

DAYANANDA SAGAR UNIVERSITY



SCHOOL OF ENGINEERING

(A State Private University under the Karnataka Act No. 20 of 2013)

Approved by UGC & AICTE, New Delhi, Accredited by NAAC with A+ grade

SCHEME FOR BACHELOR OF TECHNOLOGY (B. Tech)

COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE)

Batch 2025-2029



Dayananda Sagar University

School of Engineering

Devarakaggalahalli, Harohalli, Kanakapura Road, Bengaluru South Dist. – 562 112

Vision and Mission of DSU

VISION

To be a centre of excellence in education, research & training, innovation & entrepreneurship and to produce citizens with exceptional leadership qualities to serve national and global needs.

MISSION

To achieve our objectives in an environment that enhances creativity, innovation and scholarly pursuits while adhering to our vision.

Vision and Mission of School of Engineering

VISION

Transform lives through excellence in engineering education, research and innovation with an emphasis on sustainability, inclusive technologies and global needs.

MISSION

- Design and deliver contemporary engineering curricula to address regional and global needs while emphasizing ethics, values, integrity and regional relevance.
- Carryout high impact academic research, industry projects and innovation activities with active student engagement to advance science and engineering knowledge and state-of-the-art industry practices.
- Develop regional and national leaders to advance the society and economy.

Vision and Mission of Dept. of CSE (Data Science)

VISION

To produce Engineers for Industry and Society in the field of Computer Science and Engineering (Data Science) by providing excellence in Education, Research and Entrepreneurship with a focus on sustainable solutions to fulfill global needs.



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MISSION

Impart quality technical education, critical thinking and sustainable learning practices in the domain of Computer Science and Engineering (Data Science) with ethical values and leadership qualities. Inculcate Interdisciplinary Research and Innovation by establishing Industry-Academia collaboration to solve critical problems.

Prepare graduates to become Ethical Data Science practitioners to contribute in data driven global society.

Definitions / Descriptions

Definition of Credit	
1 Hour Lecture (L) Per Week	01 Credit
1 Hour Tutorial (T) Per Week	01 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 2026-2030

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

1. Student Centric flexible curriculum.
2. Interdisciplinary 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
 - Degree in Engineering after completion of fourth year



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SCHEME - B. TECH – 2025-29 ONWARDS I SEM

I-SEMESTER (CHEMISTRY CYCLE)											
S.N	Course Code	Course Title	Teaching Hours / Week				Examination				Credits
			Lecture	Tutorial	Practical	Project	Contact Hours	CIE Marks	SEE Marks	Total Marks	
			L	T	P	J					
1	25EN1101	Linear Algebra and Differential Equations	3	1	0	0	4	60	40	100	4
2	25EN1102	Engineering Graphics and Design Thinking	2	1	2	0	5	60	40	100	4
3	25EN1103	Chemistry for CS Cluster	2	1	2	0	5	60	40	100	4
4	25EN1107	Engineering Science Course –I for CS Cluster	3	0	0	0	3	60	40	100	3
5	25EN1110	Technical English	2	0	0	0	2	100	-	100	2
6	25EN1111	Environmental Science	2	0	0	0	2	100	-	100	2
7	25EN1112	Kannada Kali / Manasu	1	0	0	0	1	50	-	50	1
8	25EN1113	Cognitive and Technical Skills -I							-		P/F
TOTAL			15	3	4	0	22	490	160	650	20

L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. of Credits, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations, TM – Total Marks.

ENGINEERING SCIENCE COURSE – I:

Computer Science Cluster: Object Oriented Programming

ECE: Introduction to Electrical Engineering

Mechanical Cluster: Introduction to Electrical and Electronics Engineering

Mechanical Cluster: Engineering Mechanics



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I-SEMESTER (PHYSICS CYCLE)											
S.N	Course Code	Course Title	Teaching Hours / Week				Examination				Credits
			Lecture	Tutorial	Practical	Project	Contact Hours	CIE Marks	SEE Marks	Total Marks	
			L	T	P	J					
1	25EN1101	Linear Algebra and Differential Equations	3	1	0	0	4	60	40	100	4
2	25EN1114	C Programming for Problem Solving	2	1	2	0	5	60	40	100	4
3	25EN1115	Physics for Computer Science Cluster	3	0	2	0	5	60	40	100	4
4	25EN1109	Engineering Science Course – II for CS Cluster	3	0	0	0	3	60	40	100	3
5	25EN1120	Introduction to Sustainable Engineering	2	0	0	0	2	100	-	100	2
6	25EN1121	Biology for Engineers	2	0	0	0	2	100	-	100	2
7	25EN1122	Constitution of India And Professional Ethics	1	0	0	0	1	50	-	50	1
8	25EN1113	Cognitive and Technical Skills – I							-		P/F
TOTAL			15	2	4	0	22	490	160	650	20

L – Lecture, T – Tutorial, P – Practical, J – Project, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations.

ENGINEERING SCIENCE COURSE – II:

Compute Science Cluster: Introduction to Electrical and Electronics Engineering

ECE: Introduction to Electronics Engineering

Mechanical Cluster: Engineering Mechanics



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II-SEMESTER (CHEMISTRY CYCLE)											
S.N	Course Code	Course Title	Teaching Hours / Week				Examination				
			Lecture	Tutorial	Practical	Project	Contact Hours	CIE Marks	SEE Marks	Total Marks	
			L	T	P	J					
1	25EN1201	Single and Multivariate Calculus	3	1	0	0	4	60	40	100	4
2	25EN1102	Engineering Graphics and Design Thinking	2	1	2	0	5	60	40	100	4
3	25EN1103	Chemistry for CS Cluster	2	1	2	0	5	60	40	100	4
4	25EN1107	Engineering Science Course – I for Cs Cluster	3	0	0	0	3	60	40	100	3
5	25EN1110	Technical English	2	0	0	0	2	100	–	100	2
6	25EN1111	Environmental Science	2	0	0	0	2	100	–	100	2
7	25EN1112	Kannada Kali / Manasu	1	0	0	0	1	50	–	50	1
8	25EN1202	Cognitive and Technical Skills -II							–		P/F
TOTAL			15	3	4	0	22	490	160	650	20

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ENGINEERING SCIENCE COURSE – I:

Computer Science Cluster: Object Oriented Programming

ECE: Introduction to Electrical Engineering

Mechanical Cluster: Introduction to Electrical and Electronics Engineering



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II-SEMESTER (PHYSICS CYCLE)											
S.N	Course Code	Course Title	Teaching Hours / Week				Examination				Credits
			Lecture	Tutorial	Practical	Project	Contact Hours	CIE Marks	SEE Marks	Total Marks	
			L	T	P	J					
1	25EN1201	Single and Multivariate Calculus	3	1	0	0	4	60	40	100	4
2	25EN1114	C Programming for Problem Solving	2	1	2	0	5	60	40	100	4
3	25EN1115	Physics for Computer Science Cluster	3	0	2	0	5	60	40	100	4
4	25EN1109	Engineering Science Course – II for CS Cluster	3	0	0	0	3	60	40	100	3
5	25EN1120	Introduction to Sustainable Engineering	2	0	0	0	2	100	–	100	2
6	25EN1121	Biology for Engineers	2	0	0	0	2	100	–	100	2
7	25EN1122	Constitution of India and Professional Ethics	1	0	0	0	1	50	–	50	1
8	25EN1202	Cognitive and Technical Skills –II							–		P/F
	TOTAL		16	2	4	0	22	490	160	650	20

L – Lecture, T – Tutorial, P – Practical, J – Project, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations.

ENGINEERING SCIENCE COURSE – II:

Compute Science Cluster: Introduction to Electrical and Electronics Engineering

ECE: Introduction to Electronics Engineering

Mechanical Cluster: Engineering Mechanics



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SCHEME - B. TECH – 2025-2029 ONWARDS III SEM

SL. No	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					Duration in Hours	Examination (Maximum Marks)		
			L	T	P	J	C		CIE	SEE	TM
1		Applied Statistics & Stochastic Processes	3	0	0	0	3	3	60	40	100
2		Data Structures	3	0	2	0	4	5	60	40	100
3		Computer Organization and Architecture	3	0	0	0	3	3	60	40	100
4		IoT and Sensor Systems	2	0	2	0	3	3	60	40	100
5		Database Management System	3	0	2	0	4	5	60	40	100
6		Sustainability Engineering & Environmental Social and Governance	2	0	0	0	2	2	60	40	100
7		Skill Enhancement Course I (Choice of Courses)	1	0	2	0	2	3	100	-	100
8		Cognitive and Technical Skills (CTS)-III	-	-	-	-	-	-	-	-	P/F
Total			18	0	6	0	21	24	460	240	700

L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. of Credits, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations, TM – Total Marks.

SKILL ENHANCEMENT COURSE I		
SL. NO	COURSE CODE	COURSE NAME
1		JAVA Programming
2		BI Tools
3		No Coding/Low Coding Development



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SCHEME - B. TECH – 2025-2029 ONWARDS IV SEM

SL. No	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					Duration in Hours	Examination (Maximum Marks)		
			L	T	P	J	C		CIE	SEE	TM
1		Differential Equations & Optimization	3	0	0	0	3	3	60	40	100
2		Introduction to Data Science	2	0	0	0	2	2	60	40	100
3		Design and Analysis of Algorithms	3	0	2	0	4	5	60	40	100
4		Machine Learning	3	0	2	0	4	5	60	40	100
5		Operating systems	3	0	0	0	3	3	60	40	100
6		Design Studio II-(AI Enabling System)	1	0	0	2	2	2	100	-	100
7		Skill Enhancement Course II	1	0	2	0	2	3	100	-	100
8		Liberal Studies	2	0	0	0	2	2	60	40	100
Total			18	0	6	2	22	25	560	240	800

L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. of Credits, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations, TM – Total Marks.

SKILL ENHANCEMENT COURSE II		
SL. NO	COURSE CODE	COURSE NAME
1		R Programming
2		MATLAB for Data science
3		Research ethics and Technical writing
4		Full Stack Development



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LIBERAL STUDIES		
Sl. No.	Course Code	Course Title
1	26LS0001	Introduction to Japanese Language
2	26LS0002	Introduction to German Language
3	26LS0003	Law for Engineers
4	26LS0004	Introduction to Painting
5	26LS0005	Vedic Mathematics
6	26LS0006	Fundamentals of Critical Thinking
7	26LS0007	Cyber Crimes, Policies & Laws
8	26LS0008	Introduction to Film Studies
9	26LS0009	Practicing Yoga & Meditation
10	26LS0010	Universal Human Values
11	26LS0011	Data Governance

MOOC		
Sl. No.	Course Code	Course Title
1	*CID	Soft Skill Development (NPTEL)
2	*CID	Enhancing Soft Skills and Personality



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SCHEME - B. TECH – 2025-2029 ONWARDS V SEM

SL. No	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					Duration in Hours	Examination (Maximum Marks)		
			L	T	P	J	C		CIE	SEE	TM
1		Responsible AI, Ethics & Policy	2	0	0	0	2	2	60	40	100
2		Multimodal AI for Data Science	3	0	0	0	3	3	60	40	100
3		Big Data Analytics	3	0	2	0	4	5	60	40	100
4		Deep Learning Essentials	3	0	2	0	4	5	60	40	100
5		Theory of Computation with Compiler Design	3	0	0	0	3	3	60	40	100
6		Design Studio III: Innovation, Design Thinking & IP	1	0	0	2	2	2	100	-	100
7		Professional Elective I / MOOC	3	0	0	0	3	3	60	40	100
8		Cognitive and Technical Skills (CTS)-IV	-	-	-	-	-	-	-	-	P/F
Total			18	0	4	2	21	23	460	240	700

L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. of Credits, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations, TM – Total Marks.



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SCHEME - B. TECH – 2025-2029 ONWARDS VI SEM

SL. No	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					Duration in Hours	Examination (Maximum Marks)		
			L	T	P	J	C		CIE	SEE	TM
1		Sustainable Software Engineering	2	0	0	0	2	2	60	40	100
2		CUDA for High Performance Computing	3	0	2	0	4	5	60	40	100
3		Cloud Data Engineering	3	0	0	0	3	3	60	40	100
4		Computer Networks	3	0	0	0	3	3	60	40	100
5		Professional Elective II / MOOC	3	0	0	0	3	3	60	40	100
6		Minor Project (CoE-based / Start-up / Research Track)	0	0	0	4	2	-	100	-	100
7		Open Elective I	3	0	0	0	3	3	60	40	100
8		Cognitive and Technical Skills (CTS)-V	-	-	-	-	-	-	-	-	P/F
Total			17	0	2	4	20	19	460	240	700

L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. of Credits, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations, TM – Total Marks

OPEN ELECTIVE I		
Sl. No.	COURSE CODE	COURSE NAME
1	23OE0014	Statistical Computing for Data Science
2		Data Analytics for Decision Making
3		Smart Cities & Urban Data Analytics
4		R Programming for Data Analytics



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SCHEME - B. TECH – 2025-2029 ONWARDS VII SEM

SL. No	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					Duration in Hours	Examination (Maximum Marks)		
			L	T	P	J	C		CIE	SEE	TM
1		Entrepreneurial Finance & Deep Tech Start-ups	2	0	0	0	2	2	100	-	100
2		Principles of DEVOPS & MLOPS	3	0	2	0	4	5	60	40	100
3		Professional Elective III	3	0	0	0	3	3	60	40	100
4		Professional Elective IV	3	0	0	0	3	3	60	40	100
5		Open Elective II	3	0	0	0	3	3	60	40	100
6		Capstone Project I	0	0	0	8	4	-	60	40	100
Total			14	0	2	8	19	16	400	200	600

L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. of Credits, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations, TM – Total Marks

Open Elective Course- II		
Sl. No	COURSE CODE	COURSE NAME
1.	23OE0015	Data Exploration Using R
2.		MATLAB for Data Science
3.		Social Media Analytics
4.		Industrial Data Analytics



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SCHEME - B. TECH – 2025-2029 ONWARDS VIII SEM

SL. No	COURSE CODE	COURSE TITLE	SCHEME OF TEACHING					Duration in Hours	Examination (Maximum Marks)		
			L	T	P	J	C		CIE	SEE	TM
1		Professional Elective V / MOOC	3	0	0	0	3	3	60	40	100
2		Leadership, Policy & Authentic Intelligence	2	0	0	0	2	2	-	-	100
3		Internship (Industry / Research / CoE based)	0	0	0	4	2	-	100	-	100
4		Capstone Project Phase II	0	0	0	20	10	-	60	40	100
Total			5	0	0	24	17	05	220	80	400

L – Lecture, T – Tutorial, P – Practical, J – Project, C – No. of Credits, CIE – Continuous Internal Evaluation, SEE- Semester End Examinations, TM – Total Marks

I -21 II -19 III -21 IV – 22 V -21 VI -20 VII – 19 VIII – 17

NOTE: Total Credits (I-Sem to VIII Sem) = 160credits.



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NOTE: Professional elective courses Domain-wise

Sl.No	CSE (Data Science) Professional Elective Courses					
	Domain Clusters	PEC-I	PEC-II	PEC-III	PEC-IV	PEC-V
		5 th Semester	6 th Semester	7 th Semester		8 th Semester
1	GEN AI (DLI Mapped)	NLP	Generative AI and LLM	Multimodal RAG Systems	Agentic AI	Explainable AI
2	Data Science Applications (COE Mapped)	Optimization Techniques for Data Science	Data-Driven Recommendation Systems	Immersive Data Science	AI for Cybersecurity Analytics	Autonomous System
3	AI+X	AI for Healthcare	AI for Agriculture	AI for FinTech & Risk Analytics	Geo-Spatial AI	Supply Chain AI
4	Industrial AI (DLI Mapped)	AI for Industry 5.0	Industrial Digital Twin Technology	Embedded AI System & Edge Deployment	Scalable Enterprise AI	Enterprise Deployment
5	Data Security	Cryptography and Network Security	Cloud Data Security	Information security	Blockchain Technology	Adversarial Machine learning



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Sl.No	MINORS (18 CREDITS)			
	Semester	Course Title	DLI Mapping	Credits
1	4th	AI-Driven Data Engineering	3	3
2	5th	GPU Accelerated Data Mining	3	3
3	6th	High-Performance Big Data Analytics	3	3
4	7th	Deep Learning for AI	3	3
5	8th	Data Science Project DGX Cluster	6	6
Total			18	18

SLN0	HONORS (18 CREDITS)			
	Semester	Course Title	DLI Mapping	Credits
1	5th	Applied Deep Learning for Computer Vision Systems	3	3
2	6th	Accelerated Data Processing & Engineering	3	3
3	6th	Deep Learning for Autonomous & Video Analytics Systems	3	3
4	7th	Scalable AI Model Training & Optimization	3	3
5	7th	Conversational AI Systems & Intelligent Assistants	3	3
6	8th	Cybersecurity Analytics using AI & Deep Learning	3	3
Total			18	18