



DAYANANDA SAGAR
UNIVERSITY



SCHOOL OF
ENGINEERING

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

SCHEME

B.Tech. PROGRAMME– 2024 BATCH

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

Implementation of National Education Policy (NEP) 2020 for the B.Tech students of Batch 2024-25

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

SCHEME 2024 – 2028 Batch

Department of Mechanical Engineering

III SEMESTER

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	24ME2301	Transforms and Numerical Techniques	MAT	3	0	0	0	03	60	40	100	3
2	IPCC	24ME2302	Engineering Materials	Mech	2	0	2	0	04	60	40	100	3
3	IPCC	24ME2303	Fluid Mechanics and Machines	Mech	3	0	2	0	05	60	40	100	4
4	IPCC	24ME2304	Machining Process and Metrology	Mech	2	0	2	0	04	60	40	100	3
4	PCC	24ME2305	Thermodynamics	Mech	3	0	0	0	03	60	40	100	3
5	IPCC	24ME2306	Computer Aided Machine Drawing	Mech	1	0	4	0	04	60	40	100	3
6	AEC	24LSXXXX	Liberal Studies – I	Any Dept.	1	0	0	0	01	100	--	100	1
7	SEC	24ME23XX	Skill Enhancement Course – I	Mech	0	0	4	0	04	100	--	100	2
8	SEC	24ME2307	Cognitive and Technical Skills -III	--	-	0	0	0	00	--	--	P/F	0
			Total		15	0	14	0	28				22

Skill Enhancement Course – I

24ME2308	Autodesk Innovation Lab		
24ME2309	MATLAB Practice		

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	
1	BSC	24ME2401	Probability and Statistics	MAT	3	0	0	0	03	60	40	100	3
2	IPCC	24ME2402	Applied Thermal Systems	Mech	3	0	2	0	05	60	40	100	4
3	PCC	24ME2403	Kinematics and Dynamics of Machines	Mech	3	0	0	0	03	60	40	100	3
4	PCC	24ME2404	Mechanics of Solids	Mech	3	0	0	0	03	60	40	100	3
5	IPCC	24ME2405	Heat Transfer	Mech	3	0	2	0	05	60	40	100	4
6	IPCC	24ME2406	Machine learning	Mech	2	0	2	0	04	60	40	100	3
7	SEC	24ME24XX	Skill Enhancement Course – II	Mech	0	0	4	0	04	100	--	100	2
8	SEC	24ME2407	Cognitive and Technical Skills -IV	--	-	-	-	-	-	--	--	P/F	0
			Total		17	0	10	0	27				22

Skill Enhancement Course – II

24ME2408	Bosch Rexroth Innovation Lab		
24ME2409	Python Programming		

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		Mechatronics & Embedded Systems *	Mech/ECE	3	0	0	0	03	60	40	100	3
2	PCC		Finite Element method *	Mech/CSE	2	0	2	0	04	60	40	100	3
3	IPCC		Design of Machine Elements	Mech	3	0	2	0	05	60	40	100	4
4	IPCC		Industrial Automation and Robotics #	Mech	2	0	2	0	04	60	40	100	3
5	IPCC		Thermal management of Electronic devices	Mech	2	0	2	0	04	60	40	100	3
6	PEC		Professional Elective Course – I/MOOC	Mech	3	0	0	0	03	60	40	100	3
7	SEC		Skill Enhancement Course – III *	Mech	0	0	4	0	04	100	-	100	2
8	SEC		Cognitive and Technical Skills -V	--	0	0	0	0	0	--	--	P/F	0
			Total		15	0	12	0	27				21

Skill Enhancement Course – III			
	(NVIDIA-DLI Certification Course-Generic Design/Digital Twin/Robotics)		XXXXX
	CAE Lab-II (ANSA)		XXXXX

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

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		Innovation in Management and Entrepreneurship	Mech/Guest	2	0	0	0	02	60	40	100	2
2	IPCC		Introduction to Additive Manufacturing #	Mech	2	0	2	0	04	60	40	100	3
3	PCC		Noise Vibration and Harshness (NVH)	Mech	3	0	2	0	05	60	40	100	4
4	PCC		Quality and Reliability *	Mech	3	0	0	0	03	60	40	100	3
5	OEC		Open Elective – I	---	3	0	0	0	03	60	40	100	3
6	PEC		Professional Elective Course – II/MOOC	Mech	3	0	0	0	03	60	40	100	3
7	PEC		Professional Elective Course – III	Mech	3	0	0	0	03	60	40	100	3
8	SEC		Cognitive and Technical Skills -VI		-	-	-	-	-	--	--	P/F	0
			Total		19	0	04	0	23				21

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

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)

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) = 160 credits

S.N	Domain-wise	Domain Clusters	PROFESSIONAL ELECTIVE COURSES				
			PEC-I	PEC-II	PEC-III	PEC-IV	PEC-V
			5 th Semester	6 th Semester		7 th Semester	
1	Domain-1	ROBOTICS & AUTOMATION	Sensors & Actuators	Drives & Control systems	Robot Kinematics and Dynamics #	Automation and Control *	Robot Manipulators #
		Course Code					
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					
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					
4	Domain-4	DESIGN ENGINEERING	Advanced Solid Mechanics	Dynamics & Control of Mechanical Systems	Computational Mechanics *	Fracture Mechanics	Design Optimization
		Course Code					
5	Domain-5	AI+X	Smart Production systems (AR/VR-Lab) #	Micro Electro Mechanical Systems (MEMS) *	Predictive maintenance & Industrial AI *	Computational Fluid Dynamics (CFD) *	Cyber Physical Systems #
		Course Code					
	MOOC		1	2	3		
		Course Code					

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		Automobile Engineering	
		Total Quality Management and Reliability	
Materials for Engineering applications		Renewable Energy Sources	
Operations Research			
Industrial Robotics		Rapid Manufacturing Technologies	

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	

HONORS DEGREE PROGRAM

Sl. No	Course Name	Course Code	Credits	Semester
1	AI & Data Analytics in Manufacturing Systems		3	4
2	Advanced Computational Design & Generative Engineering		3	4
3	Advanced Thermodynamics & Energy Systems		3	5
4	Robot Perception & Machine Vision		3	5
5	Mechatronics and Intelligent System		3	6
6	Bio-Mechanical and System Engineering		3	7
			18	

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.



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