and Mass Transfer	3	0	Major Based Core (Breadth)	No
ME-331	Measurement & Instrumentation	2	0	Engineering Foundation	No
	Total	13	3		
	Semester Total for Theory & Lab	16			

6th Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
MS-302	Engineering Economics	2	0	Management Sciences	No
HU-304	Technical Report Writing & Presentation Skills	2	0	Humanities	No
ME-313	Mechanics of Machines	3	0	Engineering Foundation	No
ME-322	Refrigeration and Air Conditioning	3	0	Major Based Core (Depth)	No
ME-323	Heat Transfer and R & A/C Lab	0	1	Major Based Core (Depth)	No
ME-324	Power Plants	2	0	Major Based Core (Depth)	No
ME-332	Control Engineering	3	0	Major Based Core (Breadth)	No
ME-333	M&I and Control Lab	0	1	Major Based Core (Breadth)	No
	Total	15	2		
	Semester Total for Theory & Lab	17			
	Total for Third Year	33			

7th Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
MS-403	Management Elective	2	0	Management Sciences	No
HU-405	Pakistan Studies	2	0	Humanities	No
ME-411	Mechanical Vibrations	3	0	Major Based Core (Depth)	No
ME-412	Mechanisms and Mechanical Vibrations Lab	0	1	Major Based Core (Depth)	No
ME-421	Internal Combustion Engines	3	0	Major Based Core (Depth)	No
ME-422	Power Plants and IC Engines Lab	0	1	Major Based Core (Depth)	No
ME-4XY	Technical Elective-I	2	1	Major Based Core (Depth)	No
ME-499	Design Project-I	0	3	Senior Design Project	No
	Total	12	6		
	Semester Total for Theory & Lab	18			

8th Semester

Course Code	Course Title	Credit Hours		Knowledge Area	Pre-Requisite Courses (if any)
		Theory	Lab		
MS-404	Entrepreneurship	1	0	Management Sciences	No
HU-406	Social Sciences	2	0	Humanities	No
ME-413	Finite Element Methods	2	1	Major Based Core (Breadth)	No
ME-4XY	Technical Elective-II	3	0	Major Based Core (Depth)	No

ME-4XY	Technical Elective-III	2	1	Major Based Core (Depth)	No
ME-499	Design Project-II	0	3	Senior Design Project	No
	Total:	10	5		
	Semester Total for Theory & Lab	15			
	Total for Final Year	33			
	Grand Total for Four Years	136			

List of Electives

Area of Specialization	Sr. No.	Course Code	Course Title	Credit Hours	Knowledge Area	Pre-Requisite Courses (if any)
Applied Mechanics and Design	1	ME-414	Tribology	2+1	Major Based Core (Depth)	No
	2	ME-415	Mechanical Engineering Design Analysis	2+1	Major Based Core (Depth)	No
	3	ME-416	Stress Analysis	2+1	Major Based Core (Depth)	No
	4	ME-417	Composite Materials	2+1	Major Based Core (Depth)	No
Thermo-Fluids	1	ME-423	Renewable Energy Technology	2+1	Major Based Core (Depth)	No
	2	ME-424	Gas Dynamics	2+1	Major Based Core (Depth)	No
	3	ME-425	Aerodynamics	2+1	Major Based Core (Depth)	No
	4	ME-426	Computational Fluid Dynamics (CFD)	2+1	Major Based Core (Depth)	No
	5	ME-427	Nuclear Engineering	2+1	Major Based Core (Depth)	No
	6	ME-428	Automotive Engineering	2+1	Major Based Core (Depth)	No
Manufacturing Systems	1	ME-431	Advanced Manufacturing Systems	2+1	Major Based Core (Depth)	No

	2	ME-432	Introduction to Mechatronics	2+1	Major Based Core (Depth)	No
	3	ME-433	Robotics	2+1	Major Based Core (Depth)	No
	4	ME-434	Maintenance Engineering	2+1	Major Based Core (Depth)	No
Management Sciences	1	MS-403	Operations Management	2+0	Management Sciences	No
	2	MS-405	Total Quality Management	2+0	Management Sciences	No
	3	MS-406	Project Management	2+0	Management Sciences	No
	4	MS-407	Operations Research	2+0	Management Sciences	No
	5	MS-408	Engineering Law	2+0	Management Sciences	No
	8	MS-409	Supply Chain Management	2+0	Management Sciences	No

Curriculum Design

Domain	Knowledge Area	No. of Courses	Total Credits	Overall % age	HEC Recommendation
Non-Engineering	Humanities	6	12	27.2%	25-35%
	Management Sciences	4	6		
	Natural Sciences	7	19		
Engineering	Interdisciplinary	2	6	72.8%	65-75%
	Core Engineering	39	87		
	Design Project	2	6		