



NPR **COLLEGE OF ENGINEERING AND TECHNOLOGY** **(AN AUTONOMOUS INSTITUTION)**

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DEPARTMET OF COMPUTER SCIENCE AND ENGINEERING

CRITERION2

Course Outcomes and Program Outcomes

BATCH 2021-2025



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COURSE CODE & COURSE TITLE

(REGULATION2021)



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1.CourseCodeandTitle

As per Anna University Regulation 2021, the list of courses for the batch 2021-2025 is given in the Table 1.

Table 1-List of Courses with Course Code:

S.No	COURSE CODE	COURSE CODE (AU)	COURSE NAME
Semester I			
1.	C101	HS3152	Professional English - I
2.	C102	MA3151	Matrices And Calculus
3.	C103	PH3151	Engineering Physics
4.	C104	CY3151	Engineering Chemistry
5.	C105	GE3151	Problem Solving and Python Programming
6.	C106	GE3152	தமிழர் மரபு/ Heritage of Tamils
7.	C107	GE3171	Problem Solving and Python Programming Laboratory
8.	C108	BS3171	Physics and Chemistry Laboratory
9.	C109	GE3172	English Laboratory
Semester II			
10.	C110	HS3252	Professional English-II
11.	C111	MA3251	Statistics and Numerical Methods
12.	C112	PH3256	Physics for Information Science
13.	C113	BE3251	Basic Electrical and Electronics Engineering
14.	C114	GE3251	Engineering Graphics
15.	C115	CS3251	Programming in C
16.	C116	GE3252	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology
17.	C117	GE3271	Engineering Practices Laboratory
18.	C118	CS3271	Programming in C Laboratory

19.	C119	GE3272	Communication Laboratory/Foreign Language
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S.No	COURSE CODE	COURSE CODE (AU)	COURSENAME
Semester III			
20.	C201	MA3354	DiscreteMathematics
21.	C202	CS3351	DigitalPrinciplesand ComputerOrganization
22.	C203	CS3352	FoundationsofDataScience
23.	C204	CS3301	DataStructures
24.	C205	CS3391	ObjectOrientedProgramming
25.	C206	CS3311	DataStructuresLaboratory
26.	C207	CS3381	ObjectOriented ProgrammingLaboratory
27.	C208	CS3361	DataScienceLaboratory
28.	C209	GE3361	Professional Development ^s
Semester IV			
29.	C210	CS3452	Theoryof Computation
30.	C211	CS3491	ArtificialIntelligence andMachineLearning
31.	C212	CS3492	DatabaseManagementSystems
32.	C213	CS3401	Algorithms
33.	C214	CS3451	Introductionto OperatingSystems
34.	C215	GE3451	Environmental Sciencesand Sustainability
35.	C216	CS3461	OperatingSystemsLaboratory
36.	C217	CS3481	DatabaseManagement SystemsLaboratory



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S.No	Course Code	Course Code(AU)	CourseName
Semester V			
37.	C301	CS3591	Computer Networks
38.	C302	CS3501	CompilerDesign
39.	C303	CB3491	CryptographyandCyberSecurity
40.	C304	CS3551	DistributedComputing
41.	C305	CCS366	SoftwareTestingand Automation
42.	C306	CCS335	Cloud Computing
43.	C307	MX3084	Disaster Risk Reduction and Management
Semester VI			
44.	C308	ET3491	ObjectOriented SoftwareEngineering
45.	C309	CS3491	EmbeddedSystems andIoT
46.	C310	OEI351	IntroductiontoIndustrial Instrumentationand Control
47.	C311	CCS334	BigDataAnalytics
48.	C312	CCS332	App Development
49.	C313	CCS370	UIandUX Design
50.	C314	CCS354	NetworkSecurity



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S.No	COURSE CODE	COURSE	COURSENAME
		CODE (AU)	
Semester VII			
51.	C401	GE3791	Human values and Ethics
52.	C402	GE3751	Principles of Management
53.	C403	AI3021	IT in Agriculture System
54.	C404	CME365	RenewableEnergyTechnologies
55.	C405	OHS352	Project Report Writing
56.	C406	EC3711	Summer internship
Semester VIII			
57.	C407	EC3811	Project Work / Internship



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BLOOMS TAXONOMY



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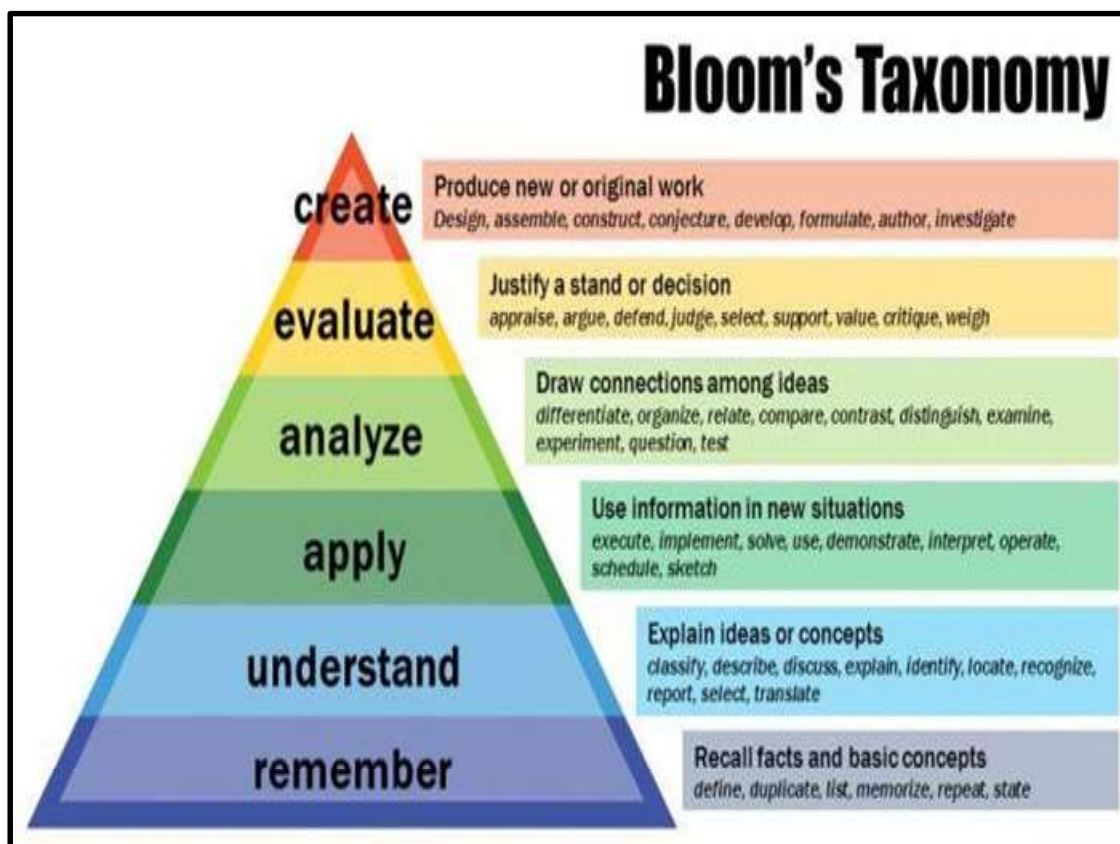
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According to revised Bloom's taxonomy, the levels in the cognitive domain are as follows:

Level	Descriptor	Level of Attainment
1	Remember	Recalling from the memory of the previously learned material
2	Understand	Explaining ideas or concepts
3	Apply	Using the information in another familiar situation
4	Analyze	Breaking information into the parts to explore understandings and relationships
5	Evaluate	Justifying a decision or course of action
6	Create	Generating new ideas, products or new ways of viewing things



Bloom's taxonomy is hierarchical, meaning that learning at the higher level requires that skills at a lower level are attained.



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COURSE OUTCOMES WITH K – LEVEL MAPPING FOR ALL COURSES

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SEMESTER-I

COURSE CODE & NAME : C101 & HS3152 - Professional English - I		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C101.1	Use appropriate words in a professional context	K3
C101.2	Gain understanding of basic grammatical structures and use them in right context.	K2
C101.3	Read and infer the denotative and connotative meanings of technical texts	K4
C101.4	Read and interpret information presented in tables, charts and other graphic forms	K4
C101.5	Write definitions, descriptions, narrations and essays on various topics	K3

COURSE CODE & NAME : C102 & MA3151 - Matrices And Calculus		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C102.1	Use the matrix algebra methods for solving practical problems	K3
C102.2	Apply differential calculus tools in solving various application problems	K3
C102.3	Able to use differential calculus ideas on several variable functions	K3
C102.4	Apply different methods of integration in solving practical problems	K3
C102.5	Apply multiple integral ideas in solving areas, volumes and other practical problems	K3

COURSE CODE & NAME : C103 & PH3151 - Engineering Physics		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C103.1	Understand the importance of mechanics	K2
C103.2	Express the knowledge in electromagnetic waves	K2
C103.3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers	K2
C103.4	Understand the importance of quantum physics	K2
C103.5	Comprehend and apply quantum mechanical principles towards the formation of energy bands	K3

COURSE CODE & NAME : C104 &CY3151 - Engineering Chemistry		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C104.1	Infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.	K4
C104.2	Identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.	K3
C104.3	Apply the knowledge of phase rule and composites for material selection requirements.	K3
C104.4	Recommend suitable fuels for engineering processes and applications.	K5
C104.5	Recognize different forms of energy resources and apply them for suitable applications in energy sectors.	K3

COURSE CODE & NAME :C105 &GE3151- Problem Solving and Python Programming		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C105.1	Express algorithmic solutions to simple computational problems.	K2
C105.2	Compute and execute simple Python programs.	K3
C105.3	Implement simple Python programs using conditionals and loops for solving problems	K3
C105.4	Determine compound data using Python lists, tuples, dictionaries etc.	K3
C105.5	Read and write data from/to files in Python programs.	K1

COURSE CODE & NAME : C106 & GE3152 - தமிழர்மரபு/Heritage of Tamils

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C106.1	Gain an understanding of the depth and classical heritage of the Tamil language	K2
C106.2	Explain the ancient Tamil people's expertise in sculpture, painting, and musical instruments	K2
C106.3	Delve into the folk traditions and martial arts practices of the Tamil community	K2
C106.4	Describe on the Tamil Thinaï concepts, trade networks, and the triumphs of the Chola dynasty	K2
C106.5	Recognize the contributions of Tamils to India's freedom struggle, the Self-Respect Movement, and the development of Siddha medicine	K2

COURSE CODE & NAME : C107 & GE3171- Problem Solving and Python Programming Laboratory

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C107.1	Simplify algorithmic solutions to simple computational problems	K4
C107.2	Model and execute simple Python programs	K4
C107.3	Implement programs in Python using conditionals and loops for solving problems..	K3
C107.4	Generate functions to decompose a Python program	K6
C107.5	Utilize Python packages for developing real-world software applications.	K3

COURSE CODE & NAME : C108 & BS3171 - Physics and Chemistry Laboratory

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C108.1	Understand the functioning of various physics laboratory equipment	K2

C108.2	Use graphical models to analyze laboratory data	K4
C108.3	Use mathematical models as a medium for quantitative reasoning and describing physical reality	K3
C108.4	Access, process and analyze scientific information	K4
C108.5	Solve problems individually and collaboratively	K3

COURSE CODE & NAME : C109 & GE3172 - English Laboratory

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C109.1	List en to and comprehend general as well as complex academic information	K2
C109.2	List en to and understand different points of view in a discussion	K2
C109.3	Speak fluently and accurately in formal and informal communicative contexts	K3
C109.4	Describe products and processes and explain their uses and purposes clearly and accurately	K3
C109.5	Express their opinion effectively in both formal and informal discussions	K3



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SEMESTER-II

COURSE CODE & NAME : C110 & HS3252 - Professional English -II		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C110.1	Compare andcontrastproductsandideasintechnicaltexts	K4
C110.2	Identify andreportcauseandeffectsinevents,industrialprocessesthroughtechnical texts	K2
C110.3	Analyse problemsinordertoarriveatfeasiblesolutionsandcommunicatethemi nthe written format	K4
C110.4	Present theirideasandopinionsinaplannedandlogicalmanner	K5
C110.5	Draft effectiveresumesinthecontextofjobsearch	K6

COURSE CODE & NAME : C111 & MA3251 - Statistics And Numerical Methods		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C111.1	Apply the concept of testing of hypothesis for small and large samples in real life problems	K3
C111.2	Apply the basic concepts of classifications of design of experiments in thefield of agriculture	K3
C111.3	Appreciate thenumericaltechniquesofinterpolationinvariousintervalsandapplythen umerical techniques of differentiation andintegration for engineering problems	K4
C111.4	Understand theknowledgeofvarioustechniquesandmethods forsolvingfirstandsecond order ordinary differential equations	K2
C111.5	Solve the partial andordinarydifferential equations with initial and boundary conditions by using certain techniques with engineering applications	K3

COURSE CODE & NAME : C112 &PH3256 Physics for Information Science

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C112.1	Gain knowledge on classical and quantum electron theories, and energy band structures	K1
C112.2	Acquire knowledge on basics of semiconductor physics and its applications in various devices	K2
C112.3	Get knowledge on magnetic properties of materials and their applications in data storage	K2
C112.4	Have the necessary understanding on the functioning of optical materials for optoelectronics	K2
C112.5	Understand the basics of quantum structures and their applications and basics of quantum computing	K2

COURSE CODE & NAME : C113 &BE3251 Basic Electrical And Electronics Engineering

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C113.1	Compute the electric circuit parameters for simple problems	K2
C113.2	Explain the working principle and applications of electrical machines	K2
C113.3	Analyze the characteristics of analog electronic devices	K4
C113.4	Explain the basic concepts of digital electronics	K2
C113.5	Explain the operating principles of measuring instruments	K2

COURSE CODE & NAME : C114 &GE3251- Engineering Graphics		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C114.1	Construct the conic curves, involutes and cycloid	K2
C114.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant	K3
C114.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and freehand sketch of given figures	K3
C114.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its development of surfaces	K3
C114.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts	K3

COURSE CODE & NAME : C115 &CS3251 Programming In C		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C115.1	Develop algorithmic solutions to simple computational problems.	K3-Apply
C115.2	Develop and execute simple Python programs.	K3-Apply
C115.3	Write simple Python programs using conditionals and loops for solving problems.	K3-Apply
C115.4	Decompose a Python program into functions.	K4- Analyze
C115.5	Represent compound data using Python lists, tuples, dictionaries etc.	K3-Apply
C115.6	Read and write data from/to files in Python programs.	K3-Apply

COURSE CODE & NAME : C116 & GE3252 - தமிழரும் தொழில்நுட்பமும்/ Tamils and Technology

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C116.1	Gain an understanding of the depth and classical heritage of the Tamil language	K4
C116.2	Explain the ancient Tamil people's expertise in sculpture, painting, and musical instruments	K4
C116.3	Delve into the folk traditions and martial arts practices of the Tamil community	K4
C116.1	Describe on the Tamil Thinaï concepts, trade networks, and the triumphs of the Chola dynasty	K4
C116.2	Recognize the contributions of Tamils to India's freedom struggle, the Self-Respect Movement, and the development of Siddha medicine.	K4

COURSE CODE & NAME : C117 & GE3271 – Engineering Practices Laboratory

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C117.1	Design RL and RC circuits	K3
C117.2	Apply network theorems for electrical circuits	K3
C117.3	Demonstrate the transient analysis and resonance of the RLC circuits	K2

COURSE CODE & NAME : CS3271 Programming in C Laboratory		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C118.1	Demonstrate knowledge on C programming constructs.	K2
C118.2	Develop programs in C using basic constructs.	K3
C118.3	Develop programs in C using arrays.	K3
C118.4	Develop applications in C using strings, pointers, functions.	K3
C118.5	Develop applications in C using structures.	K3
C118.6	Develop applications in C using file processing.	K4

COURSE CODE & NAME : C119 & GE3272 - Communication Laboratory		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
C119.1	Speak effectively in group discussions held in a formal/semi-formal contexts	K3
C119.2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions	K4
C119.3	Write emails, letters and effective job applications	K3
C119.4	Write critical reports to convey data and information with clarity and precision.	K5
C119.5	Give appropriate instructions and recommendations for safe execution of tasks	K3
C119.1	Speak effectively in group discussions held in a formal/semi-formal contexts	K3



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SEMESTER-III

COURSE CODE & NAME : MA3354 Discrete Mathematics

Code	Course Outcome	K- Level
	(On Successful completion of the course, Students will be able to)	
CO1	Explain the fundamental concepts required to test the logic of a program.	K2
CO2	Interpret different types of structures at various abstraction levels.	K2
CO3	Describe the functions that transform one finite set into another and relate them to input-output functions in computer science.	K2
CO4	Explain the basic counting principles.	K2
CO5	Discuss the concepts and properties of algebraic structures such as groups, rings, and fields.	K2

COURSE CODE & NAME : CS3351 Digital Principles and Computer Organization

Code	Course Outcome	K- Level
	(On Successful completion of the course, Students will be able to)	
CO1	Design combinational digital circuits using logic gates.	K4
CO2	Design sequential circuits and analyze their procedures.	K4
CO3	Explain the fundamentals of computer systems and execution of instructions.	K2
CO4	Analyze the control design techniques and identify hazards.	K4
CO5	Identify the characteristics of memory systems and I/O communication.	K3

COURSE CODE & NAME : CS3352 Foundations of Data Science		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Define the data science process.	K1
CO2	Explain types of data description in the data science process.	K2
CO3	Understand relationships between data.	K2
CO4	Use Python libraries for data wrangling.	K3
CO5	Apply visualization libraries in Python to explore data.	K3

COURSE CODE & NAME : CS3301 Data Structures		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Define linear and non-linear data structures.	K1
CO2	Implement operations on linear and non-linear data structures.	K3
CO3	Use suitable data structure operations for problem solving.	K3
CO4	Apply graph algorithms for graph-based applications.	K3
CO5	Analyze various searching and sorting algorithms.	K4

COURSE CODE & NAME : CS3391 Object Oriented Programming		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Implement linear data structure algorithms.	K3
CO2	Implement applications using stacks and linked lists.	K3
CO3	Implement binary search tree and AVL tree operations.	K3
CO4	Implement graph algorithms.	K3
CO5	Analyze searching and sorting algorithms.	K4

COURSE CODE & NAME : CS3311 Data Structures Laboratory		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Apply concepts of classes and objects to solve problems.	K3
CO2	Develop programs using inheritance, packages and interfaces.	K3
CO3	Make use of exception handling and multithreading for real-world problems.	K3
CO4	Build Java applications using I/O packages, strings, collections and generics.	K4
CO5	Apply concepts of classes and objects to solve problems.	K3

COURSE CODE & NAME : CS3381 Object Oriented Programming Laboratory		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Design and develop Java programs using OOP concepts.	K4
CO2	Develop applications using packages and exception handling.	K3
CO3	Implement multithreading and generics.	K3
CO4	Create GUI and event-driven applications.	K4
CO5	Implement and deploy web applications using Java.	K4

COURSE CODE & NAME : CS3361 Data Science Laboratory		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Make use of Python libraries for data science.	K3
CO2	Use statistical and probability measures for data science.	K3
CO3	Perform descriptive analytics on benchmark datasets.	K3
CO4	Perform correlation and regression analytics on datasets.	K3
CO5	Present and interpret data using visualization packages.	K3



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SEMESTER-IV

COURSE CODE & NAME : CS3452 Theory of Computation

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Construct automata using finite automata principles.	K3
CO2	Write regular expressions for given patterns.	K3
CO3	Design context-free grammars and pushdown automata.	K4
CO4	Design Turing machines for computational functions.	K4
CO5	Differentiate decidable and undecidable problems.	K4

COURSE CODE & NAME : CS3491 Artificial Intelligence And Machine Learning

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Use appropriate search algorithms to solve problems.	K3
CO2	Apply reasoning techniques under uncertainty.	K3
CO3	Build supervised learning models.	K3
CO4	Build ensemble and unsupervised learning models.	K3
CO5	Build deep learning neural network models.	K3

COURSE CODE & NAME : CS3492 Database Management Systems		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Construct SQL queries using relational algebra.	K3
CO2	Design databases using ER models and normalization.	K4
CO3	Construct queries for transaction processing and consistency.	K3
CO4	Analyze indexing strategies and tune database performance.	K4
CO5	Evaluate advanced databases and identify suitable database types.	K4

COURSE CODE & NAME : CS3401 Algorithms		
	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Analyze efficiencies of algorithms using frameworks.	K4
CO2	Apply graph algorithms to solve problems and analyze performance.	K4
CO3	Use algorithm design techniques (Divide & Conquer, DP, Greedy) to solve problems.	K3
CO4	Use state space tree methodologies for solving problems.	K3
CO5	Solve problems using approximation and randomized algorithms.	K3

COURSE CODE & NAME : CS3451 INTRODUCTION TO OPERATING SYSTEMS		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Analyze scheduling algorithms and process synchronization.	K4
CO2	Explain deadlock prevention and avoidance algorithms.	K2
CO3	Compare memory management schemes.	K4
CO4	Explain functionality of file, I/O systems, and virtualization.	K2
CO5	Compare features of iOS and Android operating systems.	K4

COURSE CODE & NAME : GE3451 Environmental Sciences and Sustainability		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand the functions of environment, ecosystems, biodiversity, and conservation.	K2
CO2	Apply preventive measures for environmental pollution and natural disasters.	K3
CO3	Apply knowledge on renewable and non-renewable resources for sustainability.	K3
CO4	Apply sustainable development goals for societal development.	K3
CO5	Analyze sustainability practices, green materials, energy cycles, and urbanization.	K4

COURSE CODE & NAME : CS3481 Database Management Systems Laboratory		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Create databases using different key constraints.	K3
CO2	Construct SQL queries using DML and DCL commands.	K3
CO3	Use stored procedures and triggers in GUI development.	K4
CO4	Create XML databases and validate them using schema.	K3
CO5	Create and manipulate data using NoSQL databases.	K3

COURSE CODE & NAME : CS3461 Operating Systems Laboratory		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Define and implement UNIX commands.	K3
CO2	Compare performances of CPU scheduling algorithms.	K4
CO3	Compare memory allocation methods.	K4
CO4	Define file organization and allocation strategies.	K2
CO5	Implement disk scheduling algorithms.	K3



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SEMESTER-V

COURSE CODE & NAME : CS3591 Computer Networks

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Explain the basic layers and their functions in computer networks.	K2
CO2	Understand how data flows between network nodes.	K2
CO3	Analyze routing algorithms.	K4
CO4	Describe protocols for various networking functions.	K2
CO5	Analyze the working of various application layer protocols.	K4

COURSE CODE & NAME : CS3501 Compiler Design

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand the techniques in different phases of a compiler.	K2
CO2	Design a lexical analyzer for a sample language using LEX.	K3
CO3	Apply parsing algorithms to develop a parser using YACC.	K3
CO4	Understand semantic rules, intermediate code generation and runtime environment.	K2
CO5	Implement code generation and apply optimization techniques.	K4

COURSE CODE & NAME : CCS335 - Cloud Computing		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand the design challenges in cloud computing.	K2
CO2	Apply virtualization concepts and techniques.	K3
CO3	Experiment with virtualization of hardware resources and Docker.	K3
CO4	Develop and deploy services on the cloud environment.	K4
CO5	Explain security challenges in cloud environment.	K2

COURSE CODE & NAME : CS3551 Distributed Computing		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Explain the foundations of distributed systems.	K2
CO2	Solve synchronization and state consistency problems.	K3
CO3	Use resource sharing techniques in distributed systems.	K3
CO4	Apply consensus and reliability models in distributed systems.	K3
CO5	Explain the fundamentals of cloud computing.	K2

COURSE CODE & NAME :CB3491 Cryptography And Cyber Security		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand fundamentals of network security, threats and vulnerabilities.	K2
CO2	Apply symmetric cryptographic algorithms.	K3
CO3	Apply public-key cryptographic operations.	K3
CO4	Apply authentication schemes for sample applications.	K3
CO5	Understand various cybercrimes and cybersecurity concepts.	K2

COURSE CODE & NAME : CCS366 Software Testing and Automation		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand basic concepts and need for software testing.	K2
CO2	Design test plans and related activities.	K3
CO3	Design effective test cases to uncover defects.	K3
CO4	Carry out advanced testing types.	K3
CO5	Automate software testing using Selenium and TestNG.	K4



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SEMESTER-VI

COURSE CODE & NAME : CCS356 Object Oriented Software Engineering

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Compare various software development lifecycle models.	K4
CO2	Evaluate project management approaches and estimation strategies.	K5
CO3	Perform formal analysis of specifications.	K3
CO4	Use UML diagrams for analysis and design.	K3
CO5	Architect and design systems using architectural styles and patterns, and test the system.	K4

COURSE CODE & NAME : CS3691 Embedded Systems and IoT

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Explain the architecture of embedded processors.	K2
CO2	Write embedded C programs.	K3
CO3	Design simple embedded applications.	K3
CO4	Compare communication models in IoT.	K4

CO5	Design IoT applications using Arduino/Raspberry Pi/open platforms.	K4
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COURSE CODE & NAME : CCS370 UI and UX Design		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Build UI for user applications.	K3
CO2	Evaluate UX design of products or applications.	K5
CO3	Demonstrate UX skills in product development.	K3
CO4	Implement sketching principles.	K3
CO5	Create wireframes and prototypes.	K4



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COURSE CODE & NAME : CCS354 NETWORK SECURITY		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Classify encryption techniques.	K4
CO2	Illustrate key management and authentication techniques.	K3
CO3	Evaluate security techniques applied to network and transport layers.	K5
CO4	Discuss application layer security standards.	K2
CO5	Apply security practices for real-time applications.	K3

COURSE CODE & NAME : CCS334 Big Data Analytics		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Describe big data and use cases across various business domains.	K2
CO2	Explain NoSQL big data management.	K2
CO3	Install, configure and run Hadoop and HDFS.	K3
CO4	Perform MapReduce analytics using Hadoop.	K3

CO5	Use Hadoop tools such as HBase, Cassandra, Pig and Hive for analytics.	K3
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COURSE CODE & NAME : CCS332App Development

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Develop native applications using GUI components.	K3
CO2	Develop hybrid applications with event handling.	K3
CO3	Implement cross-platform apps with location & data storage features.	K3
CO4	Implement cross-platform applications with GUI & event handling.	K3
CO5	Develop web applications with cloud database access.	K3



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SEMESTER-VII

COURSE CODE & NAME : GE3791 - Human Values and Ethics

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Identify the importance of democratic, secular, and scientific values for harmonious social life.	K2
CO2	Practice democratic and scientific values in personal and professional life.	K3
CO3	Find rational solutions to social problems.	K3
CO4	Behave ethically in society.	K3
CO5	Practice critical thinking and pursue truth.	K3

COURSE CODE & NAME : GE3751 Principles of Management

Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand managerial functions such as planning, organizing, staffing, leading, and controlling.	K2
CO2	Understand international aspects of management.	K2
CO3	Understand the management concept of organizing.	K2
CO4	Understand the management concept of directing.	K2
CO5	Understand the management concept of controlling.	K2

COURSE CODE & NAME : OHS352 Project Report Writing		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Write effective project reports.	K3
CO2	Use statistical tools confidently.	K3
CO3	Explain the purpose and intention of the project clearly.	K2
CO4	Create written texts to achieve the intended purpose.	K6
CO5	Master writing winning proposals and project documents.	K6

COURSE CODE & NAME : AI3021 IT in Agricultural System		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand IT applications in remote sensing such as drones.	K2
CO2	Understand automation in greenhouse management and its advantages.	K2
CO3	Apply IT concepts for field operation management.	K3
CO4	Understand weather models, their inputs, and applications.	K2
CO5	Understand applications of IT for e-governance in agriculture.	K2

COURSE CODE & NAME : CME365 Renewable Energy Technologies		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Discuss Indian and global energy scenario.	K2
CO2	Describe solar energy technologies and applications.	K2
CO3	Explain wind energy technologies.	K2
CO4	Explore bio-energy technologies.	K3
CO5	Discuss ocean and geothermal energy technologies.	K2

COURSE CODE & NAME : CS3711 Summer Internship		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Understand industry practices, processes, techniques, automation and core aspects.	K2
CO2	Analyze and design solutions to complex business problems.	K4
CO3	Build and deploy solutions for the target platform.	K3
CO4	Prepare technical reports and presentations.	K3



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SEMESTER-VIII

COURSE CODE & NAME : CS3811 Project Work/ Internship#		
Code	Course Outcome (On Successful completion of the course, Students will be able to)	K- Level
CO1	Gain domain knowledge and technical skills required for solving industry or research problems.	K2
CO2	Provide solution architecture, module-level designs and algorithms.	K4
CO3	Implement, test and deploy the solution for the target platform.	K3
CO4	Prepare detailed technical documentation and present the work effectively.	K3



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CO-POs/PSOs MAPPING AVERAGE FOR ALL COURSES (REGULATION-2021)



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BATCH:2021-2025

COVSPOMAPPINGTABLE														
COURSEWISECOVSPOsMAPPINGAVERAGE														
COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	1.33	1.83	1.49	1.83	0.99	2.48	2.48	2.48	1.33	2.48	1.00	2.48	0.00	0.00
C102	1.50	1.50	0.50	0.50	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.50	0.00	0.00
C103	1.58	1.58	0.87	0.61	0.93	0.53	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00
C104	1.53	0.56	0.59	0.37	0.00	0.71	0.81	0.00	0.00	0.00	0.00	0.35	0.00	0.00
C105	1.50	1.63	1.10	1.50	1.13	0.00	0.00	0.00	0.00	0.00	1.00	0.52	0.00	0.00
C106	2.08	2.08	1.44	1.92	1.76	0.00	0.00	0.00	0.00	0.00	1.60	0.64	0.00	0.00
C107	2.40	1.92	2.08	0.80	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C108	2.08	0.80	1.28	0.16	0.16	1.12	1.44	0.00	0.00	0.00	0.00	0.64	0.00	0.00
C109	2.40	2.40	2.40	2.40	0.80	2.40	2.40	2.40	2.40	2.40	2.40	2.40	0.00	0.00
C110	1.70	1.70	1.70	1.70	1.53	1.70	1.70	1.70	1.70	1.63	2.20	2.20	2.20	0.00
C111	1.58	1.58	0.53	0.53	0.53	0.00	0.00	0.00	1.05	0.00	1.05	1.58	0.00	0.00
C112	1.18	0.31	0.47	0.32	0.56	0.16	0.32	0.00	0.00	0.00	0.00	0.16	0.00	0.00
C113	0.79	0.71	0.39	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.79	0.00	0.00
C114	1.20	0.40	0.80	0.00	0.80	0.00	0.00	0.00	0.00	1.20	0.00	0.80	0.00	0.00
C115	1.75	2.00	2.00	1.00	1.67	1.00	0.83	0.67	1.67	0.17	2.33	1.92	1.58	1.60
C116	2.40	1.60	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.00	0.00	1.60	0.00	0.00
C117	1.47	1.87	2.13	1.33	1.07	1.33	0.00	0.00	1.87	0.40	1.87	1.87	1.87	1.87
C118	1.92	2.24	2.40	2.40	1.44	2.40	2.40	2.40	2.40	2.40	2.40	2.40	0.00	0.00



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COURSEWISECOVSPOsMAPPINGAVERAGE														
COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201	0.79	1.72	1.06	0.53	0.00	0.26	0.00	0.00	0.00	0.66	0.00	0.26	0.00	0.00
C202	1.99	1.99	1.99	1.99	1.19	1.06	0.66	0.66	0.66	0.66	1.06	1.72	0.93	1.72
C203	1.82	1.49	0.83	1.33	1.49	0.17	0.17	0.00	1.00	1.00	1.00	1.82	1.82	1.99
C204	2.18	1.78	0.99	1.58	1.78	0.20	0.20	0.00	1.19	1.19	1.19	2.18	2.18	2.38
C205	1.49	1.49	1.66	1.32	0.66	0.00	0.00	0.00	1.32	1.49	1.33	1.49	1.32	1.66
C206	1.58	1.19	1.32	0.92	0.26	0.00	0.00	0.00	1.06	1.06	1.45	1.59	1.45	1.19
C207	0.99	2.98	2.98	0.99	2.98	0	0	0	0.99	0.993	0.993	0.993	1.987	0.993
C208	1.42	1.30	0.95	1.30	0.36	0.00	0.00	0.00	1.18	1.07	1.42	1.19	1.07	1.66
C209	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C210	1.80	2.20	2.40	1.80	0.60	0.00	0.00	0.00	1.40	2.20	2.20	2.40	1.80	2.00
C211	2.40	1.20	2.00	2.00	0.80	0.00	0.00	0.00	1.80	1.60	1.80	2.60	1.60	1.80
C212	2.00	1.60	2.60	2.00	1.00	0.00	0.00	0.00	2.00	2.00	2.20	2.00	2.00	1.80
C213	1.60	1.80	0.60	0.20	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.40	0.00	0.60
C214	2.00	2.00	2.40	1.80	0.60	0.00	0.00	0.00	2.20	1.80	1.80	1.60	1.40	2.00
C215	2.80	1.40	0.60	0.20	0.00	2.20	2.40	0.00	0.80	0.00	0.00	1.80	0.00	0.00
C216	2.80	1.40	0.60	0.20	0.00	2.20	2.40	0.00	0.00	0.00	0.00	1.80	0.00	0.00
C217	2.40	1.80	1.80	1.60	2.00	0.00	0.00	0.00	2.20	2.20	2.00	2.00	1.80	1.80
C218	2.40	2.60	2.40	2.00	1.00	0.00	0.00	0.00	1.60	1.40	2.60	2.20	2.40	1.80



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COURSEWISECOVSPOsMAPPINGAVERAGE														
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C301	0.00	1.50	0.40	0.20	1.33	0.00	0.00	0.00	0.00	0.60	0.00	0.33	0.50	0.93
C302	2.50	2.33	2.15	1.81	1.39	0.00	0.00	0.00	2.15	1.63	1.35	1.98	1.49	1.46
C303	2.18	1.93	1.95	1.93	2.07	0.00	0.00	0.00	1.48	0.00	0.00	0.87	2.07	2.04
C304	1.21	1.60	1.18	1.65	1.35	0.00	0.00	0.00	1.79	1.54	1.46	1.01	1.40	1.18
C305	2.20	2.20	1.60	2.00	1.20	0.00	0.00	0.00	1.20	2.00	1.60	1.80	2.20	1.80
C306	1.77	1.73	1.73	1.63	1.40	0.00	0.00	0.00	1.77	1.77	0.80	2.10	1.27	1.43
C307	2.00	2.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	1.00	1.00	2.00	2.00	2.00
C308	2.60	2.00	3.00	2.40	1.50	0.00	0.00	0.00	1.00	2.20	2.20	2.40	2.20	1.60
C309	1.60	1.80	2.00	1.40	2.60	0.00	0.00	0.00	1.40	1.20	2.00	1.60	2.00	2.20
C310	2.80	3.00	2.80	2.80	2.80	0.00	0.00	0.00	2.20	1.80	2.60	2.00	2.20	2.80
C311	1.80	1.80	2.40	1.80	2.20	0.00	0.00	0.00	2.40	2.00	1.40	1.80	2.20	1.40
C312	1.60	2.20	2.20	2.60	1.40	0.00	0.00	0.00	2.20	2.20	1.40	1.80	2.20	2.60



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CO VS PO MAPPING TABLE														
COURSE WISE CO VS Pos MAPPING AVERAGE														
COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401	0.00	0.00	0.00	0.00	0.00	2.16	2.16	2.64	1.76	2.24	2.24	2.24	0.00	0.00
C402	0.00	0.97	0.58	0.00	0.82	1.55	1.16	0.77	0.24	0.00	0.00	1.74	0.00	0.00
C403	2.16	2.64	2.64	1.76	2.64	1.56	2.64	2.56	1.16	2.64	2.64	2.64	0.00	0.00
C404	3.00	2.00	1.00	3.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	0.00
C405	2.62	1.75	0.00	0.87	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.87	0.87	0.00
C406	2.98	2.98	2.98	2.98	2.59	2.98	2.39	2.59	2.98	2.79	2.98	2.59	2.98	2.98
C407	3.00	3.00	3.00	3.00	2.60	3.00	2.40	2.60	3.00	2.80	3.00	2.60	3.00	3.00

5.2. Mapping Table for Co-Curricular Activities

PO MAPPING TABLE									
CO-CURRICULAR VS POs/ PSOs MAPPING AVERAGE									
Co-CurricularActivities	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Guest Lectures / Technical Seminars / Webinar / Workshop/Symposium	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00
ValueAddedCourses	2.00	2.00	2.00	3.00	3.00	2.00	2.00	3.00	2.00
Internship / In-plant Training	2.00	3.00	3.00	3.00	3.00	2.00	1.00	1.00	2.00
Programme on Ethics/Entrepreneurship/IPR	2.00	3.00	3.00	2.00	3.00	2.00	1.00	1.00	2.00
Industrial Visit	2.00	3.00	2.00	3.00	3.00	2.00	3.00	2.00	2.00



ASSESSMENT TOOLS & PROCESS FOR CO ATTAINMENT

6.1. ATTAINMENT OF COURSE OUTCOMES

CO Assessment Rubrics

The assessment rubrics are set with consideration of internal assessment tests and university examinations. The internal assessment carries 20% weightage from all the two internal tests and one model examination whereas the university examination carries 80% weightage as per ANNA UNIVERSITY REGULATION 2017 shows in Figure 6.1.

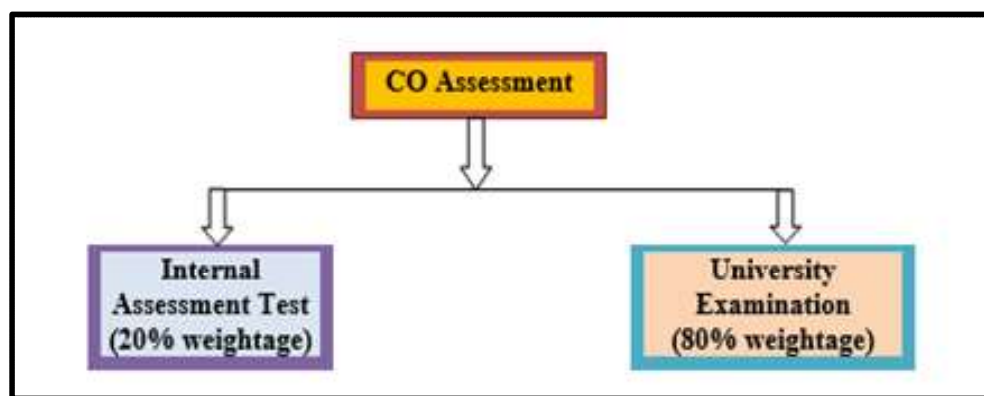


Figure:6.1.CO Assessment Rubrics

The evaluation of course outcomes is based on the performance of students in both university examination and internal assessment tests. The Table.6.1 shows the assessment methods adopted in university examination as well as internal assessment tests.

Type of Assessment	Course Type	Process of Assessment	Minimum Frequency
Internal	Theory Course	Internal & Model Assessment	3/Course
	Practical Course	Model Assessment	1/Course
	Project	Review	4/Course
University	Theory Course	Examination with question paper set by Anna University	1/Course
	Practical Course	Examination with question paper set by Anna University	1/Course
	Project	Viva-Voce	1/Course

i) THEORY COURSE:

Internal Assessment Tests:

After commencement of the course, the department will conduct two internal assessment tests and one model assessment test scheduled as per university academic schedule. Care will be taken such that completion of **2 units & 5 units** before the internal and the model assessment tests respectively. The examinations are conducted under the guidance of department exam cell in-charge.

University Examinations:

The students should be regular to class and each student needs minimum of 75% of attendance in all courses for to be eligible in appearing for the university examination of a respective course. The end-semester examinations are conducted for 100 marks and for a three-hour duration. They are evaluated by external examiners and the marks obtained are converted into grades system as per Anna University Norms.

ii) PRACTICAL COURSE:

Laboratory courses provide students with active experience with ideas and with the opportunity to explore methods used in their discipline. In order to simplify communication among the students and to develop team work, the students are projected to carry out experiments in groups. Performance assessment is based on the ability of the students to actively participate in the successfully conduct the prescribed practical work to attain appropriate conclusions.

Model Practical Examination:

The Model practical examination of 3 hours for the entire syllabus of the course and is conducted in which the student will perform experiments to check their performances. The question set will be provided by an internal expert.

University Examinations:

The End-semester practical examinations are conducted for 3 hours in which entire syllabus of the course are recovered. The question set will be framed by both Internal and External examiners.

iii) PROJECT:

Project work is projected to be a challenge to knowledge and innovative capabilities and give students the opportunity to create and apply knowledge and systematic skills learned in the different disciplines. Students are instructed to the detailed analysis and draw the conclusions based on the objectives and work Plan formulated. They are required to submit a report and explain all aspects of the work.

As per the University norms the grade system in the table 6.2

Range of Marks	Grade Point	Letter Grade (R 2017)
91-100	10	O
81-90	9	A+
71-80	8	A
61-70	7	B+
50-60	6	B
<50	0	RA
Shortage of Attendance		SA
Withdrawal		W

Table 6.2 Grade Equivalence as per Anna University Regulation 2017 norms

Measuring Course Outcomes attained:

A. Measuring CO attainment through Internal Assessments:

Table 6.3 Attainment levels of Cos through Internal Assessments

Assessment Methods	Attainment Levels	
Internal Assessment	Level 1	Upto 59% of students scored marks 70% and above in Internal Assessment Tests
	Level 2	60%-79% of students scored marks 70% and above in Internal Assessment Tests
	Level 3	80% and above students scored marks 70% and above in Internal Assessment Tests

Table 6.3. Internal Assessment level

B. Measuring CO attainment through University Examination:

Table 6.4 Attainment level of CO through University Examination

Assessment Methods	Attainment Levels	
Internal Assessment	Level 1	Upto 59% of student scored marks 70% and above in University Examination
	Level 2	60-79% of student scored marks 70% and above in University Examination
	Level 3	80% and above student scored marks 70% and above in University Examination

Table 6.4. University Examination Assessment level

Final Course Outcomes attainment is calculated by allocating 20% weightage to internal assessment tests and 80% weightage to university grade of the student. This sample CO evaluation details and CO attainment calculation procedure are described as follows.



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SAMPLE CO ATTAINMENT CALCULATION



7. Sample CO Attainment Calculation

CO attainment calculation for the course is given in the following table 7.1&7.2.

Table 7.1. CO evaluation for C311 / CS8691 – ARTIFICIAL INTELLIGENCE

Sl	Reg No	Name	TEST 1	CO 2	Total Mark (100)	C O 2	CO 3	Total Mark (100)	TEST 3	CO 2	CO 3	CO 4	CO 5	Total Mark (100)	UNIV EXAM (10)
			CO1						CO1						
1	920820104001	ABINAYA A	52	34	86	30	46	76	20	17	16	14	14	81	7
2	920820104002	ANANDARAJ M	42	28	70	36	54	90	16	10	12	16	16	70	6
3	920820104003	DEEPIKA V	46	30	76	29	43	72	22	15	14	16	17	84	7
4	920820104004	DHARSHANAPRIY A K	53	35	88	28	42	70	24	15	16	16	17	70	6
5	920820104006	GEETHANJALI S	56	38	94	29	43	72	22	15	16	16	17	94	8
6	920820104007	HARI VIGNESH K	42	28	70	28	42	70	26	16	17	14	16	80	6
7	920820104008	JERON ROBINSON T	56	38	94	34	52	86	30	16	18	18	16	94	7
8	920820104009	JOSHUA BASKARAN M	54	36	90	28	42	70	22	14	15	12	15	70	6
9	920820104010	KABILESH K	42	28	70	28	42	70	22	14	12	12	14	70	7
10	920820104011	KALEESWARAN S	49	33	82	36	54	90	24	16	15	13	15	74	7
11	920820104012	KARTHIK K	43	29	72	28	42	70	22	16	15	12	15	70	6
12	920820104013	KARTHIKEYAN.M	42	28	70	32	48	80	26	12	12	14	12	81	6
13	920820104014	KAVIARASAN C	46	30	76	28	42	70	22	12	13	12	13	70	6
14	920820104015	KEERTHI S	55	37	92	28	42	70	28	15	14	14	14	85	7
15	920820104016	KOWSALYA M	52	34	86	35	53	88	24	15	15	13	14	75	7
16	920820104017	LAKSHMIPATHY K	42	28	70	30	46	76	22	14	13	12	13	70	6
17	920820104018	LEO T	43	29	72	28	42	70	22	14	13	12	13	70	6
18	920820104019	MATHIVANAN V	42	28	70	28	42	70	22	15	15	12	14	70	6
19	920820104020	MUTHULAKSHMI M	36	24	60	36	54	90	22	15	15	12	16	70	6
20	920820104021	NAFEELA NASRIN S	54	36	90	28	42	70	30	17	16	16	16	94	9
21	920820104022	NAVEEN K	48	32	80	29	43	72	27	17	16	14	16	84	7
22	920820104023	NIVETHA K	47	31	78	32	48	80	26	17	16	17	17	81	7
23	920820104024	PALANIKUMAR V	42	28	70	28	42	70	23	17	16	12	16	71	6
24	920820104025	PONNALAGU N	50	34	84	31	47	78	22	17	16	12	16	70	7
25	920820104026	PRADEEP RAJ R S	43	29	72	35	53	88	22	16	16	12	15	70	6
26	920820104027	PRAVEEN N	42	28	70	28	42	69	22	17	16	12	16	70	6
27	920820104028	PRIYADHARSHINI M	55	37	92	39	58	97	26	17	16	14	16	82	7
28	920820104029	RAJESH SHARMA R	42	28	70	23	34	57	22	17	16	17	16	70	6
29	920820104030	RAMPRIYA A	42	28	70	0	0	0	24	15	15	14	14	76	6
30	920820104031	SABARISHAN S	42	28	70	40	60	100	22	12	12	12	12	70	7
31	920820104032	SALINI S	56	38	94	40	60	100	30	16	16	16	16	94	8
32	920820104033	SANJAY H	43	29	72	40	60	100	22	12	12	12	12	70	6

33	920820104034	SARAVANAKUMAR T	43	29	72	40	60	100	23	17	16	12	16	73	7
34	920820104035	SARAVANA PANDIP	42	28	70	40	60	100	22	17	16	12	16	70	7
35	920820104036	SHABARIKANTH GK	53	35	88	40	60	100	28	16	15	15	15	89	6
36	920820104037	SHAJITHA YASMIN N	49	33	82	40	60	100	26	17	17	14	16	81	6
37	920820104038	SHRINIDHI G	43	29	72	40	60	100	23	12	12	12	12	73	7
38	920820104039	SIVAMANI VIGNESH D	42	28	70	40	60	100	25	17	16	13	16	77	6
39	920820104040	SOWMIYA T	55	37	92	40	60	100	29	14	13	16	13	92	7
40	920820104041	SRIPRADEEP M	43	29	72	24	36	60	23	14	13	12	14	71	6
41	920820104042	SUBBULAKSHMI T	47	31	78	40	60	100	29	16	16	15	15	90	7
42	920820104043	SUDHARSAN G	44	30	74	40	60	100	24	14	13	13	16	76	6
43	920820104044	SUJIT RAGHAV MM	42	28	70	7	11	18	22	14	13	16	17	70	6
44	920820104045	SWATHI M	55	37	92	43	65	108	26	14	13	14	18	81	7
45	920820104046	THARVINRAJA S	55	37	92	40	60	100	28	15	13	15	19	88	8
46	920820104047	VENKATRAMAN M	44	30	74	40	60	100	17	12	13	12	18	53	6
47	920820104048	VIJAYAKUMAR N	42	28	70	40	60	100	19	14	13	10	15	58	6
48	920820104049	VINOTH A	52	34	86	40	60	100	27	14	13	14	22	85	7
49	920820104050	YUVANESHKUMAR K	42	28	70	20	30	51	15	10	10	12	20	70	6
50	920820104301	DILZATHBEGAM B	42	28	70	40	60	100	22	10	13	14	24	70	6
51	920820104302	SANTHOSH P A	50	34	84	40	60	100	25	14	14	13	20	77	6
52	920820104303	KISHORE KUMAR A	43	29	72	32	48	80	22	12	12	16	20	70	6
53	920820104701	DHANDEESWARAN K	48	32	80	40	60	100	26	16	14	18	20	82	6
		NO OF STUDENTS ATTENDED	53	53	54	53	53	54	53	53	53	53	53	54	53
		MAX MARK CO WISE	60	40	100	0	40	100	0	0	0	0	0	0	10
	THRESHOLD	70	42	28	70	0	28	70	0	0	0	0	0	0	7
		CO/ No of students above threshold 60%	52	52	52	53	51	47	53	53	53	53	53	54	23
		LEVEL	3	3	3	3	3	3	3	3	3	3	3	3	1

Table7.1.Evaluation of Course Outcome for batch 2021-2025

D.COAttainmentCalculation:

Table7.2.CO attainment calculation for C311 / CS8691 – ARTIFICIAL INTELLIGENCE

C310	INT.EXAM1	INT.EXAM2	MODEL EXAM	IAT	UNIV
CO1	3	0	3	3.00	3
CO2	3	0	3	3.00	3
CO3	0	3	3	3.00	3
CO4	0	3	3	3.00	3
CO5	0	0	3	3.00	3
INTERNAL/UNIVATTAINMENTS				3.00	3.00
WEIGHTAGE				20%	80%
COATTAINMENTFORTHECOURSE				0.60	2.40
FINALCOATTAINMENTFORTHECOURSE				3.00	

Table7.2.Cos Attainment for the course for batch2020-2024

Table7.2.Cos Attainment for the course for Electromagnetic Field Theory for batch 2020-2024. Table7.2 shows the sample CO attainment of course C311. InternalAssessmentTest-1 addresses the Cos C311.1 and C311.2 whereas Internal Assessment Test-2 addresses C C311.3, C C311.4 Model Assessment Test-3 addresses all the Cos C311.1, C311.2, C311.3, C311.4, and C311.5 which covers the entire syllabus. University exam covers the entire syllabus of a course and hence, it is used to measure the attainment of all COs related to a course.

COs attainment is calculated through university examination result carrying 80% weightage and three internal assessments test results carrying 20% weightage. The average of all COs for a particular course C C311 through internal assessment tests is calculated as 3.00 and it is converted into 20% for attainment of 3 as 0.60. In the university examination, 100% of the students scored more than these attainment level of B+ grade in the corresponding course. Hence the attainment level is converted into 80% as 2.40 out of 3. Finally, the Cos attainment of the course C310 is 3 out of 3.

$$3.00 \times 80 / 100 = 2.40$$

$$3.00 \times 20 / 100 = 0.60$$

Final Cos Attainment is 3.00



CO ATTAINMENT OF ALL COURSES

(REGULATION-2021)



BATCH2021- 2025

Table.8.1-CO attainment of all courses for the Batch:2021-2025

S/N	COURSE CODE	COURSE NAME	CO Level					CO ATTAINMENT (3 SCALE)	% OF ATTAINMENT
			CO1	CO2	CO3	CO4	CO5		
1.	HS3152	ProfessionalEnglish-I	2.50	2.40	2.50	2.50	2.50	2.48	82.67
2.	MA3151	MatricesandCalculus	1.90	2.00	1.20	1.20	1.20	1.5	50
3.	PH3151	EngineeringPhysics	1.90	1.20	2.00	1.20	1.60	1.58	52.67
4.	CY3151	EngineeringChemistry	2.00	1.90	1.20	1.60	1.60	1.66	55.33
5.	GE3151	ProblemSolvingandPython Programming	2.00	1.90	1.60	2.00	2.00	1.9	63.33
6.	GE3171	ProblemSolvingandPython ProgrammingLaboratory	2.40	2.40	2.40	2.40	2.40	2.4	80
7.	BS3171	PhysicsandChemistryLab oratory	2.40	2.40	2.40	2.40	2.40	2.4	80
8.	HS3252	ProfessionalEnglish-II	1.00	2.50	2.50	2.50	2.50	2.2	73.33
9.	MA3251	StatisticsandNumericalM ethods	1.90	1.60	1.20	1.20	2.00	1.58	52.67
10.	PH3256	PhysicsforInformationSci ence	1.20	1.10	1.20	1.20	1.20	1.18	39.33
11.	BE3251	BasicElectricalandElectron ics Engineering	1.20	1.20	1.20	1.20	1.10	1.18	39.33
12.	GE3251	EngineeringGraphics	1.20	1.20	1.20	1.20	1.20	1.2	40
13.	CS3251	ProgramminginC	1.50	1.50	3.00	3.00	3.00	2.4	80
14.	GE3271	EngineeringPracticesLabo ratory	2.40	2.40	2.40	2.40	2.40	2.4	80
15.	CS3271	ProgramminginCLaborato ry	2.40	2.40	2.40	2.40	2.40	2.4	80
16.	MA3354	DiscreteMathematics	2	2	2	2	2	2	66.67
17.	CS3351	Digital Principles ComputerOrganization	3	3	3	3	3	3	100
18.	CS3352	Foundationsof Data Science	2	1.2	2	2	2	1.84	61.33
19.	CS3301	DataStructures	3	3	3	3	3	3	100
20.	CS3391	ObjectOriented Programming	3	3	3	3	3	3	100
21.	CS3311	DataStructuresLaboratory	3	3	3	3	3	3	100
22.	CS3381	ObjectOriented ProgrammingLaboratory	3	3	3	3	3	3	100

23.	CS3361	DataScienceLaboratory	2.98	2.99	2.98	2.98	2.98	2.98	99.40
24.	GE3361	ProfessionalDevelopment	2.1	1.5	1.5	3	3	2.22	74
25.	CS3452	TheoryofComputation	3	3	3	3	3	3	100
26.	CS3491	ArtificialIntelligenceand MachineLearning	3	3	3	3	3	3	100
27.	CS3492	DatabaseManagement Systems	3	3	3	3	3	3	100
28.	CS3401	Algorithms	3	3	3	3	3	3	100
29.	CS3451	IntroductiontoOperating Systems	3	3	3	3	3	3	100
30.	GE3451	EnvironmentalSciencesan d Sustainability	3	3	3	3	3	3	100
31.	CS3461	OperatingSystemsLaborat ory	3	3	3	3	3	3	100
32.	CS3481	DatabaseManagement Systems Laboratory	3	3	3	3	3	3	100
33.	CS3591	ComputerNetworks	2.5	2.5	3	3	3	2.8	93.33
34.	CS3501	CompilerDesign	2.10	2.60	2.60	2.60	2.60	2.5	83.33
35.	CB3491	CryptographyandCyber Security	1.70	2.10	2.50	2.50	2.10	2.18	72.67
36.	CS3551	DistributedComputing	1.70	1.70	2.10	2.50	2.10	2.02	67.33
37.	CCS366	SoftwareTestingand Automation	3	3	3	3	3	3	100
38.	CCS335	Cloud computing	2.50	2.50	2.50	2.50	2	2.4	80
39.	CCS356	ObjectOrientedSoftware Engineering	3	3	3	3	3	3	100
40.	CS3691	EmbeddedSystemsandIoT	3	3	3	3	3	3	100
41.	CCS332	APP Development	3	3	3	3	3	3	100
42.	CCS334	Big Data Analysis	3	3	3	3	3	3	100
43.	CCS354	Network Security	3	3	3	3	3	3	100
44.	CCS370	UI & UX Design	3	3	3	3	3	3	100
45.	OIE351	IntroductiontoIndustrial Engineering	3	3	3	3	3	3	100
46.	GE3791	HumanValuesandEthics	3	3	1.20	3	3	2.64	88
47.	AI3021	IT in Agricultural System	3	3	1.20	3	3	2.64	88
48.	CME365	Reenable Energy Resources	3	3	1.20	2.90	3	2.62	87.33
49.	CS3711	Summer Internship	2.98	2.99	2.98	2.99	2.98	2.98	99.47
50.	GE3751	Principals of Management	2.90	2.90	1.20	2.90	2.90	2.56	85.33
51.	OHS352	Project Report writing	2.90	2.90	1.20	1.20	2.90	2.22	74
52.	CS3811	Project work	3	3	3	3	3	3	100

Table8.1.COAttainmentforallthecourse



ASSESSMENT TOOLS FOR POs / PSO's ATTAINMENT

9. ASSESSMENT TOOLS FOR ATTAINMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

PO Assessment for PO1 to PO5 is done by giving 80% weightage to direct assessment and 20% weightage to indirect assessment tools as shown in Fig.9.1. and the process is given in Table 91.

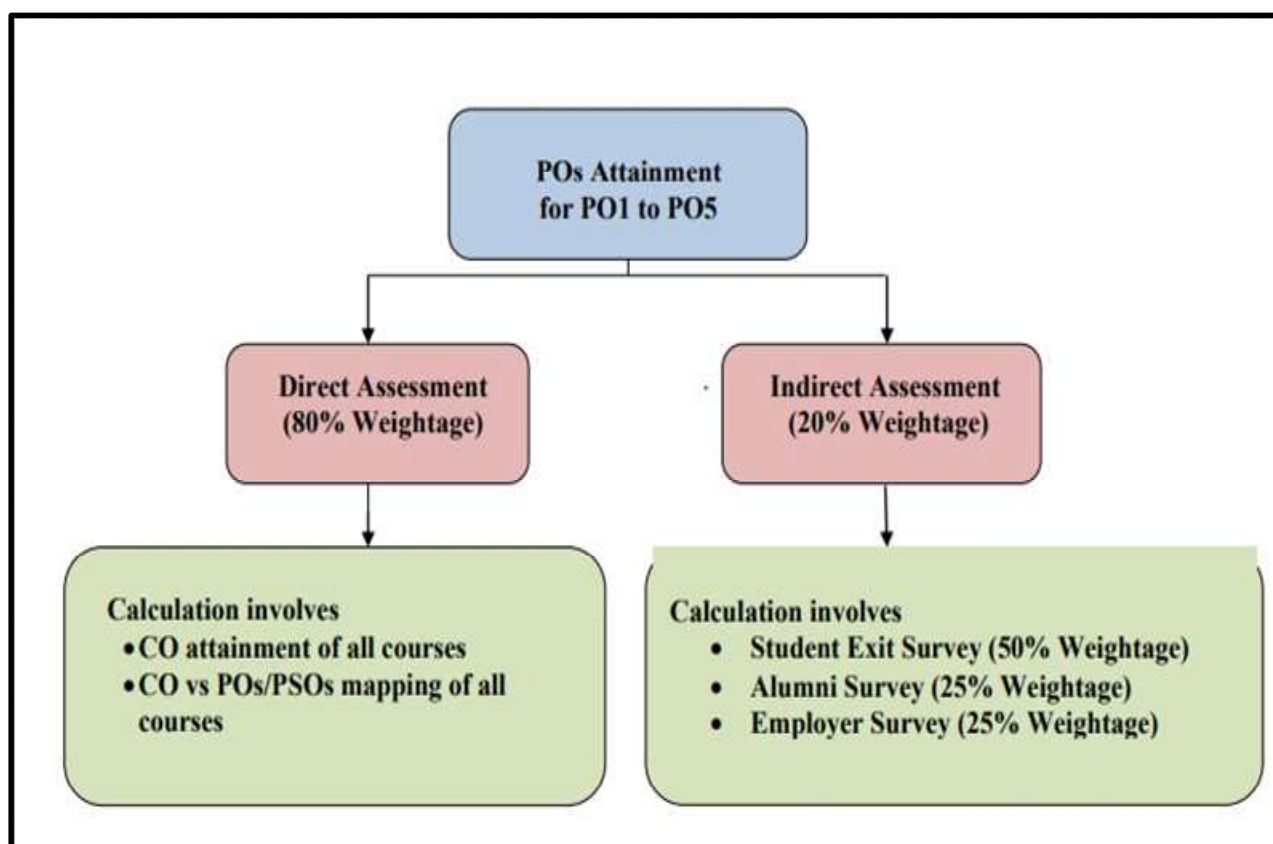


Figure9.1 Assessment Tools for PO1 to PO5 Attainment and processes

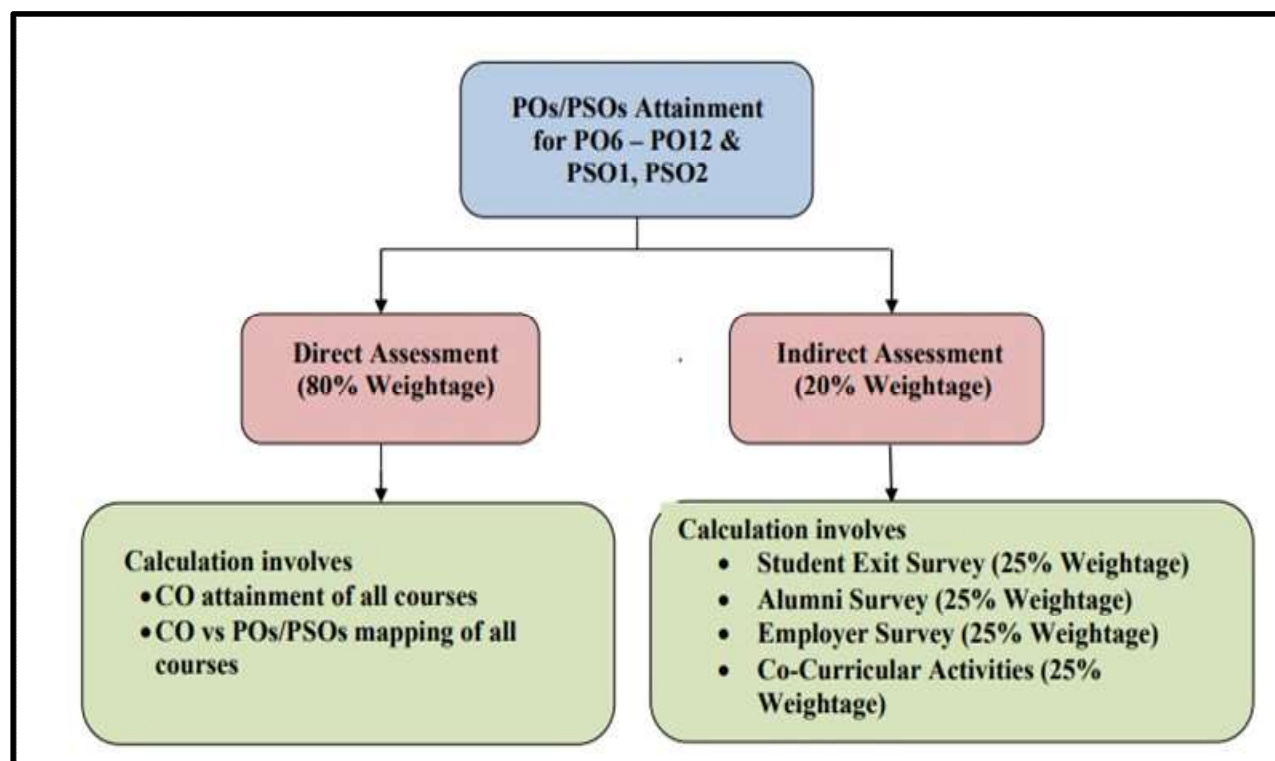


Figure 9.2 Assessment Tools for PO6 to PO12 Attainment and processes

Table9.1.POs/PSOsAssessmentToolsandProcess,

POs/PSOsASSESSMENTTOOLSANDPROCESSES				
Direct Assessment	COs Assessment	Coursetype	ProcessofAssessment	DataCollection Frequency
		Theory Course	InternalAssessmentTest	3/Course
			UniversityExamination	1/Course
		Practical Course	ModelPractical Examination	1/Course
			UniversityExamination	1/Course
		Project	ZerothReview	1/Course
			FirstReview	1/Course
			SecondReview	1/Course
			ThirdReview	1/Course
			UniversityViva-Voce Examination	1/Course
Indirect Assessment	Surveys	StudentExit Survey		Onceina year
		EmployerSurvey		Onceina year
		AlumniSurvey		Onceinayear

Table9.1.PO&PSOsAssessmenttools

Table 9.2– Rubrics for C0-Curricular Activities

S. NO.	CO- CURRICULAR ACTIVITIES	LOW(1)	MEDIUM(2)	HIGH(3)
1	Guest Lectures/Technical Seminars / Webinar / Workshop / Symposium	Organized 0-3 Programmes	Organized 4-6 Programmes	Organized more than 6 Programmes
2	Value Added Courses	Organized 0-2 Programmes	Organized 3-4 Programmes	Organized 4 Programmes
3	Internship / In-plant Training/Industrial Visit	10-25% of students participated	26-50% of students participated	More than 50% of students participated
4	Programme on Ethics/Entrepreneurship/IPR	Organized 0-1 Programmes	Organized 2-3 Programmes	Organized more than 4 Programmes



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SAMPLE POs/PSOs ATTAINMENT CALCULATION

10. SamplePOs/PSOsAttainmentCalculation

Direct assessment for POs/POs attainment calculation is based on CO attainment and Course vs POs/PSOs mapping average of all respective courses

CalculationofPOsandPSOsAttainment

$$\text{AttainmentLevel through Direct Assessment} = (0.8 \times \text{Attainment level based on University Examination Marks}) + (0.2 \times \text{Attainment level based on Internal AssessmentMarks})$$

POs/PSOsAttainmentLevelfor aCourse

$$\text{POs/PSOs Attainment} = \frac{\text{COVsPOs/PSOsMapping Averageofthecourse}}{3} \times \text{COAttainmentofthe Course}$$

OverallPOs/PSOsAttainment

$$\text{Overall POs/PSOs Attainment} = (80\% \text{ of Direct Assessment}) + (20\% \text{ of Indirect Assessment})$$



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COURSECODE&NAME: C310 / CS8651 – INTERNET PROGRAMMING

C401	INT.EXAM1	INT.EXAM 2	MODELEXAM	IAT	UNIV
CO1	3	0	3	3.00	3
CO2	3	0	3	3.00	3
CO3	0	3	3	3.00	3
CO4	0	3	3	3.00	3
CO5	0	0	3	3.00	3
INTERNAL/UNIVATTAINMENTS				3.00	3.00
WEIGHTAGE				20%	80%
COATTAINMENTFORTHECOURSE				0.60	2.40
FINALCOATTAINMENTNETFORTHECOURSE				3.00	

COVsPO														
COURSE	HIGH VOLTAGE ENGINEERING													
COURSE COUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	3	2	2	0	0	0	0	0	2	2	0	2	2	3
C401.2	3	3	3	3	3	0	0	0	2	2	0	2	2	3
C401.3	3	3	3	3	3	0	0	0	2	2	2	2	2	3
C401.4	3	3	3	3	3	0	0	0	2	2	2	2	2	3
C401.5	3	3	3	3	3	0	0	0	2	2	2	2	2	3
C401	0	0	0	0	0	0	0	0	0	0	0	0	0	0
POs/PSOs ATTAINMENT	3.00	2.80	2.80	3.00	3.00	0.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	3.00



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SURVEY ANALYSIS

11. Survey Analysis

POs/PSOs Attainment through Indirect Assessment:

The feedback about curriculum and the way to improve the POs/PSOs attainment is collected in the form of Survey from stakeholders. Indirect assessment is done through student exit survey (50% weightage), Alumni survey (25% weightage) and Employer survey (25% weightage).

STUDENT EXIT SURVEY

SNO	QUESTIONS	EXCELENT	VERY GOOD	GOOD	FAIR	POOR	TOTAL	%	SCALE
	MAX.VALUE	5	4	3	2	1	75	100	3
1	PO1	25	3	0	0	0	137	97.86%	2.94
2	PO2	22	3	3	0	0	131	93.57%	2.81
3	PO3	20	5	3	0	0	129	92.14%	2.76
4	PO4	21	6	1	0	0	132	94.29%	2.83
5	PO5	25	3	0	0	0	137	97.86%	2.94
6	PO6	21	7	0	0	0	133	95.00%	2.85
7	PO7	22	6	0	0	0	134	95.71%	2.87
8	PO8	20	5	3	0	0	129	92.14%	2.76
9	PO9	25	2	1	0	0	136	97.14%	2.91
10	PO10	25	3	0	0	0	137	97.86%	2.94
11	PO11	20	5	3	0	0	129	92.14%	2.76
12	PO12	22	3	3	0	0	131	93.57%	2.81
13	PSO1	23	3	2	0	0	133	95.00%	2.85
14	PSO2	22	3	3	0	0	131	93.57%	2.81
OVER ALL%		22.36	4.07	1.57	0	0	432.79	94.85%	2.85

ALUMNI SURVEY

SNO	QUESTIONS	EXCELENT	VERY GOOD	GOOD	FAIR	POOR	TOTAL	%	SCALE
	MAX.VALUE	5	4	3	2	1	80	100	3
1	PO1	15	1	0	0	0	79	98.75%	2.96
2	PO2	14	2	0	0	0	78	97.50%	2.93
3	PO3	14	1	1	0	0	77	96.25%	2.89
4	PO4	13	2	1	0	0	76	95.00%	2.85
5	PO5	13	1	2	0	0	75	93.75%	2.81
6	PO6	13	2	1	0	0	76	95.00%	2.85
7	PO7	13	1	2	0	0	75	93.75%	2.81
8	PO8	14	1	0	0	0	74	92.50%	2.78
9	PO9	14	0	1	0	0	73	91.25%	2.74
10	PO10	13	1	1	0	0	72	90.00%	2.70
11	PO11	14	0	1	0	0	73	91.25%	2.74
12	PO12	15	0	0	0	0	75	93.75%	2.81
13	PSO1	14	1	0	0	0	74	92.50%	2.78
14	PSO2	13	1	1	0	0	72	90.00%	2.70
OVER ALL%		318	126	41	5	0	490	94.29%	2.83

EMPLOYER SURVEY

SNO	QUESTIONS	EXCELENT	VERY GOOD	GOOD	FAIR	POOR	TOTAL	%	SCALE
	MAX.VALUE	5	4	3	2	1	40	100	3
1	PO1	7	1	0	0	0	39	97.50%	2.93
2	PO2	6	2	0	0	0	38	95.00%	2.85
3	PO3	6	2	0	0	0	38	95.00%	2.85
4	PO4	6	1	1	0	0	37	92.50%	2.78
5	PO5	7	1	0	0	0	39	97.50%	2.93
6	PO6	6	2	0	0	0	38	95.00%	2.85
7	PO7	6	1	1	0	0	37	92.50%	2.78
8	PO8	7	1	0	0	0	39	97.50%	2.93
9	PO9	7	1	0	0	0	39	97.50%	2.93
10	PO10	7	1	0	0	0	39	97.50%	2.93
11	PO11	8	0	0	0	0	40	100.00%	3.00
12	PO12	8	0	0	0	0	40	100.00%	3.00
13	PSO1	7	1	0	0	0	39	97.50%	2.93
14	PSO2	7	1	0	0	0	39	97.50%	2.93
OVER ALL%		113	26	1	0	0	140	96.61%	2.90



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POs/PSOs ATTAINMENT TABLE FOR ALL COURSES

12. POs/PSOs Attainment Table for all courses through direct assessment

POs/PSOs Attainment for all courses through direct assessment tool is given in Table 12.1

COVSPOMAPPINGTABLE														
COURSEWISE COVSPOs MAPPING AVERAGE														
COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	1.33	1.83	1.49	1.83	0.99	2.48	2.48	2.48	1.33	2.48	1.00	2.48	0.00	0.00
C102	1.50	1.50	0.50	0.50	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.50	0.00	0.00
C103	1.58	1.58	0.87	0.61	0.93	0.53	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00
C104	1.53	0.56	0.59	0.37	0.00	0.71	0.81	0.00	0.00	0.00	0.00	0.35	0.00	0.00
C105	1.50	1.63	1.10	1.50	1.13	0.00	0.00	0.00	0.00	0.00	1.00	0.52	0.00	0.00
C106	2.08	2.08	1.44	1.92	1.76	0.00	0.00	0.00	0.00	0.00	1.60	0.64	0.00	0.00
C107	2.40	1.92	2.08	0.80	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C108	2.08	0.80	1.28	0.16	0.16	1.12	1.44	0.00	0.00	0.00	0.00	0.64	0.00	0.00
C109	2.40	2.40	2.40	2.40	0.80	2.40	2.40	2.40	2.40	2.40	2.40	2.40	0.00	0.00
C110	1.70	1.70	1.70	1.70	1.53	1.70	1.70	1.70	1.70	1.63	2.20	2.20	2.20	0.00
C111	1.58	1.58	0.53	0.53	0.53	0.00	0.00	0.00	1.05	0.00	1.05	1.58	0.00	0.00
C112	1.18	0.31	0.47	0.32	0.56	0.16	0.32	0.00	0.00	0.00	0.00	0.16	0.00	0.00
C113	0.79	0.71	0.39	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.79	0.00	0.00
C114	1.20	0.40	0.80	0.00	0.80	0.00	0.00	0.00	0.00	1.20	0.00	0.80	0.00	0.00
C115	1.75	2.00	2.00	1.00	1.67	1.00	0.83	0.67	1.67	0.17	2.33	1.92	1.58	1.60
C116	2.40	1.60	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.00	0.00	1.60	0.00	0.00
C117	1.47	1.87	2.13	1.33	1.07	1.33	0.00	0.00	1.87	0.40	1.87	1.87	1.87	1.87
C118	1.92	2.24	2.40	2.40	1.44	2.40	2.40	2.40	2.40	2.40	2.40	2.40	0.00	0.00



COVSPOMAPPINGTABLE														
COURSEWISECOVSPOsMAPPINGAVERAGE														
COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201	0.79	1.72	1.06	0.53	0.00	0.26	0.00	0.00	0.00	0.66	0.00	0.26	0.00	0.00
C202	1.99	1.99	1.99	1.99	1.19	1.06	0.66	0.66	0.66	0.66	1.06	1.72	0.93	1.72
C203	1.82	1.49	0.83	1.33	1.49	0.17	0.17	0.00	1.00	1.00	1.00	1.82	1.82	1.99
C204	2.18	1.78	0.99	1.58	1.78	0.20	0.20	0.00	1.19	1.19	1.19	2.18	2.18	2.38
C205	1.49	1.49	1.66	1.32	0.66	0.00	0.00	0.00	1.32	1.49	1.33	1.49	1.32	1.66
C206	1.58	1.19	1.32	0.92	0.26	0.00	0.00	0.00	1.06	1.06	1.45	1.59	1.45	1.19
C207	0.99	2.98	2.98	0.99	2.98	0	0	0	0.99	0.993	0.993	0.993	1.987	0.993
C208	1.42	1.30	0.95	1.30	0.36	0.00	0.00	0.00	1.18	1.07	1.42	1.19	1.07	1.66
C209	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C210	1.80	2.20	2.40	1.80	0.60	0.00	0.00	0.00	1.40	2.20	2.20	2.40	1.80	2.00
C211	2.40	1.20	2.00	2.00	0.80	0.00	0.00	0.00	1.80	1.60	1.80	2.60	1.60	1.80
C212	2.00	1.60	2.60	2.00	1.00	0.00	0.00	0.00	2.00	2.00	2.20	2.00	2.00	1.80
C213	1.60	1.80	0.60	0.20	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.40	0.00	0.60
C214	2.00	2.00	2.40	1.80	0.60	0.00	0.00	0.00	2.20	1.80	1.80	1.60	1.40	2.00
C215	2.80	1.40	0.60	0.20	0.00	2.20	2.40	0.00	0.80	0.00	0.00	1.80	0.00	0.00
C216	2.80	1.40	0.60	0.20	0.00	2.20	2.40	0.00	0.00	0.00	0.00	1.80	0.00	0.00
C217	2.40	1.80	1.80	1.60	2.00	0.00	0.00	0.00	2.20	2.20	2.00	2.00	1.80	1.80
C218	2.40	2.60	2.40	2.00	1.00	0.00	0.00	0.00	1.60	1.40	2.60	2.20	2.40	1.80

COVSPOMAPPINGTABLE														
COURSEWISECOVSPOsMAPPINGAVERAGE														
COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301	0.00	1.50	0.40	0.20	1.33	0.00	0.00	0.00	0.00	0.60	0.00	0.33	0.50	0.93
C302	2.50	2.33	2.15	1.81	1.39	0.00	0.00	0.00	2.15	1.63	1.35	1.98	1.49	1.46
C303	2.18	1.93	1.95	1.93	2.07	0.00	0.00	0.00	1.48	0.00	0.00	0.87	2.07	2.04
C304	1.21	1.60	1.18	1.65	1.35	0.00	0.00	0.00	1.79	1.54	1.46	1.01	1.40	1.18
C305	2.20	2.20	1.60	2.00	1.20	0.00	0.00	0.00	1.20	2.00	1.60	1.80	2.20	1.80
C306	1.77	1.73	1.73	1.63	1.40	0.00	0.00	0.00	1.77	1.77	0.80	2.10	1.27	1.43
C307	2.00	2.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	1.00	1.00	2.00	2.00	2.00
C308	2.60	2.00	3.00	2.40	1.50	0.00	0.00	0.00	1.00	2.20	2.20	2.40	2.20	1.60
C309	1.60	1.80	2.00	1.40	2.60	0.00	0.00	0.00	1.40	1.20	2.00	1.60	2.00	2.20
C310	2.80	3.00	2.80	2.80	2.80	0.00	0.00	0.00	2.20	1.80	2.60	2.00	2.20	2.80
C311	1.80	1.80	2.40	1.80	2.20	0.00	0.00	0.00	2.40	2.00	1.40	1.80	2.20	1.40
C312	1.60	2.20	2.20	2.60	1.40	0.00	0.00	0.00	2.20	2.20	1.40	1.80	2.20	2.60



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CO VS PO MAPPING TABLE														
COURSE WISE CO VS Pos MAPPING AVERAGE														
COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401	0.00	0.00	0.00	0.00	0.00	2.16	2.16	2.64	1.76	2.24	2.24	2.24	0.00	0.00
C402	0.00	0.97	0.58	0.00	0.82	1.55	1.16	0.77	0.24	0.00	0.00	1.74	0.00	0.00
C403	2.16	2.64	2.64	1.76	2.64	1.56	2.64	2.56	1.16	2.64	2.64	2.64	0.00	0.00
C404	3.00	2.00	1.00	3.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	0.00
C405	2.62	1.75	0.00	0.87	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.87	0.87	0.00
C406	2.98	2.98	2.98	2.98	2.59	2.98	2.39	2.59	2.98	2.79	2.98	2.59	2.98	2.98
C407	3.00	3.00	3.00	3.00	2.60	3.00	2.40	2.60	3.00	2.80	3.00	2.60	3.00	3.00

POs/PSOs attainment for Co-curricular activities is given in Table 12.2

PO MAPPING TABLE									
CO-CURRICULAR VS POs/ PSOs MAPPING AVERAGE									
Co-CurricularActivities	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Guest Lectures / Technical Seminars / Webinar / Workshop/Symposium	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00
ValueAddedCourses	2.00	2.00	2.00	3.00	3.00	2.00	2.00	3.00	2.00
Internship / In-plant Training	2.00	3.00	3.00	3.00	3.00	2.00	1.00	1.00	2.00
Programme on Ethics/Entrepreneurship/IPR	2.00	3.00	3.00	2.00	3.00	2.00	1.00	1.00	2.00
Industrial Visit	2.00	3.00	2.00	3.00	3.00	2.00	3.00	2.00	2.00

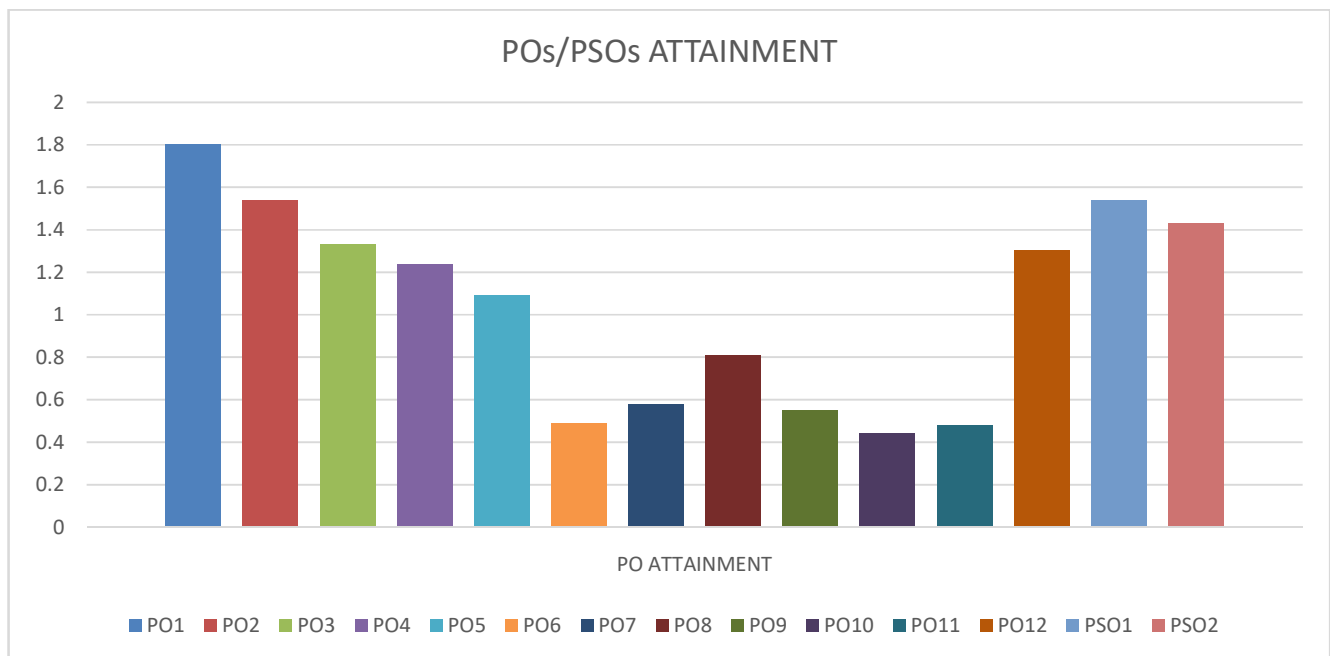
PO1 to PO5 attainment for all courses is given in Table 12.3

Survey	IN DIRECT SURVEY	Assessment Weightage	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO 12	PSO 1	PSO 2
Graduate Survey	Graduate Survey	25%	0.60	0.60	0.62	0.60	0.62	0.62	0.77	0.63	0.60	0.64	0.62	0.62	0.61	0.62
Alumni Survey	Alumni Survey	25%	0.65	0.63	0.65	0.63	0.63	0.66	0.59	0.63	0.68	0.62	0.63	0.62	0.65	0.59
Employer Survey	Employer Survey	25%	0.60	0.45	0.60	0.45	0.75	0.60	0.60	0.60	0.60	0.00	0.45	0.60	0.45	0.60
Cocurricular		0.25	0.14	0.11	0.13	0.11	0.11	0.14	0.11	0.13	0.14	0.16	0.11	0.13	0.14	0.11
Indirect Survey			1.98	1.79	1.99	1.80	2.11	2.02	2.07	1.99	2.02	1.42	1.81	1.96	1.84	1.92

The Overall POs/PSOs attainment from direct and indirect assessment as below,

ASSESSMENT TYPE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
DIRECT	1.80	1.71	1.49	1.33	1.08	0.63	0.56	0.40	1.08	1.06	1.17	1.53	1.07	0.99
INDIRECT	1.98	1.79	1.99	1.80	2.11	2.02	2.07	1.99	2.02	1.42	1.81	1.96	1.84	1.92
DIRECT 80%	1.44	1.37	1.19	1.06	0.86	0.50	0.45	0.32	0.86	0.85	0.94	1.22	0.86	0.79
INDIRECT 20%	0.40	0.36	0.40	0.36	0.42	0.40	0.41	0.40	0.40	0.28	0.36	0.39	0.37	0.38
OVERALL ATTAINMENT	1.84	1.73	1.59	1.42	1.29	0.91	0.86	0.72	1.27	1.13	1.30	1.62	1.22	1.18

POs/PSOs ATTAINMENT CHART





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ANNEXURE -I

DEPARTMENT POS &

PSOS



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM OUTCOMES

PO1:Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life Long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



PROGRAM SPECIFIC OUTCOMES

At the end of the program students will be able to,

PSO1: Deal with real time problems by understanding the evolutionary changes in computing, applying standard practices and strategies in software project development using open-ended programming environments.

PSO2: Employ modern computer languages, environments and platforms in creating innovative career paths by inculcating moral values and ethics.

PSO3: Achieve additional expertise through add-on and certificate programs.



NPR

COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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Annexure -II

SURVEY FORMS



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

STUDENT EXIT SURVEY

Name of the Student :

Registration Number :

Contact Number :

Email :

Batch :

POs/PSOs	Questions	Ratings				
		Excellent (5)	Very Good (4)	Good (3)	Fair (2)	Poor (1)
PO1	To what level you are able to apply science and engineering concepts to problem solving?					
PO2	To what extent you are able to analyze Electrical and Electronics Engineering problems?					
PO3	To what extent you are able to design solutions for complex engineering problems?					
PO4	To what extent you are able to analyze and interpret data?					
PO5	To what extent you are able to use state of the art tools for Electrical and Electronics Engineering applications?					
PO6	To what extent you are able to apply the knowledge to solve the societal issues?					
PO7	To what extent you are able to apply the knowledge to find the solution for global and sustained development?					
PO8	To what extent you are able to develop awareness of professional, ethical and social responsibilities?					
PO9	To what extent you are able to function as an individual or leader in multidisciplinary teams in projects implementation?					
PO10	To what extent you are able to communicate for engineering activities and presentation?					
PO11	To what extent you are able to demonstrate knowledge and understanding engineering and management principles to deal with					

	projects?					
PO12	To what extent you are able to engage in life-long learning and adapt to rapidly changing technologies?					
PSO1	To what extent you are able to apply modern tools and provide solutions for real time for energy conservation?					
PSO2	To what extent you are able to develop the simulation and control application in renewable industry with ethics?					



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

EMPLOYER SURVEY

Name of the Organization:

Name of the Employer and Designation:

Name of the Employee:

Please provide your comments on the following:

1. The curriculum covers all the requisite knowledge contents suitable for employment.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
2. Analysis of critical real-time problems.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
3. Design and development of systems, models and processes.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
4. Research based knowledge including analysis and problem solving abilities to arrive at feasible solutions.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
5. The curriculum has a sample scope for developing recruit's ability to apply their knowledge, skills and modern tools and software for appropriate solutions in the assigned project domain.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair

6. The recruitee's sensitivity to social needs in bringing innovative proposals and ideas.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
7. The awareness to environmental issues, if any while implementing the project.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
8. The commitment and ethical values of the Recruitree
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
9. The individual skills and contribution to the Recruitree's team in the project.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
10. Curricular components – projects, seminar help the students in gaining skills to prepare project proposals and reports.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
11. The curriculum has a sample scope for developing recruitree's ability to apply managerial, administrative principles with financial literacy for successful project execution.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair
12. Recruitree's enthusiasm to upgrade the skill set and knowledge for new assignments and professional development.
 - Excellent
 - Very Good
 - Good
 - Average
 - Fair

13. Broad curricular areas help the student in gaining knowledge for securing a job and subsequent progression.

- Excellent
- Very Good
- Good
- Average
- Fair

14. Modern tools in curriculum are contemporary enough to suit the needs of the organization.

- Excellent
- Very Good
- Good
- Average
- Fair



EMPLOYERSURVEY

Name of the Organization:

Name of the Employer and Designation: N

Name of the Employee:

Please provide your comments on the following::

POs/PSOs	Questions	Ratings				
		Excellent (5)	Very Good (4)	Good (3)	Fair (2)	Poor (1)
PO1	The curriculum covers all the requisite knowledge contents suitable for employment.					
PO2	Analysis of critical real time problems					
PO3	Design and development of systems, models and processes.					
PO4	Research based knowledge including analysis and problem solving abilities to arrive at feasible solutions.					
PO5	The curriculum has ample scope for developing recruit's ability to apply their knowledge, skills and modern tools and software for appropriate solutions in the assigned project domain					
PO6	The recruiter's sensitivity to social needs in bringing innovative proposal and ideas.					
PO7	The awareness to environmental issues, if any while implementing the project.					
PO8	The commitment and ethical values of the Recruiter					
PO9	The individual skills and contribution to the Recruiter's team in the project.					
PO10	Curricular components – projects, seminars help the students in gaining skills to prepare project proposals and reports.					
PO11	The curriculum has ample scope for developing recruit's ability to apply managerial, administrative principles with financial literacy for successful project execution.					

PO12	Recruitee's enthusiasm to upgrade the skill set and knowledge for new assignments and professional development.					
PSO1	Broad curricular areas help the student in gaining knowledge for securing a job and subsequent progression.					
PSO2	Modern tools in curriculum are contemporary enough to suit the need of the organization.					