

KURUKSHETRA UNIVERSITY, KURUKSHETRA
(ESTABLISHED BY THE STATE LEGISLATURE ACT XII OF 1956)
(‘A+’ GRADE NAAC ACCREDITED) in

Scheme & Syllabus
of
B. Tech. Degree
in
Mechanical Engineering (ME)



GENERAL COURSE STRUCTURE & THEME

A. Definition of Credit*:

1 Hr. Lecture (L) per week	1 Credit
1 Hr. Tutorial (T) per week	1 Credit
1 Hr. Practical (P) per week	0.5 Credit
2 Hours Practical (P) per week	1 Credit

* Except for mandatory and value added courses.

B. Range of Credits: The total number of credits proposed for the four-year B.Tech. degree in Mechanical Engineering is kept as 172. In addition to this, for B.Tech. with Honors & specialization/minor degree, the student has to acquire additional 18-20 credits through MOOC courses offered at SWAYAM/NPTEL portal.

C. Structure of UG Program in ME:

The structure of UG program in Mechanical Engineering is having the following categories of courses with the breakup of credits as given:

S. No.	Category	Breakup of Credits (Total 172)
1	Humanities and Social Sciences including Management courses	13.5
2	Basic Science courses	28
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	24.5
4	Professional core courses	69
5	Professional Elective courses relevant to chosen Specialization/ branch	12
6	Open subjects – Electives from other technical and /or emerging subjects	6
7	Project work, seminar and internship in industry or elsewhere	11
8	Value Added and Mandatory Courses [Environmental Sciences, Induction Program, Indian Constitution, Essence of Indian Knowledge Tradition], [IDEA Workshop, Personality Development and Soft Skills, National/ International languages, NCC/NSS/Yoga/Sports/Technical and cultural activities]	8 (1 for each course)
	Total	172

D.Course code and definition:

Course code	Definitions
L	Lecture
T	Tutorial
P	Practical
C	Credits
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSC/HSM	Humanities and Social Sciences including Management courses
MEC	Program core courses
MEP	Professional Elective courses
MEO	Open Elective courses
VAC	Value Added Courses
MAC	Mandatory Courses

CATEGORY-WISE COURSES:

HUMANITIES & SOCIAL SCIENCES COURSES [HSC/HSM]

S. No	Code No.	Subject	Semester	Credits
1	B23-HSC-101	English for Technical Writing	I	2:0:2=3
2	B23-HSC-102	Design Thinking	II	0:0:3=1.5
3	B23-HSM-101	Universal Human Values- II: Understanding Harmony And Ethical Human Conduct	II	3:0:0=3
4	B23-HSM-202	Innovation, Start-up and Entrepreneurship	IV	3:0:0=3
5	B23-HSM-201	Organizational Behaviour	V	3:0:0=3
Total				13.5

BASIC SCIENCE COURSES [BSC]

S. No	CodeNo.	Subject	Semester	Credits
1	B23-BSC-104	Engineering Chemistry	I	3:0:2=4
2	B23-BSC-107	Mathematics-I	I	3:1:0=4
3	B23-BSC-106	Biology	I	3:0:0=3
4	B23-BSC-102	Introduction to Electromagnetic Theory	II	3:1:2=5
5	B23-BSC-108	Mathematics-II	II	3:1:0=4
6.	B23-BSC-203	Mathematics-III	III	3:1:0=4
7.	B23-BSC-201	Oscillations, Waves and Optics	III	3:1:0=4
Total				28

ENGINEERING SCIENCE COURSE [ESC]

S. No	CodeNo.	Subject	Semester	Credits
1	B23-ESC-101	Programming for Problem Solving	I	3:0:2=4
2	B23-ESC-107	Manufacturing Processes Workshop	I	0:0:3=1.5
3	B23-ESC-103	Basic Electrical and Electronics Engineering	I	3:1:2=5
4	B23-ESC-102	Engineering Graphics and Design	II	1:0:4=3
5	B23-ESC -201	Engineering Thermodynamics	III	3:1:0=4
6.	B23-ESC -203	Measurement and Control	III	3:0:0=3
7.	B23-ESC -202	Materials Engineering	IV	3:0:2=4
Total				24.5

PROGRAM CORE COURSES [MEC]

S. No	CodeNo.	Subject	Semester	Credits
1	B23-MEC-201	Theory of Machines	III	3:1:2=5
2	B23-MEC-203	Mechanics of Solids-I	III	3:1:2=5
3	B23-MEC-202	Fluid Mechanics and Machines	IV	4:1:2=6
4	B23-MEC-204	Mechanical Vibrations and Tribology	IV	3:1:2=5
5	B23-MEC-206	Mechanics of Solids-II	IV	3:1:0=4
6.	B23-MEC-208	Manufacturing Technology	IV	3:0:0=3
7.	B23-MEC-301	Heat Transfer	V	3:1:2=5
8	B23-MEC-303	Production Technology	V	3:0:2=4
9	B23-MEC-305	Mechatronics	V	3:0:2=4
10	B23-MEC-307	Design of Machine Elements	V	2:4:0=6
11	B23-MEC-302	Production and Operation Management	VI	3:0:0=3
12	B23-MEC-304	Computer Aided Design and Manufacturing	VI	3:0:2=4
13	B23-MEC-306	Refrigeration and Air-conditioning	VI	3:1:2=5
14	B23-MEC-308	Internal Combustion Engines	VI	3:0:0=3
15	B23-MEC-401	Automobile Engineering	VII	3:0:0=3
16	B23-MEC-403	Python for Mechanical Engineering	VII	3:0:2=4
Total				69

SKILL ENHANCEMENT BASED PROJECT WORK, SEMINAR AND INTERNSHIP

S. No	Code No.	Subject	Semester	Credits
1	B23-MEC-310	Project-I	IV	0:0:4=2
2	B23-MEC-405	Project-II	VII	0:0:8=4
3	B23-MEC-402 /404/406/408	Project-IV/ Industrial Training/ Entrepreneurship/ Start-up	VIII	0:0:10=5
Total				11

PROGRAMME ELECTIVES [MEP]

Sr. No.	Subject	Semester	Credits
1	PROGRAMME ELECTIVE-I	VI	3:0:0=3
2	PROGRAMME ELECTIVE-II	VI	3:0:0=3
3	PROGRAMME ELECTIVE-III	VII	3:0:0=3
4	PROGRAMME ELECTIVE-IV	VIII	3:0:0=3
	Total		12

LIST OF PROGRAMME ELECTIVE COURSES

S.No	Code No.	Subject	Semester	Credits
1	B23-MEP-302	Renewable Energy Resources	VI	3:0:0=3
2	B23-MEP-304	Smart Materials	VI	3:0:0=3
3	B23-MEP-306	Industry 4.0	VI	3:0:0=3
4	B23-MEP-308	Welding Technology	VI	3:0:0=3
5	B23-MEP-310	Theory of Elasticity and Plasticity	VI	3:0:0=3
6	B23-MEP-312	Industrial Robotics	VI	3:0:0=3
7	B23-MEP-314	Optimization Techniques	VI	3:0:0=3
8	B23-MEP-316	Design of Transmission Systems	VI	3:0:0=3
9	B23-MEP-318	Non-Conventional Machining	VI	3:0:0=3
10	B23-MEP-320	Power Plant Engineering	VI	3:0:0=3
11	B23-MEP-322	Acoustics and Noise Control	VI	3:0:0=3
12	B23-MEP-324	Product Design and Development	VI	3:0:0=3
13	B23-MEP-401	Manufacturing Automation	VII	3:0:0=3
14	B23-MEP-403	Finite Element Analysis	VII	3:0:0=3
15	B23-MEP-405	Air-conditioning System Design	VII	3:0:0=3
16	B23-MEP-407	Non-destructive Testing	VII	3:0:0=3
17	B23-MEP-409	Computational Fluid Dynamics	VII	3:0:0=3
18	B23-MEP-411	Heating, Ventilation and Air-conditioning systems	VII	3:0:0=3
19	B23-MEP-402	Quality and Reliability Engineering	VIII	3:0:0=3
20	B23-MEP-404	Composite Materials	VIII	3:0:0=3
21	B23-MEP-406	Lubricants and Lubrication	VIII	3:0:0=3
22	B23-MEP-408	Tool Design	VIII	3:0:0=3
23	B23-MEP-410	Total Quality Management	VIII	3:0:0=3
24	B23-MEP-412	Concurrent Engineering	VIII	3:0:0=3
25	B23-MEP-414	Foundry Engineering	VIII	3:0:0=3
26	B23-MEP-416	Ergonomics	VIII	3:0:0=3

OPEN ELECTIVES

Sr. No.	Subject	Semester	Credits
1	OPEN ELECTIVE-I	VII	3:0:0=3
2	OPEN ELECTIVE-II	VIII	3:0:0=3
Total			6

LIST OF OPEN ELECTIVE COURSES [MEO]

S. No	CodeNo.	Subject	Semester	Credits
1	B23-MEO-401	Internet of Things	VII	3:0:0=3
2	B23-MEO-403	Basics of Electric Vehicle	VII	3:0:0=3
3	B23-MEO-405	Management Information System	VII	3:0:0=3
4	B23-MEO-407	Waste to Energy	VII	3:0:0=3
5	B23-MEO-409	Consumer Electronics	VII	3:0:0=3
6	B23-MEO-411	Bioinformatics	VII	3:0:0=3
7	B23-MEO-402	Intellectual Property Rights (IPR) and Regulatory Framework	VIII	3:0:0=3
8	B23-MEO-404	Digital Marketing	VIII	3:0:0=3
9	B23-MEO-406	Supply Chain Management	VIII	3:0:0=3
10	B23-MEO-408	Biomechanics	VIII	3:0:0=3
11	B23-MEO-410	Artificial Intelligence	VIII	3:0:0=3
12	B23-MEO-412	Energy Management	VIII	3:0:0=3
13	B23-MEO-414	Block Chain Technology	VIII	3:0:0=3
14	B23-MEO-416	Gender Sensitivity	VIII	3:0:0=3

VALUE ADDED AND MANDATORY COURSES [VAC/MAC]

S. No.	Course No./ Code	Subject	Semester	Hrs /Week	Credits
				L:T:P	
1	B23-VAC-101	Personality Development and Soft Skills	I	2:0:0	1
2	B23-VAC-102	IDEA Workshop Theory	II	2:0:0	1
3	B23-VAC-104	IDEA Workshop Lab	II	0:0:3	1
4	B23-VAC- 302/304/306/308/310	Hindi Language Skills/ Sanskrit Language Skills/ German Language Skills/ Japanese Language Skills/ French Language Skills	VI	2:0:0	1
5	B23-VAC-401/403/405/407/409/411	NCC/NSS/Sports/ Yoga/ Technical or Cultural Club/Society activities	VII	0:0:2	1
6	B23-MAC-201	Environmental Studies	III	3:0:0	1
7	B23-MAC-202	Essence of Indian Traditional Knowledge	IV	3:0:0	1
8	B23-MAC-301	Constitution of India	V	3:0:0	1
Total					8

SEMESTER WISE STRUCTURE

Bachelor of Technology (Mechanical Engineering), KUK
Credit-Based (2023-24 Onwards)
SCHEME OF STUDIES/EXAMINATIONS (Semester - I)

S. No.	Course No./ Code	Subject	L:T:P	Hours /Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1	B23-HSC-101	English for Technical Writing	2:0:0	2	2	70	30	--	100	3
2	B23-ESC-101	Programming for Problem Solving	3:0:0	3	3	70	30	--	100	3
3	B23-BSC-104	Engineering Chemistry	3:0:0	3	3	70	30	--	100	3
4	B23-BSC-107	Mathematics-I	3:1:0	4	4	70	30	--	100	3
5	B23-BSC-106	Biology	3:0:0	3	3	70	30	--	100	3
6	B23-HSC-103	English Language Lab	0:0:2	2	1	--	40	60	100	3
7	B23-ESC-105	Programming for Problem Solving Lab	0:0:2	2	1	--	40	60	100	3
8	B23-ESC-107	Manufacturing Processes Workshop	0:0:3	3	1.5	--	40	60	100	3
9	B23-BSC-114	Engineering Chemistry Lab	0:0:2	2	1	--	40	60	100	3
10	B23-VAC-101	Personality Development and Soft Skills	2:0:0	2	1	--	100	--	100	3
Total				26	20.5	350	410	240	1000	

Note:

- NCC/NSS/Sports/Yoga/Technical or cultural club/society activities will be joined by students in first year and will be evaluated in 7th semester by the Institute based upon continuous evaluation model as per the guidelines.

**Bachelor of Technology (Mechanical Engineering), KUK
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SCHEME OF STUDIES/EXAMINATIONS (Semester - II)

S. No.	Course No./ Code	Subject	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1	B23-HSM-101	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	3:0:0	3	3	70	30	--	100	3
2	B23-BSC-102	Introduction to Electromagnetic Theory	3:1:0	4	4	70	30	--	100	3
3	B23-ESC-102	Engineering Graphics and Design	1:0:0	1	1	70	30	--	100	3
4	B23-ESC-103	Basic Electrical and Electronics Engineering	3:1:0	4	4	70	30	--	100	3
5	B23-BSC-108	Mathematics-II	3:1:0	4	4	70	30	--	100	3
6	B23-BSC-112	Electromagnetic Lab	0:0:2	2	1	--	40	60	100	3
7	B23-ESC-106	Engineering Graphics and Design Lab	0:0:4	4	2	--	40	60	100	3
8	B23-ESC-108	Basic Electrical and Electronics Engineering Lab	0:0:2	2	1	--	40	60	100	3
9	B23-HSC-102	Design Thinking	0:0:3	2	1.5	--	100	--	100	3
10	B23-VAC-102	IDEA Workshop	2:0:0	2	1	--	100	--	100	3
11	B23-VAC-104	IDEA Workshop Lab	0:0:3	3	1	--	100	--	100	3
		Total		32	23.5	350	570	180	1100	

Bachelor of Technology (Mechanical Engineering), KUK
Credit-Based (2023-24 Onwards)
SCHEME OF STUDIES/EXAMINATIONS (Semester - III)

S. No.	Course No./ Code	Subject	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1	B23-BSC-201	Oscillations, Waves and Optics	3:1:0	4	4	70	30	--	100	3
2	B23-BSC-203	Mathematics-III	3:1:0	4	4	70	30	--	100	3
3	B23-MEC-201	Theory of Machines	3:1:0	4	4	70	30	--	100	3
4	B23-MEC-203	Mechanics of Solids-I	3:1:0	4	4	70	30	--	100	3
5	B23-ESC -201	Engineering Thermodynamics	3:1:0	4	4	70	30	--	100	3
6	B23-ESC -203	Measurement and Control	3:0:0	3	3	70	30	--	100	3
7	B23-MEC-205	Theory of Machines Lab	0:0:2	2	1	--	40	60	100	3
8	B23-MEC-207	Mechanics of Solids Lab	0:0:2	2	1	--	40	60	100	3
9	B23-MAC-201	Environmental Studies	3:0:0	3	1	--	100	--	100	3
Total				30	26	420	360	120	900	

Bachelor of Technology (Mechanical Engineering), KUK
Credit-Based (2023-24 Onwards)
SCHEME OF STUDIES/EXAMINATIONS (Semester - IV)

S. No	Course No./ Code	Subject	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1	B23-ESC -202	Materials Engineering	3:0:0	3	3	70	30	--	100	3
2	B23-MEC-202	Fluid Mechanics and Machines	4:1:0	5	5	70	30	--	100	3
3	B23-MEC-204	Mechanical Vibrations and Tribology	3:1:0	4	4	70	30	--	100	3
4	B23-MEC-206	Mechanics of Solids-II	3:1:0	4	4	70	30	--	100	3
5	B23-MEC-208	Manufacturing Technology	3:0:0	3	3	70	30	--	100	3
6	B23-HSM-202	Innovation, Start-up and Entrepreneurship	3:0:0	3	3	70	30	--	100	3
7	B23-ESC-204	Materials Engineering Lab	0:0:2	2	1	--	40	60	100	3
8	B23-MEC-210	Fluid Mechanics and Machines Lab	0:0:2	2	1	--	40	60	100	3
9	B23-MEC-212	Mechanical Vibrations and Tribology Lab	0:0:2	2	1	--	40	60	100	3
10	B23-MAC-202	Essence of Indian Traditional Knowledge	3:0:0	3	1	--	100	--	100	3
Total				31	26	420	400	180	1000	

Note:

- All students have to undertake the industrial training for 4 to 6 weeks after 4th semester which will be evaluated in 5th semester.

Bachelor of Technology (Mechanical Engineering), KUK
Credit-Based (2023-24 Onwards)
SCHEME OF STUDIES/EXAMINATIONS (Semester - V)

S. No	Course No./ Code	Subject	L:T:P	Hours /Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1	B23-MEC-301	Heat Transfer	3:1:0	4	4	70	30	--	100	3
2	B23-MEC-303	Production Technology	3:0:0	3	3	70	30	--	100	3
3	B23-MEC-305	Mechatronics	3:0:0	3	3	70	30	--	100	3
4	B23-MEC-307	Design of Machine Elements	2:4:0	6	6	70	30	--	100	3
5	B23-HSM-301	Organizational Behaviour	3:0:0	3	3	70	30	--	100	3
6	B23-MEC-309	Heat Transfer Lab	0:0:2	2	1	--	40	60	100	3
7	B23-MEC-311	Production Technology Lab	0:0:2	2	1	--	40	60	100	3
8	B23-MEC-313	Mechatronics Lab	0:0:2	2	1	--	40	60	100	3
9	*B23-MEC-315	*Industrial Training-I	2:0:0	2	--	--	100	--	100*	--
10	B23-MAC-317	Constitution of India	2:0:0	2	1	--	100	--	100	3
Total				29	23	350	370	180	900	

Note:

- *B23-MEC-315 is a mandatory credit-less course in which the students will be evaluated for the industrial training undergone after 4th semester and students will be required to get passing marks in Internal Assessment to qualify.

Bachelor of Technology (Mechanical Engineering), KUK
Credit-Based (2023-24 Onwards)
SCHEME OF STUDIES/EXAMINATIONS (Semester - VI)

S. No	Course No./ Code	Subject	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1	B23-MEC-302	Production and Operation Management	3:0:0	3	3	70	30	--	100	3
2	B23-MEC-304	Computer Aided Design and Manufacturing	3:0:0	3	3	70	30	--	100	3
3	B23-MEC-306	Refrigeration and Air-conditioning	3:1:0	4	4	70	30	--	100	3
4	B23-MEC-308	Internal Combustion Engines	3:0:0	3	3	70	30	--	100	3
5		*Program Elective-I	3:0:0	3	3	70	30	--	100	3
6		*Program Elective-II	3:0:0	3	3	70	30	--	100	3
7	B23-MEC-310	Project-I	0:0:4	4	2	--	0	100	100	3
8	B23-MEC-312	Computer Aided Design and Manufacturing Lab	0:0:2	2	1	--	40	60	100	3
9	B23-MEC-314	Refrigeration and Air-conditioning Lab	0:0:2	2	1	--	40	60	100	3
10	B23-VAC-302/304/306/308/310	Hindi Language Skills/ Sanskrit Language Skills/ German Language Skills/ Japanese Language Skills/ French Language Skills	2:0:0	2	1	--	100	--	100	3
Total				29	24	420	360	220	1000	

*Program Elective-I		*Program Elective-II	
Course No.	Course Name	Course No.	Course Name
B23-MEP-302	Renewable Energy Resources	B23-MEP-314	Optimization Techniques
B23-MEP-304	Smart Materials	B23-MEP-316	Design of Transmission Systems
B23-MEP-306	Industry 4.0	B23-MEP-318	Non-Conventional Machining
B23-MEP-308	Welding Technology	B23-MEP-320	Power Plant Engineering
B23-MEP-310	Theory of Elasticity and Plasticity	B23-MEP-322	Acoustics and Noise Control
B23-MEP-312	Industrial Robotics	B23-MEP-324	Product Design and Development

Note: * The course of Program Elective will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.

➤ **All students have to undertake the industrial training for 4 to 6 weeks after 6th semester which will be evaluated in 7th semester.**

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SCHEME OF STUDIES/EXAMINATIONS (Semester - VII)

S. No.	Course No./ Code	Subject	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1		*Program Elective-III	3:0:0	3	3	70	30	--	100	3
2		**Open Elective-I	3:0:0	3	3	70	30	--	100	3
3	B23-MEC-401	Automobile Engineering	3:0:0	3	3	70	30	--	100	3
4	B23-MEC-403	Python for Mechanical Engineering	3:0:0	3	3	70	30	--	100	3
5	B23-MEC-405	Project-II	0:0:8	8	4	--	100	100	200	3
6	B23-MEC-407	Python for Mechanical Engineering Lab	0:0:2	2	1	--	40	60	100	3
7	#B23-MEC-409	Industrial Training-II	2:0:0	2	--	--	100	--	100 [#]	
8	#B23-MEC-411	Seminar	0:0:2	2	--	--	100	--	100 [#]	
9	B23-VAC-401/403/405/407/409/411	NCC/NSS/Sports/ Yoga/ Technical or Cultural Club/Society activities	2:0:0	2	1	--	100	--	100	3
		Total		28	18	280	260	160	700	

*Program Elective-III			**Open Elective-I		
Course No.	Course Name		Course No.	Course Name	
B23-MEP-401	Manufacturing Automation		B23-MEO-401	Internet of Things	
B23-MEP-403	Finite Element Analysis		B23-MEO-403	Basics of Electric Vehicle	
B23-MEP-405	Air-conditioning System Design		B23-MEO-405	Management Information System	
B23-MEP-407	Non-destructive Testing		B23-MEO-407	Waste to Energy	
B23-MEP-409	Computational Fluid Dynamics		B23-MEO-409	Consumer Electronics	
B23-MEP-411	Heating, Ventilation and Air-conditioning systems		B23-MEO-411	Bioinformatics	

Note: The course of both Program Elective and Open Elective will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.

- **#B23-MEC-409 and B23-MEC-411 are mandatory credit-less courses in which the students will be evaluated for the industrial training undergone after 6th semester and Seminar on the thrust of the discipline. Students will be required to get passing marks to qualify.**
- ***B23-VAC-401/403/405/407/409/411 are single credit value added courses in which NCC/NSS/Sports/Yoga/Technical or Cultural Club/Society activities will be joined by students in first year and will be evaluated in 7th semester by the institute based upon continuous evaluation model as per guidelines.**

Bachelor of Technology (Mechanical Engineering), KUK
Credit-Based (2023-24 Onwards)
SCHEME OF STUDIES/EXAMINATIONS (Semester - VIII)

S. No	Course No./ Code	Subject	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of exam (Hours)
						End Semester Exam	Internal Assessment	Practical Exam	Total	
1		*Program Elective-IV	3:0:0	3	3	70	30	--	100	3
2		**Open Elective-II	3:0:0	3	3	70	30	--	100	3
3.	B23-MEC-402/404 /406/408	Project-IV/ Industrial Training/ Entrepreneurship/ Start-up	0:0:10	10	5		100	100	200	3
Total				16	11	140	160	100	400	

*Program Elective-IV		**Open Elective-II	
Course No.	Course Name	Course No.	Course Name
B23-MEP-402	Quality and Reliability Engineering	B23-MEO-402	Intellectual Property Rights (IPR) and Regulatory Framework
B23-MEP-404	Composite Materials	B23-MEO-404	Digital Marketing
B23-MEP-406	Lubricants and Lubrication	B23-MEO-406	Supply Chain Management
B23-MEP-408	Tool Design	B23-MEO-408	Biomechanics
B23-MEP-410	Total Quality Management	B23-MEO-410	Artificial Intelligence
B23-MEP-412	Concurrent Engineering	B23-MEO-412	Energy Management
B23-MEP-414	Foundry Engineering	B23-MEO-414	Block Chain Technology
B23-MEP-414	Ergonomics	B23-MEO-416	Gender Sensitivity

Note:

- **The Program Elective and Open Elective will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.**
- **In case of semester-long project work/training done in industry, the Program Elective- IV and Open Elective-II may be offered in online mode through MOOC courses from SWAYAM/NPTEL.**

Mechanical Engineering

Students of Mechanical Engineering are offered to earn **ADDITIONAL 18-20 CREDITS** through MOOCs/SWAYAM courses as per the 'Guidelines to implement the SWAYAM/MOOCs/ other authorized online courses (OAOC) of Kurukshetra University, Kurukshetra' in any of the emerging areas mentioned below for the award of the degree of:

- 1. B.Tech. (Hons.) Mechanical Engineering with Specialization in 3D Printing**
- 2. B.Tech. (Hons.) Mechanical Engineering with Specialization in Electric Vehicles**
- 3. B.Tech. (Hons.) Mechanical Engineering with Specialization in Energy Engineering**
- 4. B.Tech. (Hons.) Mechanical Engineering with Specialization in Robotics**
- 5. B.Tech. (Hons.) Mechanical Engineering with Specialization in Mechatronics**
- 6. B.Tech. Mechanical Engineering with Minor Degree in Artificial Intelligence and Machine Learning**
- 7. B.Tech. Mechanical Engineering with Minor Degree in Blockchain**
- 8. B.Tech. Mechanical Engineering with Minor Degree in Data Science**
- 9. B.Tech. Mechanical Engineering with Minor Degree in Internet of Things (IoT)**
- 10. B.Tech. Mechanical Engineering with Minor Degree in Cyber Security**
- 11. B.Tech. Mechanical Engineering with Minor Degree in Computer Science and Biology**
- 12. B.Tech. Mechanical Engineering with Minor Degree in Drug Engineering**
- 13. B.Tech. Mechanical Engineering with Minor Degree in Genome Engineering and Technology**