DAYANANDA SAGAR UNIVERSITY

DEVARAKAGGALAHALLI, HAROHALLI, KANAKAPURA ROAD
BENGALURU SOUTH DISTRICT- 562112

SCHOOL OF ENGINEERING

SCHEME & SYLLABUS
FOR
BACHELOR OF TECHNOLOGY (B.Tech) – 2024-28

ELECTRONICS AND COMMUNICATION ENGINEERING

(With effect from 2024-28)

Dayananda Sagar University

School of Engineering

Devarakaggalahalli , Harohalli , Kanakapura Road , Bengaluru South District- 562112

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME AND SYLLABUS

B.Tech. PROGRAMME– 2024-28 BATCH

Definitions / Descriptions

Definition of Credit:	
01 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

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
INT	Internship
PROJ	Project Work

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME 2024 – 2028 Batch

I SEMESTER

S.N	Course Type	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	Linear Algebra and Differential Equations	MAT	All Depts.	3	0	0	0	03	60	40	100	**3**
2	BSC	Engineering Chemistry	CHEM	All Depts.	2	0	2	0	03	60	40	100	**3**
3	ESC	Introduction to Mechanical Engineering	ME	All Depts.	2	0	2	0	03	60	40	100	**3**
4	ESC	Introduction to Electrical Engineering	EC	All Depts	2	0	0	0	03	60	40	100	**2**
5	ESC	Object Oriented Programming	CSE	All Depts.	2	2	2	0	03	60	40	100	**4**
6	ESC	Engineering Mechanics	ME	All Depts.	2	0	0	0	03	60	40	100	**2**
7	HSMC	Technical English	HUM	All Depts.	1	2	0	0	--	100	--	100	**2**
8	AEC	Environmental Science	Biology	All Depts.	1	0	0	0	--	100	--	100	**0**
9	HSMC	Kannada Kali / Manasu	HUM	All Depts.	0	0	0	0	--	100	--	100	**0**
10		Cognitive and Technical Skills I		Training & Placement	2	0	0	0	02	100	--	100	2
									Total	**700**	**200**	**900**	**21**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME 2024 – 2028 Batch

II SEMESTER

S.N	Course Type	Course Name	Teaching Department	Specific to Department	Teaching Hours / Week				Examination				Credits
					Lecture	Tutorial	Practice	Project	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	J					
1	BSC	Single and Multivariate Calculus	MAT	All Depts.	3	0	0	0	03	60	40	100	**3**
2	BSC	Engineering Physics	PHY	All Depts.	3	0	2	0	03	60	40	100	**4**
3	ESC	Introduction to Electronics Engineering	ECE	All Depts.	3	0	0	0	03	60	40	100	**3**
4	ESC	C Programming for Problem Solving	CSE	All Depts.	2	2	2	0	03	60	40	100	**4**
5	ESC	Engineering Graphics and Design Thinking	ME	All Depts.	1	0	4	0	03	60	40	100	**3**
6	AEC	Biology for Engineers	Biology	All Depts.	2	0	0	0	--	100	--	100	**2**
7	HSMC	Constitution of India and Professional Ethics	HUM	All Depts.	1	0	0	0	--	100	--	100	**0**
8		Cognitive and Technical Skills II		Training & Placement	2	0	0	0	02	100	--	100	**2**
		Total								**600**	**200**	**800**	**21**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME 2024 – 2028 Batch

III SEMESTER

Sl.No	Course Code	Course Type	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	24EC2301	BSC	Transforms and Numerical Methods	MAT	3	0	0	3	3	60	40	100	3
2	24EC2302	IPCC	Analog Electronic Circuits	ECE	3	0	2	3	3	60	40	100	4
3	24EC2303	IPCC	Digital Logic Design	ECE	3	0	2	3	3	60	40	100	4
4	24EC2304	PCC	Network Analysis	ECE	3	0	0	3	3	60	40	100	3
5	24EC2305	PCC	Computer Organization & Architecture	ECE/CSE	3	0	0	3	3	60	40	100	3
6	24LSXXXX	HSMC	Liberal Studies – I	Any Dept.	1	0	0	1	1	100	--	100	1
7	24ECXXXX	SEC	Skill Enhancement Course – I	ECE	1	0	2	1	1	100	--	100	2
8	24EC2306		Cognitive And Technical Skills III	Training & Placement	2	0	0	2	2	100	--	100	0
									Total	600	200	800	**20**

Skill Enhancement Course – I		
1	Introduction to Model-Based Design	24EC2307
2	Microcontroller Programming	24EC2308

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME 2024 – 2028 Batch

IV SEMESTER

Sl.No	Course Code	Course Type	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	24EC2401	BSC	Probability And Statistics	MAT	3	0	0	0	3	60	40	100	3
2	24EC2402	PCC	Electromagnetic Field Theory	ECE	3	1	0	0	3	60	40	100	4
3	24EC2403	IPCC	Embedded System Design	ECE	3	0	2	0	3	60	40	100	4
4	24EC2404	PCC	Control & Instrumentation	ECE	3	0	0	0	3	60	40	100	3
5	24EC2405	PCC	Signals & Systems	ECE	3	0	0	0	3	60	40	100	3
6	24EC2406	IPCC	CMOS VLSI Design	ECE	3	0	2	0	3	60	40	100	4
7	24EC24XX	SEC	Skill Enhancement Course – II	ECE	1	0	2	0	1	100	--	100	2
8	24EC2407		Cognitive And Technical Skills IV	Training & Placement	2	0	0	0	2	100	--	100	0
Total										**560**	**240**	**800**	**23**

Skill Enhancement Course – II		
1	Introduction To Circuit Design and Simulation	24EC2408
2	Introduction to Embedded Machine Learning	24EC2409

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SCHEME 2024 – 2028 Batch

V SEMESTER													
Sl.No	Course Code	Course Type	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	24EC3501	IPCC	Machine Learning for Engineers	ECE	3	0	2	0	3	60	40	100	4
2	24EC3502	PCC	Digital Signal Processing	ECE	3	0	0	0	3	60	40	100	3
3	24EC3503	IPCC	Analog and Digital Communication	ECE	3	0	2	0	3	60	40	100	4
4	24EC3504	PCC	Digital Design Verification	ECE	3	0	0	0	3	60	40	100	3
5	24EC3505	PCC	Antennas and wave propagation	ECE	3	0	0	0	3	60	40	100	3
6	24EC3506	DSC	Design Studio: AIOT System Design	ECE	2	0	0	0	3	100	--	100	2
7	24EC35XX	PEC	Professional Elective Course – I / MOOC	ECE	3	0	0	0	3	60	40	100	3
8	24EC3507		Cognitive And Technical Skills V	Training & Placement	2	0	0	0	2	100	--	100	0
Total										**560**	**240**	**800**	**22**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME 2024 – 2028 Batch

VI SEMESTER

Sl.No	Course Code	Course Type	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	24EC3601	PCC	Control Automation and Intelligent Machines	ECE	3	0	0	0	3	60	40	100	3
2	24EC3602	IPCC	Power Electronics for Electric Vehicles and Smart Grids	ECE	3	0	2	0	3	60	40	100	4
3	24EC3603	IPCC	RF and Microwave Engineering	ECE	3	0	2	0	3	60	40	100	4
4	24EC3604	PCC	Wireless Communication	ECE	3	0	0	0	3	60	40	100	3
5	24EC36XX	PEC	Professional Elective Course – II / MOOC	ECE	3	0	0	0	3	60	40	100	3
6	24OEXXXX	OE	Open Elective – I	ECE	3	0	0	0	3	60	40	100	3
7	24EC3605	PROJ	Minor Project	ECE	0	0	4	0	3	100	--	100	2
8	24EC3606		Cognitive And Technical Skills VI	Training & Placement	2	0	0	0	2	100	--	100	0
Total										**560**	**240**	**800**	**22**

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SCHEME 2024 – 2028 Batch

VII SEMESTER													
Sl.No	Course Code	Course Type	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	Entrepreneurial Finance & Deep-Tech Start-ups	ECE	3	0	0	0	3	60	40	100	3
2		PEC	Professional Elective Course – III/ MOOC	ECE	3	0	0	0	3	60	40	100	3
3		PEC	Professional Elective Course – IV / MOOC	ECE	3	0	0	0	3	60	40	100	3
4		OE	Open Elective – II	ECE	3	0	0	0	3	60	40	100	3
5		PROJ	Capstone Project -I	ECE	0	0	0	8	3	100	--	100	4
									Total	**340**	**160**	**500**	**16**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME 2024 – 2028 Batch

VIII SEMESTER

Sl.No	Course Code	Course Type	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	Professional Elective Course – V / MOOC		3	0	0	0	3	60	40	100	3
2		HSMC	Leadership Policy & Authentic Intelligence		2	0	0	0	2	100	--	100	2
3		PROJ	Capstone Project-II		0	0	0	20	3	60	40	100	10
4		INT	Internship (Industry/Research/COE Based)		0	0	0	4	3	100	--	100	2
Total										**320**	**80**	**400**	**17**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME - B.TECH – 2024-28 ONWARDS

PROFESSIONAL ELECTIVE COURSES

5th Semester	
PEC-I	
Course Code	**Course Name**
24EC3510	Information Theory and Coding
24EC3511	Adaptive Signal Processing
24EC3512	Mixed Signal IC design
24EC3513	Real-Time Operating Systems
24EC3514	Data Acquisition & Processing Systems
24EC3515	Deep Learning

6th Semester	
PEC-II	
Course Code	**Course Name**
24EC3607	Photonics and Optical Communication
24EC3608	Digital Image Processing
24EC3609	Digital IC Design
24EC3610	Applied Model-Based Design
24EC3611	Speech & Audio Signal Processing
24EC3612	Computer Vision and Video Analytics

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SCHEME - B.TECH – 2024-28 ONWARDS

7th Semester			
PEC-IV		PEC-V	
Course Code	Course Name	Course Code	Course Name
	Wireless Sensor Networks		5G and Mobile Communication
	Satellite Remote Sensing		Seismic Signal Processing
	Low Power VLSI Design		Semiconductor Device Modeling
	Edge AI		In-vehicle Networking
	Industrial IoT		Software Defined Radio
	Generative AI and LLM		Industrial Digital Twins

8th Semester	
PEC-V	
Course Code	Course Name
	Radar and Navigation Systems
	AI in Healthcare & Biomedical Systems
	AI and ML for VLSI CAD
	Embedded Linux
	Chip Packaging and Semiconductor Manufacturing
	Robotics

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Professional Elective Courses

Sl.No		Verticals		V-1	V-2	V-3	V-4	V-5	V-6
		Domain Clusters		Communication	Signal Processing	VLSI & Semiconductor Systems	IoT & Embedded Systems	Interdisciplinary	NVIDIA DLI Courses
				(A)	(B)	(C)	(D)	(E)	(F)
1	PROFESSIONAL ELECTIVE COURSES	PEC-I	5th Sem	Information Theory and Coding	Adaptive Signal Processing	Mixed Signal IC design	Real Time Operating Systems	Data Acquisition & Processing Systems	Deep Learning
2		PEC-II	6th Sem	Photonics and Optical Communication	Digital Image Processing	Digital IC Design	Applied Model Based Design	Speech & Audio Signal Processing	Computer Vision and Video Analytics
3		PEC-III	7th Sem	Wireless Sensor Networks	Satellite Remote Sensing	Low Power VLSI Design	Edge AI	Industrial IoT	Generative AI and LLM
4		PEC-IV	7th Sem	5G and Mobile Communication	Seismic Signal Processing	Semiconductor Device Modelling	In Vehicle Networking	Software Defined Radio	Industrial Digital Twins
5		PEC-V	8th Sem	Radar and Navigation Systems	AI in Healthcare & Biomedical Systems	AI and ML for VLSI CAD	Embedded Linux	Chip Packaging and Semiconductor Manufacturing	Robotics

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

OPEN ELECTIVE COURSES

	Open Elective I -Courses		Open Elective II-Courses
Course Code	**Course Name**	**Course Code**	**Course Name**
24OE0033	Energy Storage Technologies (Batteries and BMS)	24OE0036	Introduction to Nanotechnology and its Applications
24OE0034	Electronic Materials, Processing & Fabrication	24OE0038	Electric Vehicle Technology
24OE0035	Smart Cities and Smart Grids	24OE0039	Human-Machine Interaction

Minor Track for Non-ECE Students

Name of the Course	Credit
IoT-enabled Sensor Engineering	3
Embedded Systems Engineering	4
Real-Time Operating System	3
Speech & Audio Signal Processing	3
Edge AI	3
Project	2
Total Credits	**18**