

**Kolhapur Institute of Technology's
College of Engineering (Autonomous),
Kolhapur**



KOLHAPUR INSTITUTE
OF TECHNOLOGY'S
**COLLEGE OF
ENGINEERING**
(AUTONOMOUS),
KOLHAPUR



Department of Mechanical Engineering
Curriculum and Syllabus for
B. Tech. Mechanical Engineering
Scheme: 2023-24 (As Per NEP)

As per NEP Guidelines

Proposed Scheme of Credit Distribution

Year											
		FY		SY		TY		B. Tech.			
Sr No		I	II	III	IV	V	VI	VII	VIII	Actual	NEP Guidelines
1	Basic Science course	8	8							16	14-18
2	Engineering Science course	7	6							13	12-16
3	Programme Core Courses	3		16	15	10	10	11		61	44-56
4	Programme Elective course					3	4	3	6	16	20
5	Multi Minor			2	3	3	3	3		14	14
6	Open elective					3	3	2		8	8
7	Vocational and Skill Enhancement course	1	3		1		1			6	8
8	Ability enhancement course		3			1				4	4
9	Entrepreneurship /Economics/ Management courses (Mgt/Economics/Mkt/Finance)			2		2				4	4
10	Indian knowledge system	2								2	2
11	Value Education course			2	2					4	4
12	Research Methodology (Project)							4		4	4
13	Comm.Engg Project/Field Project (PBL/Seminar/Mini Project)					1	1			2	2
14	Project								4	4	4
15	Internship/OJT (PBL/Seminar/Mini Project/Virtual Internship/Physical)			1	1				6	8	12
16	Co curricular courses		1		1		1		1	4	4
		20-22	20-22	20-22	20-22	20-22	20-22	20-22	20-22	174	
		21	21	23	23	23	23	23	17	174	

SEMESTER III											
Sr. No.	Category	Course Code	Course Name	L	T	P	Hrs. / Week	Credits	Evaluation Scheme		
									Component	Marks	
										Max	Min
1	PC	UMEPC0301	Mathematics for Mechanical Engineering	3	1	0	4	4	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
2	PC	UMEPC0302	Applied Thermodynamics	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
3	PC	UMEPC0303	Materials Engineering	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
4	PC	UMEPC0304	Analysis of Mechanical Elements	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
5	VEC	UMEVE0305	Environmental Studies	2	0	0	2	2	ISE	50	20
6	HSSM	UMEEM0306	Finance Management	2	0	0	2	2	ESE	50	20
7	PC	UMEPC0331	Materials Engineering Laboratory	0	0	2	2	1	ISE	25	10
									ESE(POE)	25	10
8	PC	UMEPC0332	Object Oriented Programming Laboratory	0	0	2	2	1	ISE	50	20
									ESE(POE)	25	10
9	PC	UMEPC0333	Thermal Engineering Laboratory	0	0	2	2	1	ISE	25	10
10	OJT	UMEIL0371	Project Laboratory	0	0	2	2	1	ISE	50	20
11	MM	UMEMM034*	Multi Disciplinary Minor	2	0	0	2	2	ESE	100	40
Total:							27	23	Total Marks: 800 Total Credit: 23		

SEMESTER IV

Sr. No.	Category	Course Code	Course Name	L	T	P	Hrs. / Week	Credits	Evaluation Scheme		
									Component	Marks	
										Max	Min
1	PC	UMEPC0401	Metrology	2	0	0	2	2	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
2	PC	UMEPC0402	Manufacturing Technology and Processes	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
3	PC	UMEPC0403	Fluid Mechanics and Hydraulic Machines	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
4	PC	UMEPC0404	Control Systems Engineering	2	0	0	2	2	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
5	PC	UMEPC0405	Theory of Machines	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
6	VEC	UMEVE0406	Constitution of India	2	0	0	2	2	ISE	50	20
7	PC	UMEPC0431	Fluid Mechanics and Hydraulic Machines Laboratory	0	0	2	2	1	ISE	25	10
									ESE(POE)	25	10
8	PC	UMEPC0432	Theory of Machines Laboratory	0	0	2	2	1	ISE	25	10
									ESE(POE)	25	10
9	OJT	UMEIL0471	Workshop Practice	0	0	2	2	1	ISE	25	10
10	VSEC	UMEVS0433	Geometrical Dimensioning and Tolerances Laboratory	0	0	2	2	1	ISE	25	10
11	CC	UMECC0434	Co-Curricular Activities-II	0	0	2	2	1	ISE	50	20
12	MM	UMEMM044*	Multi-Disciplinary Minor	3	0	0	3	3	ESE	100	40
Total:							28	23	Total Marks: 800 Total Credit: 23		

SEMESTER V

Sr. No.	Category	Course Code	Course Name	L	T	P	Hrs. / Week	Credits	Evaluation Scheme			
									Component	Marks		
										Max	Min	
1	PC	UMEPC0501	Design of Machine Elements	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
2	PC	UMEPC0502	Mechanical Vibrations	2	0	0	2	2	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
3	PC	UMEPC0503	Heat Transfer	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
4	PEC	UMEPE051*	Program Elective-I	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
5	OE	UMEEOE052*	Open Elective-I	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
6	HSSM	UMEEM0504	Supply Chain Management	2	0	0	2	2	ESE	50	20	
7	PC	UMEPC0531	Heat Transfer Laboratory	0	0	2	2	1	ISE	25	10	
									ESE(POE)	25	10	
8	PC	UMEPC0532	Mechanical Vibrations Laboratory	0	0	2	2	1	ISE	25	10	
									ESE(POE)	25	10	
9	VSEC	UMEVS0533	Advanced Automobile Engineering Laboratory	0	0	2	2	1	ISE	25	10	
10	FP	UMEIL0571	Community Engagement Project	0	0	2	2	1	ISE	25	10	
11	MM	UMEMM054*	Multi Disciplinary Minor	3	0	0	3	3	ESE	100	40	
Total:							27	23	Total Marks: 800 Total Credit: 23			

SEMESTER VI

Sr. No.	Category	Course Code	Course Name	L	T	P	Hrs. / Week	Credits	Evaluation Scheme			
									Component	Marks		
										Max	Min	
1	PC	UMEPC0601	Power Plant Engineering	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
2	PC	UMEPC0602	Finite Element Analysis	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
3	PC	UMEPC0603	Mechatronics	2	0	0	2	2	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
4	PEC	UMEPE061*	Program Elective-II	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
5	OE	UMEEOE062*	Open Elective- II	3	0	0	3	3	ISE1	10		40
									MSE	30		
									ISE2	10		
									ESE	50	20	
6	AEC	UMEAEO604	Business Communication and Value Science	0	0	2	2	1	ISE	50	20	
7	PC	UMEPC0631	Power Plant Engineering Laboratory	0	0	2	2	1	ISE	25	10	
									ESE(POE)	25	10	
8	PC	UMEPC0632	Finite Element Analysis Laboratory	0	0	2	2	1	ISE	25	10	
9	PC	UMEPC0633	Mechatronics Laboratory	0	0	2	2	1	ISE	25	10	
									ESE(POE)	25	10	
10	FP	UMEIL1071	CAD/CAM/CAE Laboratory	0	0	2	2	1	ISE	25	10	
11	CC	UMECC0634	Co-Curricular Activities-III	0	0	2	2	1	ISE	50	20	
12	MM	UMEMM064*	Multi Disciplinary Minor	3	0	0	3	3	ESE	100	40	
Total:							29	23	Total Marks:850 Total Credit: 23			

SEMESTER VII

Sr. No.	Category	Course Code	Course Name	L	T	P	Hrs. / Week	Credits	Evaluation Scheme		
									Component	Marks	
										Max	Min
1	PC	UMEPC0701	Industrial Automation and Robotics	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
2	PC	UMEPC0702	Advanced Manufacturing Engineering	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
3	PC	UMEPC0703	HVAC and Refrigeration Systems	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
4	PEC	UMEPE071*	Program Elective-III	3	0	0	3	3	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
5	OE	UMEOE072*	Open Elective- III	2	0	0	2	2	ISE1	10	40
									MSE	30	
									ISE2	10	
									ESE	50	
6	PC	UMEPC0731	Industrial Automation and Robotics Laboratory	0	0	2	2	1	ISE	25	10
									ESE(OE)	25	10
7	PC	UMEPC0732	HVAC and Refrigeration Laboratory	0	0	2	2	1	ISE	25	10
									ESE(POE)	25	10
8	RM	UMEIL0771	Project-I	0	0	8	8	4	ISE	75	30
									ESE(OE)	25	10
9	MM	UMEMM074*	Multi Disciplinary Minor	3	0	0	3	3	ESE	100	40
Total:							29	23	Total Marks: 800 Total Credit: 23		

SEMESTER VIII

Sr. No.	Category	Course Code	Course Name	L	T	P	Hrs. / Week	Credits	Evaluation Scheme			
									Component	Marks		
										Max	Min	
1	PEC	UMEPE081*	Program Elective-IV	3	0	0	3	3	ISE1	10	20	40
									MSE	30		
									ISE2	10		
									ESE	50		
2	PEC	UMEPE081*	Program Elective-V	3	0	0	3	3	ISE1	10	20	40
									MSE	30		
									ISE2	10		
									ESE	50		
3	RP	UMEIL0871	Project-II	0	0	8	8	4	ISE	50	20	40
									ESE(OE)	50	20	
4	OJT	UMEIL0872	Internship	0	0	12	12	6	ISE	75	30	
									ESE(OE)	75	30	
5	CC	UMECC0831	Co-Curricular Activities-IV	0	0	2	2	1	ISE	50	20	
Total:							28	17	Total Marks: 500 Total Credit: 17			

Program Electives:**PROGRAM ELECTIVE -1**

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEPE0511	Automobile and EV Technology	3	0	0	3	3
2	UMEPE0512	Tribology	3	0	0	3	3
3	UMEPE0513	Machine Tool Design	3	0	0	3	3
4	UMEPE0514	Design Thinking	3	0	0	3	3
Total:						3	3

PROGRAM ELECTIVE-II

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEPE0611	Fault Diagnosis and Condition Monitoring	3	0	0	3	3
2	UMEPE0612	Metal Forming and Joining Technology	3	0	0	3	3
3	UMEPE0613	Advanced Automobile Design*(Tata Tech)	3	0	0	3	3
4	UMEPE0614	Introduction to CFD	3	0	0	3	3
Total:						3	3

PROGRAM ELECTIVE-III

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEPE0711	Design of Mechanical Systems	3	0	0	3	3
2	UMEPE0712	Engineering Management	3	0	0	3	3
3	UMEPE0713	Enterprise Resource Planning	3	0	0	3	3
4	UMEPE0714	Thermal Management and Electronic Packaging	3	0	0	3	3
Total:						3	3

PROGRAM ELECTIVE-IV

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEPE0811	Six Sigma in Quality Management	3	0	0	3	3
2	UMEPE0812	Industrial Engineering	3	0	0	3	3
3	UMEPE0813	Advanced Energy Technology	3	0	0	3	3
4	UMEPE0814	Operations Research	3	0	0	3	3
Total:						3	3

PROGRAM ELECTIVE-V

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEPE0815	Advanced Composites	3	0	0	3	3
2	UMEPE0816	Industry 5.0	3	0	0	3	3
3	UMEPE0817	Cryogenics	3	0	0	3	3
4	UMEPE0818	Process Equipment Design	3	0	0	3	3
Total:						3	3

Multi Disciplinary Minor Courses**Track: Major in Mechanical Engineering with Minor in Artificial Intelligence and Machine Learning**

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEMM0341	Introduction to Artificial Intelligence	2	0	0	2	2
2	UMEMM0441	Introduction to Data Science	3	0	0	3	3
3	UMEMM0541	Python for Machine Learning and Data Science	3	0	0	3	3
4	UMEMM0641	Data Visualization and Analysis	3	0	0	3	3
5	UMEMM0741	Machine Learning	3	0	0	3	3
Total:						14	14

Multi Disciplinary Minor Courses**Track :Major in Mechanical Engineering with Minor in Electrical and Electronics Technology**

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEMM0342	Circuit Design and Analysis	2	0	0	2	2
2	UMEMM0442	Sensors, Electrical Machines and Drives	3	0	0	3	3
3	UMEMM0542	Signal and Image Processing	3	0	0	3	3
4	UMEMM0642	Micro Electro Mechanical Systems	3	0	0	3	3
5	UMEMM0742	Internet of Things	3	0	0	3	3
Total:						14	14

Multi Disciplinary Minor Courses**Track :Major in Mechanical Engineering with Minor in Automobile Technology**

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEMM0343	Sensors and Actuators	2	0	0	2	2
2	UMEMM0443	Numerical Methods and Simulation Techniques	3	0	0	3	3
3	UMEMM0543	Electrical and Hybrid Vehicles	3	0	0	3	3
4	UMEMM0643	Energy Storage Devices	3	0	0	3	3
5	UMEMM0743	Vehicle Management System	3	0	0	3	3
Total:						14	14

Emerging Minor Courses

Track: Emerging Minor in Green Technology

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEMN0361	Renewable Energy Systems	3	1	0	4	4
2	UMEMN0461	Industrial Waste Management and Recycling	3	1	0	4	4
3	UMEMN0561	Energy Conservation and Management	3	1	0	4	4
4	UMEMN0661	Sustainable Engineering	3	1	0	4	4
5	UMEMN0761	Energy Storage Systems	2	0	0	2	2
Total:						20	18

B Tech Honors(Core Engineering Domain) (Robotics)

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEHN0351	Fundamentals of Robotics	3	1	0	4	4
2	UMEHN0451	Fundamentals of Microcontroller	3	1	0	4	4
3	UMEHN0551	Programming and Simulation for Robotics	3	1	0	4	4
4	UMEHN0651	Robot Kinematics and Dynamics	3	1	0	4	4
5	UMEHN0751	Mini Project	0	0	4	4	2
Total:						20	18

EXIT COURSES-FIRST YEAR (CERTIFICATE COURSE)

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEEEX0291	3D Modeling Software	2	0	2	4	3
2	UMEEEX0292	Drafting Skills	2	0	2	4	3
3	UMEEEX0293	Hands-on Training in any workshop (2 Weeks)	0	0	4	4	2
Total:						12	8

EXIT COURSES-SECOND YEAR (DIPLOMA)

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEEEX0491	CNC Programming	2	0	2	4	3
2	UMEEEX0492	Minor Project	2	0	2	4	3
3	UMEEEX0493	Internship Mechanical Industry (2Week)	0	0	4	4	2
Total:						12	8

EXIT COURSES-THIRD YEAR (B.VOC.)

Sr. No.	Course Code	Course Name	L	T	P	Hrs. / Week	Credits
1	UMEEEX0691	Application of MATLAB for Mechanical Engineering	2	0	2	4	3
2	UMEEEX0692	Minor Project	2	0	2	4	3
3	UMEEEX0693	Internship Mechanical Industry (2 Week)	0	0	4	4	2
Total:						12	8

Pie chart showing the distribution of credits

