DAYANANDA SAGAR
UNIVERSITY

Dayananda Sagar University

School of Engineering

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara Dt., Bengaluru – 562 112

Department of Computer Science & Technology

B.Tech. PROGRAMME– 2023 BATCH

SCHEME AND SYLLABUS

(1th to 8th semester)

Academic Year 2024-25

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DAYANANDA SAGAR UNIVERSITY

SCHOOL OF ENGINEERING

PART-B

SCHEME AND SYLLABUS FOR B.TECH. CST (FIRST TO FOURTH YEARS) PROGRAMEE

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

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SCHOOL OF ENGINEERING

I SEMESTER (Chemistry Cycle)														
S. N	Course Type	Course Code	Course Name	Teaching Department	Specific to Department	Teaching Hours / Week				Examination				Credits
						Lecture	Tutorial	Practice	Project	Durationin Hours	CIE Marks	SEE Marks	Total Marks	
						L	T	P	J					
1	BSC	23EN1101	Linear Algebra and Differential Equations	MAT	All Depts	3	0	0	0	03	60	40	100	3
2	ESC	23EN1102	C Programming for Problem Solving	Any Dept	All Depts	2	1	2	0	03	60	40	100	4
3	BSC	23EN1103	Engineering Chemistry	CHEM	All Depts	2	0	2	0	03	60	40	100	3
4	ESC	23EN1104	Introduction to Mechanical Engineering	ME	All Depts	2	0	2	0	03	60	40	100	3
5	ESC	23EN1105	Introduction to Electrical Engineering	ECE	All Depts	2	0	0	0	03	60	40	100	2
6	ESC	23EN1106	Engineering Mechanics	ME	All Depts	2	0	0	0	03	60	40	100	2
7	HSMC	23EN1107	Technical English	HUM	All Depts	2	0	0	0	01	100	--	100	2
8	AEC	23EN1108	Environmental Science	HUM	All Depts	1	0	0	0	01	50	--	50	1
9	HSMC	23EN1109	Kannada Kali / Manasu	HUM	All Depts	1	0	0	0	01	50	--	50	0
		Total									560	240	800	20

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SCHOOL OF ENGINEERING

I SEMESTER (Physics Cycle)														
S. N	Course Type	Course Code	Course Name	Teaching Department	Specific to Department	Teaching Hours / Week				Examination				Credits
						Lecture	Tutorial	Practice	Project	Durationin Hours	CIE Marks	SEE Marks	Total Marks	
						L	T	P	J					
1	BSC	23EN1101	Linear Algebra and Differential Equations	MAT	All Depts	3	0	0	0	03	60	40	100	3
2	ESC	23EN1102	C Programming for Problem Solving	Any Dept	All Depts	2	1	2	0	03	60	40	100	4
3	BSC	23EN1110	Engineering Physics	CHEM	All Depts	3	0	2	0	03	60	40	100	4
4	ESC	23EN1111	Introduction to Electronics Engineering	ME	All Depts	3	0	0	0	03	60	40	100	3
5	ESC	23EN1112	Engineering Graphics and Design Thinking	ECE	All Depts	2	0	2	0	03	60	40	100	3
6	BSC	23EN1113	Biology for Engineers	ME	All Depts	2	0	0	0	01	100	--	100	2
7	HSMC	23EN1114	Constitution Of India and Professional Ethics	HUM	All Depts	1	0	0	0	01	50	--	50	1
		Total									450	200	650	20

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	II SEMESTER (Chemistry Cycle)													
S. N	Course Type	Course Code	Course Name	Teaching Department	Specific to Department	Teaching Hours / Week				Examination				Credits
						Lecture	Tutorial	Practice	Project	Durationin Hours	CIE Marks	SEE Marks	Total Marks	
						L	T	P	J					
1	BSC	23EN1201	Single and Multivariate Calculus	MAT	All Depts	3	0	0	0	03	60	40	100	3
2	BSC	23EN1202	Object Oriented Programming	CSE	All Depts	2	1	2	0	03	60	40	100	4
3	ESC	23EN1103	Engineering Chemistry	CHEM	All Depts	2	0	2	0	03	60	40	100	3
4	ESC	23EN1104	Introduction to Mechanical Engineering	ME	All Depts	2	0	2	0	03	60	40	100	3
5	ESC	23EN1105	Introduction to Electrical Engineering	ECE	All Depts	2	0	0	0	03	60	40	100	2
6	ESC	23EN1106	Engineering Mechanics	ME	All Depts	2	0	0	0	03	60	40	100	2
7	HSMC	23EN1107	Technical English	HUM	All Depts	2	0	0	0	01	100	--	100	2
8	AEC	23EN1108	Environmental Science	Biology	All Depts	1	0	0	0	01	100	--	50	1
9	HSMC	23EN1109	Kannada Kali / Manasu	HUM	All Depts	1	0	0	0	01	100	--	50	0
		Total									560	240	800	20

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	II SEMESTER (Physics Cycle)													
S. N	Course Type	Course Code	Course Name	Teaching Department	Specific to Department	Teaching Hours / Week				Examination				Credits
						Lecture	Tutorial	Practice	Project	Durationin Hours	CIE Marks	SEE Marks	Total Marks	
						L	T	P	J					
1	BSC	23EN1201	Single and Multivariate Calculus	MAT	All Depts	3	0	0	0	03	60	40	100	3
2	ESC	23EN1202	Object Oriented Programming	CSE	All Depts	2	1	2	0	03	60	40	100	4
3	BSC	23EN1110	Engineering Physics	PHY	All Depts	3	0	2	0	03	60	40	100	4
4	ESC	23EN1111	Introduction to Electronics Engineering	ECE	All Depts	3	0	0	0	03	60	40	100	3
5	ESC	23EN1112	Engineering Graphicsand Design Thinking	ME	All Depts	2	0	2	0	03	60	40	100	3
6	AEC	23EN1113	Biology for Engineers	Biology	All Depts	2	0	0	0	01	100	--	100	2
7	HSMC	23EN1114	Constitution of India and Professional Ethics	HUM	All Depts	1	0	0	0	01	50	--	50	1
		Total									450	200	650	20

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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	23CT2301	Transforms and Numerical Techniques	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC	23CT2302	Data Structures	CSE	3	0	2	0	03	60	40	100	**4**
3	IPCC	23CT2303	Digital Logic Design	ECE	3	0	2	0	03	60	40	100	**4**
4	PCC	23CT2304	Discrete Mathematics and Graph Theory	CSE	3	0	0	0	03	60	40	100	**3**
5	PCC	23CT2305	Full Stack Development	CST	3	0	0	0	03	60	40	100	**3**
6	AEC	23CT23XX	Liberal Studies/MOOC	Any Dept.	1	0	0	0	01	50	--	50	**1**
7	SEC	23CT23XX	Skill Enhancement Course – I	CST	1	0	2	0	01	100	--	100	**2**
8	SEC	23CT2306	Cognitive and Technical Skills-I	CST	0	0	4	0	04	100	--	100	**2**
			Total		**17**	**00**	**10**	**00**	**21**	**550**	**200**	**750**	**22**

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Liberal Studies – I			
S.N	Course Code	Course Name	Offering Department
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	

Skill Enhancement Course – I		
S.N	Course Code	Course Name
1	23CT2307	Design Thinking & Ideation
2	23CT2308	Innovative Businesses & Breakthrough Technologies

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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	23CT2401	Probability & Statistics	MAT	3	0	0	0	03	60	40	100	**3**
2	IPCC	23CT2402	Design and Analysis of Algorithms	CSE	3	0	2	0	03	60	40	100	**4**
3	PCC	23CT2403	Database Management System	CSE	3	0	2	0	03	60	40	100	**4**
4	PCC	23CT2404	Introduction to Artificial Intelligence	CSE	3	0	0	0	03	60	40	100	3
5	IPCC	23CT2405	Computer Organization and Architecture	CSE	3	0	0	0	03	60	40	100	**3**
6	SEC	23CT24XX	Skill Enhancement Course – II	CST	1	0	2	0	01	100	--	100	**2**
7	SEC	23CT2406	Cognitive and Technical Skills-II	CST	0	0	4	0	04	100	--	100	**2**
			Total		**16**	**00**	**10**	**02**	**20**	**500**	**200**	**700**	**21**

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Skill Enhancement Course – II		
S.N	**Course Code**	**Course Name**
1	23CT2407	Small E-Business Launch
2	23CT2408	Idea Generation and Validation

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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	IPCC	23CT3501	Theory of Computation	CSE	3	1	0	0	03	60	40	100	4
2	PCC	23CT3502	Software Engineering & Project Management	CSE	3	0	0	0	03	60	40	100	3
3	IPCC	23CT3503	Machine Learning	CSE	3	0	2	0	03	60	40	100	4
4	IPCC	23CT3504	Product Design & Development	CST	2	0	0	2	03	60	40	100	3
5	IPCC	23CT3505	Operating System	CSE	3	0	2	0	03	60	40	100	4
6	PEC	23CT35XX	Professional Elective Course – I / MOOC	CST	3	0	0	0	03	60	40	100	3
7	SEC	23CT3506	Cognitive and Technical Skills-III	CST	0	0	4	0	06	100	--	100	2
8	PROJ	23CT3507	Mini Project	CST	0	0	0	4	01	100	--	100	2
			Total		**17**	**01**	**08**	**06**	**25**	**560**	**240**	**800**	**25**

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Professional Elective Course – I		
S.N	Course Code	Course Name
1	23CT3508	Interactive Art and Creative Coding
2	23CT3509	Quantum Computing Fundamentals
3	23CT3510	IoT Fundamentals: Architecture to Analytics
4	23CT3511	NoSQL Database Fundamentals

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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	23CT3601	Supply Chain Management and Operations	CST	2	0	0	0	02	60	40	100	**2**
2	IPCC	23CT3602	Introduction to Computer Networks	CST	3	0	2	0	03	60	40	100	**4**
3	PCC	23CT3603	Lean Startup Methodology	CST	2	0	2	2	03	60	40	100	**4**
4	OEC	23OEXXXX	Open Elective – I	All Dept	3	0	0	0	03	60	40	100	**3**
5	PEC	23CT36XX	Professional Elective Course – II / MOOC	CST	3	0	0	0	03	60	40	100	**3**
6	PEC	23CT36XX	Professional Elective Course – III / MOOC	CST	3	0	0	0	03	60	40	100	**3**
7	PROJ	23CT3604	Cognitive and Technical Skills-IV	CST	0	0	4	0	01	100	--	100	**2**
			Total		**16**	**00**	**08**	**02**	**18**	**460**	**240**	**700**	**21**

NOTE:

Internship: All the students admitted to III year shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A university examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up/complete the internship shall be declared fail and shall have to
complete during subsequent University examination after satisfying the internship requirements

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Open Electives-I		
S.N	**Course Code**	**Course Name**
1	23OE0019	Small E-Business Launch
2	23OE0020	Product Engineering & Entrepreneurship

Professional Elective Course – II		
S.N	**Course Code**	**Course Name**
1	23CT3605	Gaming Design Fundamentals
2	23CT3606	Fundamentals of Quantum Cryptography/ Quantum Algorithms and Cryptography
3	23CT3607	Edge Computing with IoT
4	23CT3608	Data Engineering / Data Science for Engineers

Professional Elective Course – III		
S.N	**Course Code**	**Course Name**
1	23CT3609	Game Development using Unity/ Game Development Using Godot
2	23CT3610	Qiskit and Quantum Circuits: A Hands-On Approach
3	23CT3611	Building Intelligent IoT Systems/ Foundations of Cloud IoT Edge ML
4	23CT3612	Effective Data Transformation with DBT

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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	PEC	23CT4701	Product Analytics	CST	2	0	0	2	03	60	40	100	**3**
2	OEC	23OEXXXX	Open Elective – II	All. Dept.	3	0	0	0	03	60	40	100	**3**
3	PEC	23CT47XX	Professional Elective Course – IV/ MOOC	CST	3	0	0	0	03	60	40	100	**3**
4	PEC	23CT47XX	Professional Elective Course – V / MOOC	CST	3	0	0	0	03	60	40	100	**3**
5	PROJ	23CT4702	Capstone Project-Phase I	CST	0	0	0	8	03	100	--	100	**4**
			Total		**11**	**00**	**00**	**10**	**15**	**340**	**160**	**500**	**16**

Open Electives-II		
S.N	**Course Code**	**Course Name**
1	23OE0021	Lean Startup Methodology
2	23OE0022	Product Analytics

Professional Elective Course – IV		
S.N	**Course Code**	**Course Name**
1	23CT4703	AR/VR & Game-Theoretic/ Algorithmic Game Theory
2	23CT4704	Quantum Artificial Intelligence
3	23CT4705	Cyber-physical systems /Foundations of Cyber-physical Systems
4	23CT4706	Introduction to Data Visualization

Professional Elective Course – V		
S.N	**Course Code**	**Course Name**
1	23CT4707	Unreal Engine Game Development for Beginners
2	23CT4708	Quantum Computing with PennyLane/ Quantum Machine learning with TensorFlow Quantum
3	23CT4709	Real-Time Cyber-Physical Systems Design using MATLAB
4	23CT4710	Tableau for Data Analysts/ Power BI for Data Analysts

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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	23CT4801	Capstone Project-Phase II	CST	0	0	0	22	03	60	40	100	**11**
2	INT	23CT4802	Internship	--	0	0	6	0	03	100	--	100	**04**
			Total		**00**	**00**	**06**	**22**	**06**	**160**	**40**	**200**	**15**

NOTE 1: Internship

Completed during the intervening vacations of VI and VII semesters and /or VII and VIII semesters or VIII semesters

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

I	-20	V	-25
II	-20	VI	-21
III	-22	VII	- 16
IV	- 21	VIII	– 15

Total=160

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Elective courses domain-wise

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 Name	Course Name	Course Name	Course Name	Course Name
1	Domain-1	GAMING AND ANIMATIONS/ AR&VR	Interactive Art and Creative Coding	Gaming Design Fundamentals	Game Development using Unity/ Game Development Using Godot	AR/VR & Game-Theoretic/ Algorithmic Game Theory	Unreal Engine Game Development for Beginners
2	Domain-2	QUANTUM INFORMATIO N SYSTEM	Quantum Computing Fundamentals	Fundamentals of Quantum Cryptography/ Quantum Algorithms and Cryptography	Qiskit and Quantum Circuits: A Hands-On Approach	Quantum Artificial Intelligence	Quantum Computing with PennyLane/ Quantum Machine learning with TensorFlow Quantum
3	Domain-3	INTERNET OF THINGS TOOLS & TECHNOLOGI ES	IoT Fundamentals : Architecture to Analytics	Edge Computing with IoT	Building Intelligent IoT Systems/ Foundations of Cloud IoT Edge ML	Cyber-physical systems /Foundations of Cyber-physical systems	Real-Time Cyber-Physical Systems Design using MATLAB
4	Domain-4	DATA ANALYTICS	NoSQL Database Fundamentals	Data Engineering / Data Science for Engineers	Effective Data Transformation with DBT	Introduction to Data Visualization	Tableau for Data Analysts/ Power BI for Data Analysts

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