

DAYANANDA SAGAR UNIVERSITY

SCHOOL OF ENGINEERING



**SCHEME FOR
BACHELOR OF TECHNOLOGY (B. Tech)**

**COMPUTER SCIENCE & ENGINEERING
(Artificial Intelligence & Machine Learning)
(1st to 8th Semester)**

Graduation Year: 2023-2027

(With effect from 2023-24)



Dayananda Sagar
University Bengaluru



Dayananda Sagar University

School of Engineering

Devarakagalahalli, Harohalli, Kanakapura Road, Ramanagara Dt., Bengaluru- 562112

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(Artificial Intelligence & Machine Learning)

Total Credits

Sl. No	Semester	Credits
1	1 st semester	20
2	2 nd semester	20
3	3 rd semester	22
4	4 th semester	25
5	5 th semester	23
6	6 th semester	22
7	7 th semester	13
8	8 th semester	15
Total		160

I SEM - CHEMISTRY CYCLE

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					PREREQUISITE	
			L	T	P	S/ P	C	SEM	COURSE CODE
1	23EN1101	LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS	03	0	--	--	03	*	***
2	23EN1102	C PROGRAMMING FOR PROBLEM SOLVING	02	01	02	--	04	*	***
3	23EN1103	ENGINEERING CHEMISTRY	02	0	02	--	03	*	***
4	23EN1104	INTRODUCTION TO MECHANICAL ENGINEERING	02	0	02	--	03	*	***
5	23EN1105	INTRODUCTION TO ELECTRICAL ENGINEERING	02	--	--	--	02	*	***
6	23EN1106	ENGINEERING MECHANICS	02	--	--	--	02	*	***
7	23EN1107	TECHNICAL ENGLISH	02	--	--	--	02	*	***
8	23EN1108	ENVIRONMENTAL SCIENCE	01	--	--	--	01	*	***
9	23EN1109	KANADA KALI/MANASU	01	--	--	--	--	*	***
			17	01	06	--	20		

L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

I-SEM - PHYSICS CYCLE

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					PREREQUISITE	
			L	T	P	S/ P	C	SEM	COURSE CODE
1	23EN1101	LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS	03	--	--	--	03	*	***
2	23EN1102	C PROGRAMMING FOR PROBLEM SOLVING	02	01	02	--	04	*	***
3	23EN1110	ENGINEERING PHYSICS	03	--	02	--	04	*	***
4	23EN1111	INTRODUCTION TO ELECTRONICS ENGINEERING	03	--	--	--	03	*	***
5	23EN1112	ENGINEERING GRAPHICS AND DESIGN THINKING	02	--	02	--	03	*	***
6	23EN1113	BIOLOGY FOR ENGINEERS	02	--	--	--	02	*	***
7	23EN1114	CONSTITUTION OF INDIA AND PROFESSIONAL ETHICS	01	--	--	--	01	*	***
			16	01	06	--	20		

L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

II-SEM - CHEMISTRY CYCLE

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					PREREQUISITE	
			L	T	P	S/ P	C	SEM	COURSE CODE
1	23EN1201	SINGLE AND MULTIVARIATE CALCULUS	03	--	--	--	03	*	***
2	23EN1202	OBJECT ORIENTED PROGRAMMING	02	01	02	--	04	*	***
3	23EN1103	ENGINEERING CHEMISTRY	02	--	02	--	03	*	***
4	23EN1104	INTRODUCTION TO MECHANICAL ENGINEERING	02	--	02	--	03	*	***
5	23EN1105	INTRODUCTION TO ELECTRICAL ENGINEERING	02	--	--	--	02	*	***
6	23EN1106	ENGINEERING MECHANICS	02	--	--	--	02	*	***
7	23EN1107	TECHNICAL ENGLISH	02	--	--	--	02	*	***
8	23EN1108	ENVIRONMENTAL SCIENCE	01	--	--	--	01	*	***
9	23EN1109	KANNADA KALI/MANASU	01	--	--	--	--	*	***
			17	01	06	--	20		

L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

II SEM - PHYSICS CYCLE

SL	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					PREREQUISITE	
			L	T	P	S/ P	C	SEM	COURSE CODE
1	23EN1201	SINGLE AND MULTIVARIATE CALCULUS	03	--	--	--	03	*	***
2	23EN1102	OBJECT ORIENTED PROGRAMMING	02	01	02	--	04	*	***
3	23EN1110	ENGINEERING PHYSICS	03	--	02	--	04	*	***
4	23EN1111	INTRODUCTION TO ELECTRONICS ENGINEERING	03	--	--	--	03	*	***
5	23EN1112	ENGINEERING GRAPHICS AND DESIGN THINKING	02	--	02	--	03	*	***
6	23EN1113	BIOLOGY FOR ENGINEERS	02	--	--	--	02	*	***
7	23EN1114	CONSTITUTION OF INDIA AND PROFESSIONAL ETHICS	1	--	--	--	01	*	***
			16	01	06	--	20		

L – Lecture, T – Tutorial, P – Practical, S/P – Seminar/Project, C – No. of Credits

III SEM – CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

SL. NO	Course Type	Course Code	Course Name	Teaching Hours / Week				Examination			
				Lecture	Tutorial	Practical	Project	CIE Marks	SEE Marks	Total Marks	Credit
				L	T	P	J				
1	BSC	23AM2301	Probability & Statistics	3	0	0	0	60	40	100	03
2	IPCC	23AM2302	Data Structures	3	0	2	0	60	40	100	04
3	IPCC	23AM2303	Computer Networks	3	0	2	0	60	40	100	04
4	PCC	23AM2304	Discrete Mathematics and Graph Theory	3	0	0	0	60	40	100	03
5	PCC	23AM2305	Computer Organization and Architecture	3	0	0	0	60	40	100	03
6	SEC	23AM2306	Skill Enhancement Course – I	1	0	2	0	100	--	100	02
7	PEC	23LSXXXX	Liberal Studies	1	0	0	0	100	--	100	01
8	AEC	23AM2307	Cognitive and Technical Skills-I	0	0	4	0	100	--	100	02
			Total	17	0	10	0				22

IPCC-Integrated Professional Core Course, PCC-Professional Core Courses, SEC-Skill Enhancement Courses, BSC-Basic Science, L – Lecture, T – Tutorial, P – Practical, J –Project, C – No. Of Credits, AEC-Ability Enhancement Course

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LIBERAL STUDIES LIST - B.TECH PROGRAMME – 2023-24 Batch

Sl. No.	Course Code	Course Title	Offering dept
1	23LS0001	INTRODUCTION TO DRAMA	Any department
2	23LS0002	INTRODUCTION TO DANCE	
3	23LS0003	INTRODUCTION TO MUSIC	
4	23LS0004	INTRODUCTION TO PHOTOGRAPHY	
5	23LS0005	INTRODUCTION TO JAPANESE LANGUAGE	
6	23LS0006	LAW FOR ENGINEERS	
7	23LS0007	INTRODUCTION TO PAINTING	
8	23LS0008	COMMUNICATION THROUGH SANSKRIT	
9	23LS0009	VEDIC MATHEMATICS	
10	23LS0010	FUNDAMENTALS OF CRITICAL THINKING	
11	23LS0011	INTRODUCTION TO FILM STUDIES	
12	23LS0012	PRACTICING YOGA & MEDITATION	
13	23LS0013	CYBER CRIMES, POLICIES & LAWS	
14	23LS0014	INTRODUCTION TO GERMAN LANGUAGE	

IV SEM – CSE(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

SL	Course Type	Course Code	Course Name	Teaching Hours / Week				Examination			
				Lecture	Tutorial	Practical	Project	CIE Marks	SEE Marks	Total Marks	Credit
				L	T	P	J				
1	BSC	23AM2401	Transform and Numerical Techniques	3	0	0	0	60	40	100	03
2	IPCC	23AM2402	Design and Analysis of Algorithms	3	0	2	0	60	40	100	04
3	IPCC	23AM2403	Database Management System	3	0	2	0	60	40	100	04
4	IPCC	23AM2404	Theory of Computation	3	1	0	0	60	40	100	04
5	PCC	23AM2405	Artificial Intelligence	3	0	0	0	60	40	100	03
6	PCC	23AM2406	Full Stack Development	3	0	0	0	60	40	100	03
7	SEC	23AM2407	Skill Enhancement Course -II	1	0	2	0	100	--	100	02
8	AEC	23AM2408	Cognitive and Technical Skills-II	0	0	4	0	100	--	100	02
			Total	19	1	10	0				25

IPCC-Integrated Professional Core Course, PCC-Professional Core Courses, SEC-Skill Enhancement Courses, PEC-Professional Elective Courses, BSC-Basic Science, L – Lecture, T – Tutorial, P – Practical, J– Project, C – No. Of Credits, AEC-Ability Enhancement Course

V SEM – CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

SL	Course Type	Course Code	Course Name	Teaching Hours / Week				Examination			
				Lecture	Tutorial	Practical	Project	CIE Marks	SEE Marks	Total Marks	C
				L	T	P	J				
1	IPCC	23AM3501	Machine Learning	3	0	2	0	60	40	100	04
2	IPCC	23AM3502	Operating Systems	3	0	2	0	60	40	100	04
3	IPCC	23AM3503	Natural Language Models	3	1	0	0	60	40	100	04
4	HSMC	23AM3504	Innovation and Entrepreneurship	2	0	0	0	60	40	100	02
5	IPCC	23AM3505	Compiler Design and System Software	3	1	0	0	60	40	100	04
6	SEC	23AM3506	Skill Enhancement Course -III	1	0	2	0	100	--	100	02
7	PEC	23AM35XX	Professional Elective Course -I	3	0	0	0	60	40	100	03
8	AEC	23AM2512	Cognitive and Technical Skills-III	-	-	-	-	--	--	--	P/F
			Total	18	2	6	4				23

HSMC- Humanities and Social Sciences including Management Courses, IPCC-Integrated Professional Core Course, PCC-Professional Core Courses, SEC-Skill Enhancement Courses, PEC-Professional Elective Courses, L – Lecture, T – Tutorial, P – Practical, J-Project, C – No. Of Credits, AEC-Ability Enhancement Course

VI SEM – CSE(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

SL	Course Type	Course Code	Course Name	Teaching Hours / Week				Examination			
				Lecture	Tutorial	Practical	Project	CIE Marks	SEE Marks	Total Marks	C
				L	T	P	J				
1	IPCC	23AM3601	Deep Learning	3	0	2	0	60	40	100	04
2	IPCC	23AM3602	Image Processing and Computer Vision	3	0	2	0	60	40	100	04
3	PCC	23AM3603	Designing MLOps for Enterprises	3	0	0	0	60	40	100	03
4	PEC	23AM36XX	Professional Elective Course – II	3	0	0	0	60	40	100	03
5	PEC	23AM36XX	Professional Elective Course – III	3	0	0	0	60	40	100	03
6	OEC	23OEXXXX	Open Elective – I	3	0	0	0	60	40	100	03
7	PROJ	23AM3604	Minor Project	0	0	0	4	--	100	100	02
8	AEC	23AM2613	Cognitive and Technical Skills-IV	-	-	-	-	--	--	--	P/F
			Total	19	0	6	0				22

IPCC-Integrated Professional Core Course, PCC-Professional Core Courses, PEC-Professional Elective Courses, OEC-Open Elective Courses, PROJ-Project Work, L – Lecture, T – Tutorial, P – Practical, J– Project, C – No. Of Credits, AEC-Ability Enhancement Course

VII SEM –CSE(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

SL	Course Type	Course Code	Course Name	Teaching Hours / Week				Examination			
				Lecture	Tutorial	Practical	Project	CIE Marks	SEE Marks	Total Marks	Credit
				L	T	P	J				
1											
2	PEC	23AM47XX	Professional Elective Course – IV	3	0	0	0	60	40	100	03
3	PEC	23AM47XX	Professional Elective Course – V/ MOOC	3	0	0	0	60	40	100	03
4	OEC	23OEXXXX	Open Elective – II	3	0	0	0	60	40	100	03
5	PROJ	23AM4702	Capstone Project Phase-I	0	0	0	6	100	--	100	04
			Total	9	0	0	6				13

CID* - NPTEL COURSE ID

IPCC-Integrated Professional Core Course, PCC-Professional Core Courses, SEC-Skill Enhancement Courses, PEC-Professional Elective Courses, OEC-Open Elective Courses, PROJ-Project Work, L – Lecture, T – Tutorial, P – Practical, J–Project, C – No. Of Credits

VIII SEM –CSE(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

SL	Course Type	Course Code	Course Name	Teaching Hours / Week				Examination			
				Lecture	Tutorial	Practical	Project	CIE Marks	SEE Marks	Total Marks	Credit
				L	T	P	J				
1	PROJ	23AM4801	Capstone Project Phase-II	0	0	0	22	100	--	100	12
2	INT	23AM4802	Internship	0	0	0	6	100	--	100	03
			Total	0	0	0	28				15

PROJ-Project Work, INT-Internship, L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. Of Credits

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (Artificial Intelligence & Machine Learning)

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			
			Course Code	Course Name	Course Code	Course Name	Course Code	Course Name	Course Code	Course Name	Course Code	Course Name
1	Domain-1	AI and Language Perceptions	23AM3507	Optimization Techniques	23AM3605	Explainable AI	23AM3609	Generative AI	23AM4703	AI Ethics	23AM4707	Human Computer Interface
2	Domain-2	Robotics and Automation	23AM3508	Fundamentals of Robotics	23AM3606	Reinforcement Learning	23AM3610	Robot Operating System (ROS)	23AM4704	Industry 5.0	23AM4708	Robotics and Automation Application
3	Domain-3	Architecture and Security	23AM3509	Fundamentals of IoT	23AM3607	Cryptography & Network Security	23AM3611	Embedded Systems Design	23AM4705	GPU Architecture	23AM4709	Quantum Computing
4	Domain-4	Data Analytics	23AM3510	Data Science & Analytics	23AM3608	Predictive Analytics	23AM3612	Financial Technology (FinTech)	23AM4706	Big Data Analytics	23AM4710	UG Research Project

PROFESSIONAL ELECTIVE COURSES DOMAIN-WISE

OPEN ELECTIVE COURSES

Sl. No	Open Elective Courses		
	6 th Semester		7 th Semester
	OEC-I	OEC-I	OEC-II
1	Industrial Robotics 23OE0016	Machine Learning for Health Care 23OE0017	Responsible AI & Ethics 23OE0018