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

SCHEME AND SYLLABUS

B.Tech. PROGRAMME– 2024 BATCH

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

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

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

Implementation of National Education Policy (NEP) 2020 for the B.Tech students of Batch 2024-28

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

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

SCHEME 2024 – 2028 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		Transforms and Numerical Techniques	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC		Engineering Materials	Mech	2	0	2	0	04	60	40	100	**3**
3	IPCC		Fluid Mechanics and Machines	Mech	3	0	2	0	05	60	40	100	**4**
4	IPCC		Machining Process and Metrology	Mech	2	0	2	0	04	60	40	100	**3**
4	PCC		Thermodynamics	Mech	3	0	0	0	03	60	40	100	**3**
5	IPCC		Computer Aided Machine Drawing	Mech	1	0	4	0	05	60	40	100	**3**
6	AEC		Liberal Studies – I	Any Dept.	1	0	0	0	01	100	--	100	**1**
7	SEC		Skill Enhancement Course – I	Mech	0	0	4	0	02	100	--	100	**2**
			Total		15	0	14	0	27				**22**

Skill Enhancement Course – I			
	Autodesk Innovation Lab		
	Bosch Rexroth Innovation Lab		

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

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		Probability and Statistics	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC		Applied Thermal Systems	Mech	3	0	2	0	05	60	40	100	**4**
3	PCC		Kinematics and Dynamics ofMachines	Mech	3	0	0	0	03	60	40	100	**3**
4	PCC		Mechanics of Solids	Mech	3	0	0	0	03	60	40	100	**3**
5	IPCC		Heat Transfer	Mech	3	0	2	0	05	60	40	100	**4**
6	IPCC		Machine learning	Mech	2	0	2	0	04	60	40	100	**3**
7	SEC		Skill Enhancement Course – II	Mech	0	0	4	0	03	100	--	100	**2**
			Total		17	0	10		26				**22**

Skill Enhancement Course – II			
	Autodesk Innovation Lab		
	Bosch Rexroth Innovation Lab		

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

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		Microprocessors and Microcontrollers	Mech/ECE	3	0	0	0	03	60	40	100	3
2	PCC		Technologies for Rural India	Mech/CSE	2	0	0	2	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	03	100	-	100	**2**
			Total		15	0	10	02	26				**21**

Skill Enhancement Course – III			
	CAE Lab-I (CATIA)		XXXXX
	CAE Lab-II (ANSA)		XXXXX

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

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		Management and Entrepreneurship	Mech/Guest	3	0	0	0	03	60	40	100	**3**
2	IPCC		Finite Element method	Mech	3	0	2	0	05	60	40	100	**4**
3	PCC		Mechanical Vibrations	Mech	2	0	2	0	04	60	40	100	**3**
4	OEC		Open Elective – I	---	3	0	0	0	03	60	40	100	**3**
5	PEC		Professional Elective Course – II/MOOC	Mech	3	0	0	0	03	60	40	100	**3**
6	PEC		Professional Elective Course – III	Mech	3	0	0	0	03	60	40	100	**3**
7	PROJ		Minor Project	Mech	0	0	0	4	04	100	--	100	**2**
8	INT		Internship	Mech	Completed during intervening period of IV and V sem				--	100	--	100	**2**
			Total		17	--	4	4	25				**23**

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

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**

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

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) = 160 credits.

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

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					
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	Automotive Chassis & Transmission Systems	Fundamental of Drives and DC Machine Modeling	Advanced Energy Storage
		Course Code					
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					
5	**Domain-5**	**General Mechanical Engineering**	Refrigeration and Air-conditioning	Micro Electro Mechanical Systems (MEMS)	Total Quality Management	Computational Fluid Dynamics (CFD)	Tool Design
	MOOC		1	2	3		
		Course Code					

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

OPEN ELECTIVES:

Open Elective –I (OEC-I)	Course Code	Open Elective –II (OEC-II)	Course Code
Fluids & Thermal Engineering		Automobile Engineering	
		Total Quality Management and Reliability	
Materials for Engineering applications		Renewable Energy Sources	
		Rapid Manufacturing Technologies	
Industrial Robotics			

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

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	

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

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.