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Department of Electronics and Communication Engineering

Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

SemesterNo:	IV		
CourseTitle:	– Analog and Digital Communication	**CourseCode:**	**U24EC402**
CourseOutcomeNo.	**Description**		
ADC.CO1	Interpret the knowledge about AM, FM Transmitters and Receivers		
ADC.CO2	Analyze and design the various Modulation Techniques.		
ADC.CO3	Interpret the concept of information theory and apply source coding schemes.		
ADC.CO4	Demonstrate various error control schemes and develop the encoding and decoding techniques to detect and correct the errors.		
ADC.CO5	Illustrate the concepts of Digital modulation techniques and base band signal		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PSO 1**	**PSO 2**
ADC.CO1	3	2	1	1	1	-	-	-	-	-	-	3	2
ADC.CO2	3	3	2	1	1	-	-	-	-	1	-	3	2
ADC.CO3	3	3	3	2	2	-	-	-	-	-	-	3	3
ADC.CO4	3	3	2	2	2	-	-	-	-	-	-	2	3
ADC.CO5	3	3	3	2	2	-	-	-	-	-	-	3	3
Average	**3**	**2.8**	**2.2**	**1.6**	**1.6**	**-**	**-**	**-**	**-**	**1**	**-**	**2.8**	**2.6**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	IV		
Course Title:	Analog Communication (AC)	**Course Code:**	**U24EC402**
Course Outcome No.	**Description**		
AC.CO1	Analyze and relate the Single stage and Multistage RC Coupled amplifiers with BJT.		
AC.CO2	Interpret the effect of negative feedback on shunt and series feedback amplifiers and explain its stability considerations		
AC.CO3	Demonstrate the application of positive feedback to generate sustained oscillations and illustrate operation of different types of Oscillators.		
AC.CO4	Compare operation of the classes of Power Amplifiers and their design considerations.		
AC.CO5	Illustrate design consideration of different types of Tuned Amplifiers and their operation.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
AC.CO1	3	3	2	1	2	-	-	-	-	-	-	3	3
AC.CO2	3	2	2	-	2	-	-	-	-	-	-	3	2
AC.CO3	3	3	2	1	2	-	-	-	-	-	-	3	3
AC.CO4	3	3	2	-	1	-	-	-	-	-	-	3	3
AC.CO5	3	3	2	1	1	-	-	-	-	-	-	3	3
Average	**3**	**2.8**	**2**	**1**	**1.6**	**-**	**-**	**-**	**-**	-	**-**	**3**	**2.8**

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Course Outcomes

ACADEMIC YEAR: 2025-26

Course Outcomes:

SemesterNo:	IV		
CourseTitle:	Control System	**CourseCode:**	**U24EC403**
Course OutcomeNo.	**Description**		
CS CO1	Formulate mathematical models for Electromechanical LTI system and Derive transfer functions using.block diagram reduction and signal flow graphs		
CS CO2	Analyze the transient and steady state Response of First and second order system and evaluate the impact of PID controllers on system p;erformance		
CS CO3	Assess absolute and relative stability of an LTI system using time domain techniques.		
CS CO4	Determine the System stability of an LTI system using frequency domain techniques and understand the concepts of compensators.		
CS CO5	Construct states space models for LTI Systems and to evaluate system properties, including controllability and observability.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PSO 1**	**PSO 2**
CS CO1	3	2	1	1	1							3	2
CS CO2	3	3	2	2	2							3	3
CS CO3	3	3	2	3	1							3	3
CS CO4	3	3	3	3	2	-	-			-	1	3	3
CS CO5	3	3	2	3	3							3	3
Average	**3**	**2.8**	**2**	**2.4**	**1.8**						**1**	**3**	**3**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	IV		
Course Title:	Pulse and Linear Integrated Circuits (PLIC)	**Course Code:**	**U24EC404**
Course Outcome No.	**Description**		
PLIC.CO1	Construct different linear networks and analysis their response to different input signals		
PLIC.CO2	Analyze and design multi vibrators and sweep circuits using transistor		
PLIC.CO3	To understand the basic concept of operational amplifier and differential amplifier		
PLIC.CO4	Develop skills to design simple circuits using op amp and simple filter circuits		
PLIC .CO5	Learn about various techniques to develop A/D and D/A converters		

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
PLIC.CO1	3	2	3	-	-	-	-	-	-	-	2	2	2
PLIC.CO2	3	2	3	1	-	2	-	-	-	-	2	2	2
PLIC.CO3	3	3	1	-	-	-	-	-	-	-	2	2	2
PLIC.CO4	3	2	3	-	2	2	-	-	-	-	2	3	2
PLIC .CO5	3	2	3	2	2	2	-	-	-	-	3	3	2
Average	**3**	**2.2**	**2.6**	**1.5**	**0.8**	**1.2**	**-**	**-**	**-**	**-**	**2.2**	**2.4**	**2**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	IV		
Course Title:	ANALOG AND DIGITAL COMMUNICATION LAB	**Course Code:**	U24EC4L1
Course Outcome No.	**Description**	**BTL**	**Competency**
ADCLab.CO1	**Demonstrate** and simulate modulation and demodulation of AM and FM.	Apply	PO5 – 5.2.2
ADCLab.CO2	**Construct** the need for pre-emphasis and de-emphasis at the transmitter and receiver respectively.	Create	PO3 – 3.1.3
ADC Lab CO3	**Demonstrate** the generation of PAM, PWM circuits	Analyze	PO2 – 2.4.4
ADCLab.CO4	**Determine** the generation and detection of baseband transmission PCM, DM, and ADM	Evaluate	PO2 – 2.4.1
ADCLab.CO5	**Generate** of ASK, FSK, DPSK and QPSK.	Apply	PO3 – 3.1.1

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
ADCLab.CO1	3	2	2	2	3	2	-	-	1	1	-	2	2
ADC Lab CO2	3	3	3	2	3	1	-	-	2	2	2	3	2
ADC Lab CO3	3	3	3	3	3	2	-	-	2	2	2	3	2
ADC Lab CO4	2	2	3	2	3	2	-	-	2	2	2	2	3
ADCLab.CO5	2	3	3	3	3	3	-	-	2	3	2	3	2
Average	**2.6**	**2.6**	**2.8**	**2.4**	**3**	**2**	**-**	**-**	**1.8**	**2**	**2**	**2.6**	**2.2**

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Course Outcomes & Course Articulation Matrix

Course Outcomes:

SemesterNo:	IV		
CourseTitle:	Analog Circuit	**CourseCode:**	**U24EC407**
CourseOutcomeNo.	**Description**		
AC Lab CO1	Evaluate gain and bandwidth of BJT Amplifiers.		
AC Lab CO2	Design and implement Input and Output impedance of Feedback amplifiers.		
AC Lab CO3	Determine the frequency of oscillator circuits.		
AC Lab CO4	Demonstrate the efficiency of Power amplifiers.		
AC Lab CO5	Determine the frequency response of RF amplifiers.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PSO 1**	**PSO 2**
AC Lab CO1	3	3	2	3	3							3	3
AC Lab CO2	3	3	3	3	3			2	2		1	3	3
AC Lab CO3	3	3	2	3	3							3	3
AC Lab CO4	3	3	2	3	3							3	3
AC Lab CO5	3	3	2	3	3							3	3
Average	**3**	**2.9**	**2**	**2.5**	**1.5**			**2**	**2**		**1**	**3**	**3**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	IV		
Course Title:	Pulse and Linear Integrated Circuits (PLIC) LAB	**Course Code:**	**U24EC4L3**
Course Outcome No.	**Description**		
PLIC LAB.CO1	Construct different linear networks and analysis their response to different input signals		
PLIC LAB.CO2	Analyze and design multi vibrators and sweep circuits using transistor		
PLIC LAB.CO3	To understand the basic concept of operational amplifier and differential amplifier		
PLIC LAB.CO4	Develop skills to design simple circuits using op amp and simple filter circuits		
PLIC LAB.CO5	Learn about various techniques to develop A/D and D/A converters		

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
PLIC LAB.CO1	3	2	3	-	-	-	-	-	-	-	2	2	2
PLIC LAB.CO2	3	2	3	1	-	2	-	-	-	-	2	2	2
PLIC LAB.CO3	3	3	1	-	-	-	-	-	-	-	2	2	2
PLIC LAB.CO4	3	2	3	-	2	2	-	-	-	-	2	3	2
PLIC LAB.CO5	3	2	3	2	2	2	-	-	-	-	3	3	2
Average	**3**	**2.2**	**2.6**	**1.5**	**0.8**	**1.2**	**-**	**-**	**-**	**-**	**2.2**	**2.4**	**2**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	IV		
Course Title:	MICRO PROJECT	**Course Code:**	**U24EC4P1**
Course Outcome No.	**Description**		
MiP.CO1	Identify and define a problem statement from the requirements raised from literature survey analysis		
MiP.CO2	Build and Test electronic circuits/prototype for developing real life small electronic applications		
MiP.CO3	Work in teams, write comprehensive report and effective presentation of the project work		
MiP.CO4	Rapid prototyping which will lead them towards entrepreneurship.		
MiP.CO5	Prepare and deliver a professional technical report and seminar presentation, including oral and written communication		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

COs / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
MiP.CO1	**3**	**2**	**1**	**1**	**1**	**–**	**–**	**–**	**–**	**1**	**–**	**3**	**2**
MiP.CO2	**3**	**3**	**2**	**2**	**2**	**–**	**–**	**–**	**–**	**1**	**2**	**3**	**2**
MiP.CO3	**2**	**2**	**3**	**2**	**2**	**–**	**–**	**–**	**3**	**3**	**2**	**3**	**3**
MiP.CO4	**2**	**2**	**2**	**3**	**3**	**–**	**–**	**–**	**–**	**1**	**3**	**2**	**3**
MiP.CO5	**1**	**1**	**2**	**1**	**1**	**–**	**–**	**–**	**3**	**3**	**2**	**2**	**2**
Average	**2.2**	**2.0**	**2.0**	**1.8**	**1.8**	**–**	**–**	**–**	**2.0**	**1.8**	**1.8**	**2.6**	**2.4**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	IV		
Course Title:	COMPUTER APPLICATIONS	**Course Code:**	**U24EC4L1**
Course Outcome No.	**Description**		
CA LAB.CO1	Identify and define a problem statement from the requirements raised from literature survey analysis		
CA LAB.CO2	Build and Test electronic circuits/prototype for developing real life small electronic applications		
CA LAB.CO3	Work in teams, write comprehensive report and effective presentation of the project work		
CA LAB.CO4	Rapid prototyping which will lead them towards entrepreneurship.		
CA LAB.CO5	Prepare and deliver a professional technical report and seminar presentation, including oral and written communication		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

COs / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CA LAB.CO1	**3**	**2**	**1**	**1**	**1**	–	–	–	–	**1**	–	**3**	**2**
CA LAB.CO2	**3**	**3**	**2**	**2**	**2**	–	–	–	–	**1**	**2**	**3**	**2**
CA LAB.CO3	**2**	**2**	**3**	**2**	**2**	–	–	–	**3**	**3**	**2**	**3**	**3**
CA LAB.CO4	**2**	**2**	**2**	**3**	**3**	–	–	–	–	**1**	**3**	**2**	**3**
CA LAB.CO5	**1**	**1**	**2**	**1**	**1**	–	–	–	**3**	**3**	**2**	**2**	**2**
Average	**2.2**	**2.0**	**2.0**	**1.8**	**1.8**	–	–	–	**2.0**	**1.8**	**1.8**	**2.6**	**2.4**

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Course Outcomes&Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

SemesterNo:	VI		
CourseTitle:	**VLSI Design**	**CourseCode:**	**U23EC602**
CourseOutcomeNo.	**Description**		
VLSI CO.1	Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors and basic electrical properties of MOS transistors.		
VLSI CO.2	Analyze the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit.		
VLSI CO.3	Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD		
VLSI CO.4	Analyze dynamic CMOS & pseudo NMOS structures of logic gates, SRAM & DRAM cells		
VLSI CO.5	Explain different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PSO 1**	**PSO 2**
VLSI CO.1	3	2	1	2	1						1	2	1
VLSI CO.2	3	3	2	3	2							3	3
VLSI CO.3	3	3	3	3	3		2	2			1	3	3
VLSI CO.4	3	3	2	3	2							3	3
VLSI CO.5	2	2	2	3	2	1	1				2	2	2
Average	**2.8**	**2.6**	**2.0**	**2.8**	**2.0**	**1**	**1.5**	**2**			**1**	**2.6**	**2.4**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VI		
Course Title:	Embedded Systems (ES)	**Coursecode:**	**U23EC603**
Course Outcome No.	**Description**		
ES.CO1	**Explain** embedded system basics, classifications, and key characteristics.		
ES.CO2	**Apply** microcontroller concepts and **demonstrate** interfacing using interrupts and communication protocols.		
ES.CO3	**Develop** simple embedded firmware using various design approaches and IDE tools.		
ES.CO4	**Analyze** RTOS components such as tasks, semaphores, queues, and memory management.		
ES.CO5	**Evaluate** system architecture, processor organization, memory, and SoC design aspects.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
ES.CO1	3	2	1	1	1	0	0	0	0	0	2	2	2
ES.CO2	2	2	2	2	3	0	0	0	0	0	3	3	2
ES.CO3	2	2	3	2	3	0	0	0	0	0	3	3	2
ES.CO4	2	3	2	3	1	0	0	0	0	0	2	2	3
ES.CO5	2	3	2	2	2	0	0	0	0	0	2	3	2
Average	**2.2**	**2.4**	**2**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**2.4**	**2.6**	**2.2**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VI		
Course Title:	**Electronic Measurement and Instrumentation**	**Course Code:**	**U324EC604**
Course Outcome No.	**Description**		
EMI.CO1	**Describe** characteristic of an instrument and state different Standards of measurements		
EMI.CO2	**Identify** and explain different types of Transducers		
EMI.CO3	**Draw** and Interpret types of transducers.		
EMI.CO4	**Design** and analyze the digital voltmeters and prioritize the instruments.		
EMI.CO5	**Identify** and classify types of Biomedical instruments.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
EMI.CO1	3	2	1	3	1	0	0	0	0	0	2	2	2
EMI.CO2	2	2	2	2	3	0	0	0	0	0	3	3	2
EMI.CO3	2	2	3	2	3	0	0	0	0	0	3	3	2
EMI.CO4	2	3	2	3	1	0	0	0	0	0	2	2	3
EMI.CO5	2	3	2	3	2	0	0	0	0	0	2	3	2
Average	**2.2**	**2.4**	**2**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**2.4**	**2.6**	**2.2**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VI		
Course Title:	Introduction to IOT (IIOT)	**Course Code:**	**U23EC607**
Course Outcome No.	**Description**		
IIOT.CO1	Relate and analyze the IOT technology and research directions.		
IIOT.CO2	Comprehend various protocols and architecture of IOT		
IIOT.CO3	Design simple IOT systems with IOT reference model		
IIOT.CO4	Compare with the various applications of IOT		
IIOT.CO5	Comprehend the different privacy and security approaches at IOT.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
IIOT.CO1	3	3	2	2	1	-	-	-	-	-	-	3	3
IIOT.CO2	3	2	2	1	2	-	-	-	-	-	-	3	2
IIOT.CO3	3	3	3	2	3	-	-	-	-	-	-	2	3
IIOT.CO4	3	3	2	2	2	-	-	-	-	-	-	3	3
IIOT.CO5	2	2	2	2	2	-	-	-	-	-	-	2	3
IIOT	**2.8**	**2.6**	**2.2**	**1.8**	**2.0**	**-**	**-**	**-**	**-**	**-**	**-**	**2.6**	**2.8**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VI		
Course Title:	**Software Engineering**	**Course Code:**	**U23CS607**
Course Outcome No.	**Description**		
SE CO.1	Acquired working knowledge of alternative approaches and techniques for each phase of software development		
SE CO.2	Judge an appropriate process model(s) assessing software project attributes and analyze necessary requirements for project development eventually composing SRS.		
SE CO.3	Creation of visual models to describe (non-) algorithmic solutions for projects using various design principles		
SE CO.4	Acquire skills necessary as an independent or as part of a team for architecting a complete software project by identifying solutions for recurring problems exerting knowledge on patterns		
SE CO.5	Concede product quality through testing techniques employing appropriate metrics by understanding the practical challenges associated with the development of a significant software system. .		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
SE CO.1	3	2	2	–	2	–	–	–	–	–		2	2
SE CO.2	2	3	3	2	2	–	–	–	–	2	–	3	2
SE CO.3	2	2	3	–	2	–	–	–	–	2	–	2	2
SE CO.4	2	2	3	–	2	–	–	–	3	2	–	3	2
SE CO.5	2	3	2	3	3	–	–		–	–	–	2	3
Average	2.2	2.4	2.6	2.5	2.2				3	2		2.4	2.2

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VI		
Course Title:	Embedded Systems and IoT lab (ES-IOT Lab)	**Course Code:**	**U23EC6L1**
Course Outcome No.	**Description**		
ES-IOT Lab.CO1	**Demonstrate** GPIO operations using Arduino through interfacing of switches, LEDs, LCD, and actuators.		
ES-IOT Lab.CO2	**Implement** sensor interfacing (LDR, Humidity, Ultrasonic, MQ2) for real-time data acquisition.		
ES-IOT Lab.CO3	**Analyze** sensor responses to evaluate environmental parameters and system behavior.		
ES-IOT Lab.CO4	**Develop** Arduino-based embedded applications using relays, buzzers, actuators, and communication modules.		
ES-IOT Lab.CO5	**Implement** IoT communication using Bluetooth and ESP8266 for data transmission to cloud/mobile applications.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
ES-IOT Lab.CO1	3	2	2	2	3	2	-	-	1	1	-	2	2
ES-IOT Lab.CO2	3	3	3	2	3	1	-	-	2	2	2	3	2
ES-IOT Lab.CO3	3	3	3	3	3	2	-	-	2	2	2	3	2
ES-IOT Lab.CO4	2	2	3	2	3	2	-	-	2	2	2	2	3
ES-IOT Lab.CO5	2	3	3	3	3	3	-	-	2	3	2	3	2
Average	**2.6**	**2.6**	**2.8**	**2.4**	**3**	**2**	**-**	**-**	**1.8**	**2**	**2**	**2.6**	**2.2**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

SemesterNo:	VI		
CourseTitle:	**ECAD Lab**	**CourseCode:**	**U24EC608**
CourseOutcomeNo.	**Description**		
ECAD Lab CO.1	Demonstrate Xilinx ISE suite to write Verilog code for logic gates, combinational circuits and sequential circuits.		
ECAD Lab CO.2	Write Verilog code for basic logic gates, complex logic gates, combinational circuits, and sequential circuits using switch level, gate level, data flow and behavioral modeling.		
ECAD Lab CO.3	Develop test bench code using Verilog and verify the simulation results.		
ECAD Lab CO.4	Demonstrate the FPGA implementation of digital circuits and generate the synthesis report.		
ECAD Lab CO.5	Simplify the layouts of basic logic gates using Xilinx ISE/VIVADO.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PSO 1**	**PSO 2**
ECAD Lab CO.1	3	2	2	3	3			1	2		1	3	2
ECAD Lab CO.2	3	3	3	3	3			1	2		1	3	3
ECAD Lab CO.3	3	3	2	3	3			2	2		1	3	3
ECAD Lab CO.4	3	3	3	3	3			2	2		1	3	3
ECAD Lab CO.5	3	3	3	3	3			1	2		1	3	3
Average	**3**	**2.9**	**2.6**	**3**	**3**			**1.4**	**2**		**1**	**3**	**2.9**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

SemesterNo:	VIII		
CourseTitle:	**Principles and Applications of AI**	**CourseCode:**	**U21EC802**
CourseOutcomeNo.	**Description**		
PAAI.CO1	Outline various AI problem-solving approaches for typical AI problems.		
PAAI.CO2	Interpret conceptual knowledge of search methods and optimization problems.		
PAAI.CO3	Analyze knowledge representation and reasoning techniques in AI.		
PAAI.CO4	Describe architectures and communication mechanisms of intelligent agents.		
PAAI.CO5	Enumerate AI concepts through real-world applications.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PSO 1**	**PSO 2**
PAAI.CO1	3	2	-	-	-	-	-	-	-	-	1	2	-
PAAI.CO2	3	3	-	2	2	-	-	-	-	-	1	3	2
PAAI.CO3	3	3	-	2	2	-	-	-	-	-	1	3	2
PAAI.CO4	2	2	2	-	2	-	-	2	1	-	1	2	3
PAAI.CO5	2	1	2	-	3	-	1	-	1	-	2	3	3

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VIII	Course Code	U21CS711
Course Title:	**Comprehensive Viva**		
Course Outcome No.	**Description**		
BDS.CO.1	Understand the basic concepts of Data Science and identify its real-world applications across various domains.		
BDS.CO.2	Explain the fundamentals of data and apply Data Mining principles to discover patterns and insights.		
BDS.CO.3	Recognize the importance of qualitative data and define key terminologies related to Data Science.		
BDS.CO.4	Apply data pre-processing techniques to extract meaningful knowledge from raw data.		
BDS.CO.5	Demonstrate the basics of the R programming environment, including R language syntax, RStudio, and commonly used R packages.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

COs / POs	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO1 0**	**PO1 1**	**PSO 1**	**PSO2**	
BDS.CO.1	3	2	–	–	–	–	–	–	–	2	3	–		–
BDS.CO.2	3	–	–	2	3	–	–	–	–	–	3	2		2
BDS.CO.3	–	2	3	–	2	–	–	–	–	–	3	–		–
BDS.CO.4	–	–	3	–	3	–	–	–	2	–	–	3		3
BDS.CO.5	–	–	–	3	–	2	–	2	–	3	3	2		2
BDS.COs (Avg.)	**1.2**	**0.8**	**1.2**	**1.0**	**1.6**	**0.4**	**0.0**	**0.4**	**0.4**	**1.0**	**2.4**	**1.4**		**1.4**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

SemesterNo:	VIII		
CourseTitle:	Green Building Technology (GBT)	**CourseCode:**	**U21CE806**
CourseOutcomeNo.	**Description**		
GBT.CO1	Define sustainability and a green building, along with its features and benefits.		
GBT.CO2	To know the importance of sustainable use of natural resources and energy.		
GBT.CO3	Explain the energy efficiency terms and methods used in green building practices		
GBT.CO4	Select materials for sustainable built environment & adopt waste management methods.		
GBT.CO5	Describe the methods used to maintain indoor environmental quality.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	**Program Outcomes (PO)**											**Program Specific Outcomes (PSO's)**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**

GBT.CO1	2	1	-	-	-	-	3	2	-	-	-	2	1
GBT.CO2	2	2	-	-	-	-	3	2	-	-	-	3	2
GBT.CO3	2	2	1	-	-	-	3	1	-	-	-	2	3
GBT.CO4	2	2	3	-	-	-	3	1	-	-	-	3	2
GBT.CO5	2	1	1	-	-	-	2	3	-	-	-	2	2
Average	**2**	**1.6**	**1.6**	**-**	**-**	**-**	**2.8**	**1.8**	**-**	-	**-**	**2.4**	**2**

Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VIII		
Course Title:	**Comprehensive Viva**	**Course Code:**	**U21EC8P1**
Course Outcome No.	**Description**		
CV.CO1	Demonstrate fundamental concepts of core Electronics and Communication Engineering subjects during a comprehensive viva voce		
CV.CO2	Apply variables and mathematical formulations to explain and justify complex engineering problems and models		
CV.CO3	Analyze interdisciplinary engineering problems and defend technical decisions made in the final year project.		
CV.CO4	Evaluate solutions, methodologies, and results using appropriate engineering principles during academic and industrial-oriented interviews.		
CV.CO5	Communicate technical knowledge effectively with clarity and confidence while responding to academic and industry-level interview questions		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

COs / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CV.CO1	**3**	**2**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**1**	**–**	**3**	**2**
CV.CO2	**3**	**3**	**2**	**2**	**2**	**–**	**–**	**–**	**–**	**1**	**–**	**3**	**2**
CV.CO3	**2**	**3**	**3**	**2**	**2**	**–**	**–**	**–**	**–**	**2**	**–**	**3**	**3**
CV.CO4	**2**	**2**	**2**	**3**	**3**	**–**	**–**	**–**	**–**	**1**	**-**	**2**	**3**
CV.CO5	**1**	**1**	**–**	**–**	**–**	**–**	**–**	**–**	**3**	**3**	**–**	**2**	**2**
Average	**2.2**	**2.2**	**1.8**	**1.4**	**1.4**	**–**	**–**	**–**	**0.6**	**1.6**	**-**	**2.6**	**2.4**

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Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2025-26

Course Outcomes:

Semester No:	VIII		
Course Title:	MAJOR PROJECT	**Course Code:**	**U21EC8P2**
Course Outcome No.	**Description**		
MaP.CO1	Implement and evaluate a proposed engineering project or internship plan, demonstrating technical proficiency in applying theoretical knowledge to real-world problems.		
MaP.CO2	Review effectively with industry coordinators, project guides, and peers to develop and revise project proposals within specified timelines.		
MaP.CO3	Relate regular project monitoring and presentations, analyzing progress and incorporating feedback to meet sessional evaluation criteria.		
MaP.CO4	Appraise departmental coordination processes, including re-grouping and re-allotment, to ensure timely project execution by the end of the VIII semester.		
MaP.CO5	Discuss and submit comprehensive project reports following common documentation norms, synthesizing outcomes for final evaluation.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

COs / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
MaP.CO1	3	3	3	3	2	-	-	-	-	2	1	3	3
MaP.CO2	3	2	3	3	1	1	-	2	-	1	3	3	2
MaP.CO3	2	2	2	2	-	2	-	1	-	-	2	2	2
MaP.CO4	1	1	1	2	3	1	-	3	-	2	1	1	1
MaP.CO5	1	2	2	3	1	-	-	2	-	1	2	1	2
MaP	**2**	**2**	**2.2**	**2.6**	**1.7**	**1.3**	**-**	**2**	**-**	**1.5**	**1.8**	**2**	**2**