SCHOOL OF ENGINEERING
Dayananda Sagar University
Devarakaggalahalli , Harohalli , Kanakapura Road ,Ramanagar District- 562112

SCHEME

B.Tech. PROGRAMME– 2022 -2023

Definitions / Descriptions

Devarakaggalahalli / Harohalli / Kanakapura Road /Ramanagar
District- 562112

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 2022-23

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 2022 – 2026 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	22ME2301	Transforms and Numerical Techniques	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC	22ME2302	Engineering Materials	Mech	2	0	2	0	04	60	40	100	**3**
3	IPCC	22ME2303	Fluid Mechanics and Machines	Mech	3	0	2	0	05	60	40	100	**4**
4	IPCC	22ME2304	Machining Process and Metrology	Mech	2	0	2	0	04	60	40	100	**3**
4	PCC	22ME2305	Thermodynamics	Mech	3	0	0	0	03	60	40	100	**3**
5	IPCC	22ME2306	Computer Aided Machine Drawing	Mech	1	0	4	0	05	60	40	100	**3**
6	AEC	22LSXXXX	Liberal Studies – I	Any Dept.	1	0	0	0	01	100	--	100	**1**
7	SEC	22ME23XX	Skill Enhancement Course – I	Mech	1	0	2	0	03	100	--	100	**2**
			Total		16	0	12	0	26				**22**

Skill Enhancement Course – I			
	Autodesk Innovation Lab		22ME2307
	Bosch Rexroth Innovation Lab		22ME2308

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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	22ME2401	Probability and Statistics	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC	22ME2402	Applied Thermal Systems	Mech	3	0	2	0	05	60	40	100	**4**
3	PCC	22ME2403	Kinematics and Dynamics ofMachines	Mech	3	0	0	0	03	60	40	100	**3**
4	PCC	22ME2404	Mechanics of Solids	Mech	3	0	0	0	03	60	40	100	**3**
5	IPCC	22ME2405	Heat Transfer	Mech	3	0	2	0	05	60	40	100	**4**
6	IPCC	22ME2406	Machine learning	Mech	2	0	2	0	04	60	40	100	**3**
7	SEC	22ME2407	Special Topics	Mech	0	0	2	0	02	100	--	100	**1**
8	SEC	22ME24XX	Skill Enhancement Course – II	Mech	1	0	2	0	03	100	--	100	**2**
			Total		18	0	10		28				**23**

Skill Enhancement Course – II

	Autodesk Innovation Lab		22ME2408
	Bosch Rexroth Innovation Lab		22ME2409

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	22ME3501	Microprocessors and Microcontrollers	Mech/ECE	3	0	0	0	03	60	40	100	3
2	PCC	22ME3502	Technologies for Rural India	Mech/CSE	2	0	0	2	04	60	40	100	3
3	IPCC	22ME3503	Design of Machine Elements	Mech	3	0	2	0	05	60	40	100	4
4	IPCC	22ME3504	Industrial Automation and Robotics	Mech	2	0	2	0	04	60	40	100	3
5	IPCC	22ME3505	Thermal management of Electronic devices	Mech	2	0	2	0	04	60	40	100	3
6	PEC	22ME35XX	Professional Elective Course – I/MOOC	Mech	3	0	0	0	03	60	40	100	3
7	SEC	22ME35XX	Skill Enhancement Course – III	Mech	0	0	4	0	04	100	-	100	2
8	SEC	22ME3506	Cognitive and Technical Skills -I	--	0	0	4	0	04	60	40	100	2
			Total		15	0	14	02	31				23

Skill Enhancement Course – III

22ME3507	CAE Lab-I (CATIA)		XXXXX
22ME3508	CAE Lab-II (ANSA)		XXXXX

VI SEMESTER													
S.N	Course Type	Course Code	Course Name	Teaching Department	Teaching Hours / Week				Examination				Credits
					Lecture	Tutorial	Practica	Project	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	J					
1	HSMC	22ME3601	Management and Entrepreneurship	Mech/Guest	3	0	0	0	03	60	40	100	3
2	IPCC	22ME3602	Finite Element method	Mech	3	0	2	0	05	60	40	100	4
3	PCC	22ME3603	Mechanical Vibrations	Mech	2	0	2	0	04	60	40	100	3
4	OEC	22OEXXXX	Open Elective – I	---	3	0	0	0	03	60	40	100	3
5	PEC	22ME36XX	Professional Elective Course – II/MOOC	Mech	3	0	0	0	03	60	40	100	3
6	PEC	22ME36XX	Professional Elective Course – III	Mech	3	0	0	0	03	60	40	100	3
7	PROJ	22ME3604	Minor Project	Mech	0	0	0	4	04	100	--	100	2
8	SEC	22ME3605	Cognitive and Technical Skills -II	--	0	0	4	0	04	60	40	100	2
			Total		17	--	8	4	29				23

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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	2	6	19				18

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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	6	22	28				14

NOTE: Total Credits (I-Sem to VIII Sem) = 165 credits.

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S.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	22ME3509	22ME3606	22ME3613		
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	22ME3510	22ME3607	22ME3614		
3	Domain-3	HYBRID & ELECTRIC VEHICLES	Introduction to Hybrid & Electric Vehicles	Autotronics	Automotive Chassis & Transmission Systems	Fundamental of Drives and DC Machine Modeling	Advanced Energy Storage
		Course Code	22ME3511	22ME3608	22ME3615		
4	Domain-4	RENEWABLE ENERGY	Solar Energy Engineering	Wind Energy Systems	Hydrogen Energy and Storage	Energy management and economics	Energy system modelling and Analysis
		Course Code	22ME3512	22ME3609	22ME3616		
5	Domain-5	General Mechanical Engineering	Refrigeration and Air-conditioning	Micro Electro Mechanical	Total Quality Management	Computational Fluid Dynamics (CFD)	Tool Design

				Systems (MEMS)			
			22ME3513	22ME3610	22ME3617		
	MOOC		1	2	3		
		Course Code	22ME3514	22ME3612	22ME3618		

OPEN ELECTIVES:

Open Elective –I (OEC-I)	Course Code	Open Elective –II (OEC-II)	Course Code
Fluids & Thermal Engineering	22OE0049	Automobile Engineering	22OE0015
		Total Quality Management and Reliability	22OE0052
Materials for Engineering applications	22OE0050	Renewable Energy Sources	22OE0019
			22OE0016

Industrial Robotics	22ME2051	Rapid Manufacturing Technologies	

MINORS DEGREE PROGRAM

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Sl. No	Course Name	Course Code	Credits	Semester
1	Engineering Materials	22ME2302	3	3
2	Mechanics of Solids	22ME2404	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.