Department of Mechanical Engineering
Dayananda Saar University
School of Engineering
Harohalli, Kanakapura Road, Bengaluru South Dt. – 562 112

SCHEME

B.Tech. PROGRAMME– 2023 BATCH

Department of Mechanical Engineering
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Definitions / Descriptions

Definition of Credit:	
1 Hour Lecture (L) Per Week	01 Credit
1 Hour Tutorial (T) Per Week	0.5 Credit
1 Hour Practical (P) Per Week	0.5 Credit
1 Hour Project (J) Per Week	0.5 Credit

Course code and Definition:	
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSMC	Humanities and Social Sciences including Management Courses
IPCC	Integrated Professional Core Course
PCC	Professional Core Courses
PEC	Professional Elective Courses
OEC	Open Elective Courses
SEC	Skill Enhancement Courses
UHV	Universal Human Value Course
PROJ	Project Work
INT	Internship

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Implementation of National Education Policy (NEP) 2020 for the B.Tech students of Batch 2023-24

The implementation of Curriculum follows NEP 2020 and addresses the following features and categories of courses:

1. Student Centric flexible curriculum.
2. Inter-disciplinary Courses,
3. Multi-disciplinary Courses,
4. Ability Enhancement Courses,
5. Skill Enhancement Courses,
6. Value Added Courses,
7. Product Design and Development,
8. Internship (Rural Internship, Industry Internship, Research/Development Internship), and
9. Multiple Exit and Multiple Entry
    - Certificate in Engineering after completion of first year.
    - Diploma in Engineering after completion of second year.
    - Advanced Diploma in Engineering after completion of third year.
    - Degree in Engineering after completion of fourth year

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SCHEME 2023 – 2027 Batch

Department of Mechanical Engineering

III SEMESTER													
S. N	Course Type	Course Code	Course Name	Teaching Department	Teaching Hours / Week				Examination				Credits
					Lecture	Tutorial	Practical	Project	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	J					
1	BSC	23ME2301	Transforms and Numerical Techniques	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC	23ME2302	Engineering Materials	Mech	2	0	2	0	04	60	40	100	**3**
3	IPCC	23ME2303	Fluid Mechanics and Machines	Mech	3	0	2	0	05	60	40	100	**4**
4	IPCC	23ME2304	Machining Process and Metrology	Mech	2	0	2	0	04	60	40	100	**3**
4	PCC	23ME2305	Thermodynamics	Mech	3	0	0	0	03	60	40	100	**3**
5	IPCC	23ME2306	Computer Aided Machine Drawing	Mech	1	0	4	0	05	60	40	100	**3**
6	AEC	23LSXXXX	Liberal Studies – I	Any Dept.	1	0	0	0	01	100	--	100	**1**
7	SEC	23ME23XX	Skill Enhancement Course – I	Mech	0	0	4	0	04	100	--	100	**2**
8	SEC	23ME2308	Cognitive and Technical Skills -III	--	0	0	4	0	04				**2**
			Total		15	0	18	0	33				**24**

Skill Enhancement Course – I			
23ME2309	Autodesk Innovation Lab		

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IV SEMESTER													
S. N	**Course Type**	**Course Code**	**Course Name**	**Teaching Department**	**Teaching Hours / Week**				**Examination**				**Credits**
					Lecture	**Tutorial**	**Practical**	**Project**	**Duration in Hours**	**CIE Marks**	**SEE Marks**	**Total Marks**	
					L	**T**	**P**	**J**					
1	BSC	23ME2401	Probability and Statistics	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC	23ME2402	Applied Thermal Systems	Mech	3	0	2	0	05	60	40	100	**4**
3	PCC	23ME2403	Kinematics and Dynamics of Machines	Mech	3	0	0	0	03	60	40	100	**3**
4	PCC	23ME2404	Mechanics of Solids	Mech	3	0	0	0	03	60	40	100	**3**
5	IPCC	23ME2405	Heat Transfer	Mech	3	0	2	0	05	60	40	100	**4**
6	IPCC	23ME2406	Machine learning	Mech	2	0	2	0	04	60	40	100	**3**
7	SEC	23ME24XX	Skill Enhancement Course – II	Mech	0	0	4	0	04	100	--	100	**2**
8	SEC	23ME2407	Cognitive and Technical Skills -IV	--	0	0	4	0	04				**2**
			Total		17	0	14		31				**24**

Skill Enhancement Course – II			
23ME2408	Bosch Rexroth Innovation Lab		

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V SEMESTER													
S. N	Course Type	Course Code	Course Name	Teaching Department	Teaching Hours / Week				Examination				Credits
					Lecture	Tutorial	Practical	Project	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	J					
1	PCC	23ME3501	Embedded Systems	Mech/ECE	3	0	0	0	03	60	40	100	3
2	PCC	23ME3502	Finite Element method	Mech/CSE	2	0	2	0	04	60	40	100	**3**
3	IPCC	23ME3503	Design of Machine Elements	Mech	3	0	2	0	05	60	40	100	**4**
4	IPCC	23ME3504	Industrial Automation and Robotics	Mech	2	0	2	0	04	60	40	100	**3**
5	IPCC	23ME3505	Thermal management of Electronic devices	Mech	2	0	2	0	04	60	40	100	**3**
6	PEC	23ME35XX	Professional Elective Course – I/MOOC	Mech	3	0	0	0	03	60	40	100	**3**
7	SEC	23ME35XX	Skill Enhancement Course – III	Mech	0	0	4	0	04	100	-	100	**2**
8	SEC	23ME3506	Cognitive and Technical Skills -V	--	0	0	0	0	0	--	--	P/F	0
			Total		15	0	12	0	27				**21**

Skill Enhancement Course – III			
23ME3507	CAE Lab-I (CATIA)		
23ME3508	CAE Lab-II (ANSA)		
23ME3509	ABAQUS		

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VI SEMESTER													
S.N	**Course Type**	**Course Code**	**Course Name**	**Teaching Department**	**Teaching Hours / Week**				**Examination**				Credits
					Lecture	**Tutorial**	**Practical**	**Project**	**Duration in Hours**	**CIE Marks**	**SEE Marks**	**Total Marks**	
					L	**T**	**P**	**J**					
1	HSMC	23ME3601	Innovation in Management and Entrepreneurship	Mech/Guest	2	0	0	0	02	60	40	100	**2**
2	IPCC	23ME3602	Introduction to Additive Manufacturing	Mech	2	0	2	0	04	60	40	100	**3**
3	PCC	23ME3603	Noise Vibration and Harshness (NVH)	Mech	3	0	2	0	05	60	40	100	**4**
4	PCC	23ME3604	Quality and Reliability	Mech	3	0	0	0	03	60	40	**100**	**3**
5	OEC	23OEXXXX	Open Elective – I	---	3	0	0	0	03	60	40	100	**3**
6	PEC	23ME36XX	Professional Elective Course – II/MOOC	Mech	3	0	0	0	03	60	40	100	**3**
7	PEC	23ME36XX	Professional Elective Course – III	Mech	3	0	0	0	03	60	40	100	**3**
8	SEC	23ME3605	Cognitive and Technical Skills -VI		-	-	-	-	-	--	--	**P/F**	0
			Total		19	0	04	0	23				**21**

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VII SEMESTER													
S. N	Course Type	Course Code	Course Name	Teaching Department	Teaching Hours / Week				Examination				Credits
					Lecture	Tutorial	Practical	Project	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	J					
1	HSMC		Fundamentals of Economics	Mech	3	0	0	0	03	60	40	100	**3**
2	IPCC		Instrumentation and Control	Mech	2	0	2	0	04	60	40	100	**3**
3	OEC		Open Elective – II	--	3	0	0	0	03	60	40	100	**3**
4	PEC		Professional Elective Course – IV / MOOC	Mech	3	0	0	0	03	60	40	100	**3**
5	PEC		Professional Elective Course – V	Mech	3	0	0	0	03	60	40	100	**3**
6	PROJ		Capstone Project Phase- 1 #	Mech	0	0	0	06	03	100	--	100	**3**
			Total		14	0	02	06	19				**18**

Note: # Indicates Course Integrated with Center of Excellence (LAB)

Department of Mechanical Engineering
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VIII SEMESTER													
S. N	Course Type	Course Code	Course Name	Teaching Department	Teaching Hours / Week				Examination				Credits
					Lecture	Tutorial	Practical	Project	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	J					
1	PROJ		Capstone Project Phase – 2 #	Mech	0	0	0	22	22	60	40	100	11
2	INT		Research Internship/ Industry Internship	Mech	0	0	6	0	06	100	--	100	03
			Total		0	0	06	22	28				**14**

Note: # Indicates Course Integrated with Center of Excellence (LAB)

NOTE: Total Credits (I-Sem to VIII Sem) = 162 credits

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.N	Domain-wise	Domain Clusters	PROFESSIONAL ELECTIVE COURSES				
			PEC-I	PEC-II	PEC-III	PEC-IV	PEC-V
			5th Semester	6th Semester		7th Semester	
1	Domain-1	ROBOTICS & AUTOMATION	Sensors & Actuators	Drives & Control systems	Robot Kinematics and Dynamics	Automation and Control *	Robot Manipulators #
		Course Code	23ME3510	23ME3606	23ME3612		
2	Domain-2	ADDITIVE MANUFACTURING	Automated Manufacturing Systems	Materials for Additive Manufacturing	Processing Of Plastics & Composites	Computational Tools for Additive Manufacturing #	Powder Metallurgy
		Course Code	23ME3511	23ME3607	23ME3613		
3	Domain-3	HYBRID & ELECTRIC VEHICLES	Introduction to Hybrid & Electric Vehicles	Autotronics	Software Defined Vehicles	Fundamental of Drives and DC Machine Modeling	Advanced Energy Storage
		Course Code	23ME3512	23ME3608	23ME3614		
4	Domain-4	RENEWABLE ENERGY	Solar Energy Engineering	Wind Energy Systems	Hydrogen Energy and Storage	Sustainable Energy management and economics	Energy system modelling and Analysis *
		Course Code	23ME3513	23ME3609	23ME3615		
5	Domain-5	GENERAL MECHANICAL ENGINEERING	Sustainable Practices for Rural India	Micro Electro Mechanical Systems (MEMS)	Supply Chain Management	Computational Fluid Dynamics (CFD) *	Smart Production systems # (AR/VR-Lab)

		Course Code	23ME3514	23ME3610	23ME3616		
	MOOC		1	2		3	
		Course Code	23ME3515	23ME3611			

Note: * Indicates NVIDIA-DLI Certification Course & # Indicates Course Integrated with Center of Excellence (LAB)

OPEN ELECTIVES:

Open Elective –I (OEC-I)	Course Code	Open Elective –II (OEC-II)	Course Code
Sustainable Engineering	23OE0034	Automobile Engineering	23OE0038
Materials for Engineering applications	23OE0035	Total Quality Management and Reliability	23OE0039
Operations Research	23OE0036	Renewable Energy Sources	23OE0040
Industrial Robotics	23OE0037	Rapid Manufacturing Technologies	23OE0041

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MINORS DEGREE PROGRAM

Sl. No	Course Name	Course Code	Credits	Semester
1	Engineering Materials		3	3
2	Mechanics of Solids		3	4
3	Thermal System Engineering		3	5
4	Digital Manufacturing (Theory & Practice)		3	5
5	Product Design and development (Theory & Practice) -		3	6
6	Advances in Mechanical Engineering (Robotics, Electric Vehicle & Green Energy)		3	7
			18	

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General Instructions:

- **Open Elective Courses:** At least two courses must be provided from each department and the courses shall be general course on emerging areas with broad coverage of syllabus so that student shall chose without any difficulty.
- **Honors Degree:** An Honors degree typically refers to a higher level of academic achievement in the major area. That is, certificate in his/her OWN major for Research orientation. The Credit requirement: **172 to 178 credits** (Major worth 160 credits + Honors 12 to 18 credits)
- **Minor Degree:** Minor is a secondary concentration of courses that often complements the honors. Minor in any OTHER branch for Improving Employability.
    - Minor is an option rather than a requirement for B. Tech students. They may opt for one of the Engineering or Non-engineering discipline as Minor, earning additional credits ranging from 12 to 18. However, students are permitted to choose only one Minor either from engineering or Non-engineering discipline.
    - This opportunity is ideal for students who took a Major out of necessity but would still like to pursue their passion in another discipline or to enrich/equip them for a specific profession where greater job opportunities exist. Another advantage of opting for a Major with a Minor is to earn standing credits for pursuing a Master's degree abroad or within India too.
    - Only students who satisfy a set of minimum eligibility criteria set forth by the university and meet certain pre-requisites, will be permitted to opt for a Minor.
    - Credit requirement: **172 to 178 credits** (Major worth 160 credits + Minor 12 to 18 credits)
    - Degree nomenclature: The degree will contain the Major / Major with Specialization. The Minor pursued by the student will be provided in the transcript along with details on courses completed and associated credits earned.
    - For e.g., For a student who pursued Computer Science and Engineering with a Minor in Industrial Psychology, the degree will read "B. Tech in Computer Science and Engineering", Transcripts of B. Tech will reflect the Minor courses and the Minor certificate in Industrial Psychology will be issued separately.