

VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY

NAMBUR



**VASIREDDY VENKATADRI
INSTITUTE OF TECHNOLOGY**

(AUTONOMOUS)

DEPARTMENT OF INFORMATION TECHNOLOGY

CO-PO-PSO-PEO ASSESSMENT MANUAL

INDEX	
1	Institute Vision and Mission
2	Department Vision and Mission
3	Outcome Based Education (OBE)
4	Program Educational Objectives(PEO)
5	Program Outcomes (PO)
6	Program Specific Outcomes (PSO)
7	Blooms Taxonomy
8	Course Codes
9	Course Outcome Statements
10	Contribution of Courses in R16 Curriculum
11	Procedure for assessment of Course Outcomes
12	CO Rubrics
13	CO attainment calculation (for one course)
14	CO attainment-Direct (for all courses)
15	CO attainment-indirect (for all courses)
16	CO attainment-Direct + indirect (for all courses)
17	PO/PSOs assessment tools
18	Procedure for calculating the attainment of PO/PSOs (for one course)
19	PO/PSOs attainments (For all courses)
20	Batch wise PO/PSOs attainments
21	Batch wise PO/PSOs Attainment Levels and Actions for Improvement
22	Batch wise PEO Assessment
Annexures	
I	Program Exit Survey
II	Alumni Survey
III	Parent Survey
IV	Employer Survey

1. INSTITUTE VISION AND MISSION

VISION

To impart quality education through exploration and experimentation and generate socially conscious engineers, embedding ethics and values, for the advancement in science and technology.

MISSION

- To educate students with a practical approach to dovetail them to industry-needs.
- To govern the institution with a proactive and professional management with passionate teaching faculty.
- To provide holistic and integrated education and achieve over all development of students by imparting scientific and technical, social and cognitive, managerial and organizational skills.
- To compete with the best and be the most preferred institution of the studios and the scholarly.
- To forge strong relationships and linkage with the industry.

2. DEPARTMENT VISION AND MISSION

VISION

To produce IT professionals who can develop globally competitive and socially useful information technology-enabled solutions and products that offer cost-effective solutions, for organizations, in particular, and society in general, through their innovative ideas, and to create a knowledge pool through research in this field.

MISSION

M1: To produce information technology professionals for the Global IT industry.

M2: To develop student centric and qualitative teaching-learning practices.

M3: To establish infrastructure that endows cutting edge technology requirements of the industry.

M4: To extend service to the public, the state and the nation at large by building quality engineers.

M5: To carve disciplined and socially, technologically better responsible citizens.

M6: To make the students pursuing information technology the technological ambassadors of VVIT in whatever part of the world they find themselves in their future careers.

3. OUTCOME BASED EDUCATION (OBE)

Institutions adopting OBE try to bring changes to the curriculum by dynamically adapting to the requirements of the different stakeholders like Students, Parents, Industry Personnel and Recruiters. OBE is all about feedback and outcomes.

Four levels of outcomes from OBE are:

1. Program Educational Objectives (PEOs)
2. Program Outcomes (POs)
3. Program Specific Outcomes (PSOs)
4. Course Outcomes (COs)

Why OBE?

1. International recognition and global employment opportunities.
2. More employable and innovative graduates with professional and soft skills, social responsibility and ethics.
3. Better visibility and reputation of the technical institution among stakeholders.
4. Improving the commitment and involvement of all the stakeholders.
5. Enabling graduates to excel in their profession and accomplish greater heights in their careers.
6. Preparing graduates for the leadership positions and challenging them and making them aware of the opportunities in the technology development.

Benefits of OBE for Faculty Members Faculty members are referred to as Change of Agents in OBE.

1. Teaching will become a far more creative and innovative career.
2. Faculty members will no longer feel the pressure of having to be the “source of all knowledge”.
3. Faculty members shape the thinking and vision of students towards a course

4. PROGRAM EDUCATIONAL OBJECTIVES (PEO)

Program Educational Objectives (PEOs) should be defined by the Head of the Department in consultation with the faculty members. PEOs are a promise by the department to the aspiring students about what they will achieve once they join the programme. PEO assessment is not made compulsory by NBA as it is quite difficult to measure in Indian context. NBA assessors usually do not ask for PEO assessment. PEOs are about professional and career accomplishment after 4 to 5 years of graduation. PEOs can be written from different perspectives like Career, Technical Competency and behaviour. While writing the PEOs do not use the technical terms as it will be read by prospective students who wants to join the programme.

PEO-1: Solid Foundation and Core Competence

To provide the graduates with concrete base in Information Technology, to pursue higher studies and to succeed in industry / technical profession with global competence by imparting acute technical skills like designing, modeling, analyzing and problem-solving on top of solid foundation in mathematical, scientific, computing and engineering fundamentals.

PEO-2: Employability and Research Spur

To train the graduates for a higher degree of employability in both public and private sector industries at national and international level by imparting ability to Re-learn and innovate in ever-changing global economic and technological environments and to contribute effectively in research and development.

PEO-3: Professional Skills and Societal Contribution

To inculcate the graduates to have basic interpersonal skills, effective communication skills to teamwork/ lead in multidisciplinary approach, under diverse professional environments by handling critical situations through lifelong learning with an ethical attitude (administrative acumen) and an ability to relate engineering issues to broader social context.

PEO-4: Real World Competency and Innovation

To enable students with good scientific and engineering breadth and technology skills so as to comprehend, analyze, design, and create novel products and solutions for the real-life problems to emerge as researchers, experts, educators & entrepreneurs.

5. PROGRAM OUTCOMES (PO)

A Program Learning Outcome is broad in scope and be able to do at the end of the programme. POs are to be in line with the graduate attributes as specified in the Washington Accord. POs are to be specific, measurable and achievable. NBA has defined 12 POs and you need not define those POs by yourself and it is common for all the institutions in India. In the syllabus book given to students, there should be clear mention of course objectives and course outcomes along with CO-PO course articulation matrix for all the courses

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 teamwork: 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

6. PROGRAM SPECIFIC OUTCOMES (PSO)

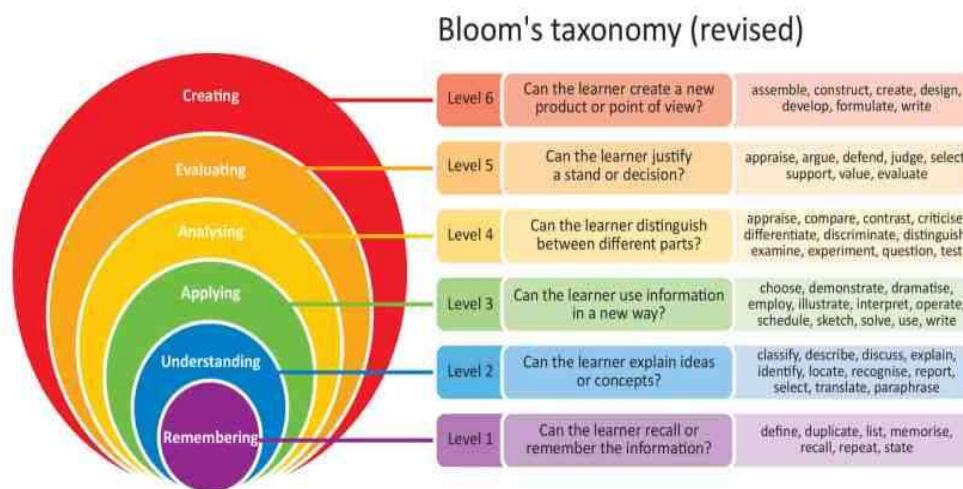
Program Specific Outcomes (PSOs) are statements that describe what the graduates of a specific engineering program should be able to do. A list of PSOs written for the department of Information Technology is given below.

PSO1 Professional skills: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer based systems of varying complexity.

PSO2 Successful career and entrepreneurship: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur and a zest for higher studies/employability in the field of computer science & engineering.

7. BLOOM'S TAXONOMY

Bloom's Taxonomy was created in 1956 under the leadership of educational psychologist Dr Benjamin Bloom in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. It is most often used when designing educational, training, and learning processes. By utilizing Bloom's Taxonomy, students are not going to forget the information as soon as the class ends — rather, they retain and apply the information as they continue to grow as a student and in their careers, staying one step ahead of the competition



BLOOM'S TAXONOMY DIGITAL PLANNING VERBS					
REMEMBERING	UNDERSTANDING	APPLYING	ANALYZING	EVALUATING	CREATING
 Copying Defining Finding Locating Quoting Listening Googling Repeating Retrieving Outlining Highlighting Memorizing Networking Searching Identifying Selecting Tabulating Duplicating Matching Bookmarking Bullet-pointing	 Annotating Tweeting Associating Tagging Summarizing Relating Categorizing Paraphrasing Predicting Comparing Contrasting Commenting Journaling Interpreting Grouping Inferring Estimating Duplicating Gathering Exemplifying Expressing	 Acting out Articulate Reenact Loading Choosing Determining Displaying Judging Executing Examining Implementing Sketching Experimenting Hacking Interviewing Painting Preparing Playing Integrating Presenting Charting	 Calculating Categorizing Breaking Down Correlating Deconstructing Linking Mashing Mind-Mapping Organizing Appraising Advertising Dividing Deducing Distinguishing Illustrating Questioning Structuring Integrating Attributing Estimating Explaining	 Arguing Validating Testing Scoring Assessing Criticizing Commenting Debating Defending Detecting Experimenting Grading Hypothesizing Measuring Moderating Posting Predicting Rating Reflecting Reviewing Editorializing	 Blogging Building Animating Adapting Collaborating Composing Directing Devising Podcasting Wiki Building Writing Filming Programming Simulating Role Playing Solving Mixing Facilitating Managing Negotiating Leading

8. COURSE CODES

C111	ENGLISH-I
C112	MATHEMATICS-I
C114	APPLIED PHYSICS
C115	COMPUTER PROGRAMMING
C113	MATHEMATICS-II
C116	ENGINEERING DRAWING
C117	ENGLISH-COMMUNICATION SKILLS LAB-I
C118	APPLIED/ENGINEERING PHYSICS LAB
C119	PHYSICS VIRTUAL LAB
C11A	C PROGRAMMING LAB
C121	ENGLISH-II
C122	MATHEMATICS - III
C123	APPLIED CHEMISTRY
C125	ENVIRONMENTAL STUDIES
C124	OOPS THROUGH C++
C126	ENGINEERING MECHANICS
C128	ENGLISH - COMM. SKILLS LAB - II
C127	APPLIED CHEMISTRY LAB
C129	OBJECT ORIENTED PROGRAMMING LAB
C211	STATISTICS WITH R PROGRAMMING
C212	MFCS
C213	DIGITAL LOGIC DESIGN
C214	PYTHON PROGRAMMING
C215	DATA STRUCTURES THROUGH C++
C217	DATA STRUCTURES THROUGH C++ LAB
C218	PYTHON PROGRAMMING LAB
C216	SOFTWARE ENGINEERING
C222	JAVA PROGRAMMING
C224	COMPUTER ORGANIZATION
C226	PPL
C228	JAVA PROGRAMMING LAB
C221	COMPUTER GRAPHICS
C223	E-COMMERCE

C225	OOAD USING UML
C227	UNIFIED MODELING LANGUAGES LAB
C312	UNIX AND SHELL PROGRAMMING
C314	DATABASE MANAGEMENT SYSTEMS
C315	OPERATING SYSTEMS
C311	HUMAN COMPUTER INTERACTION
C313	ADVANCED JAVA PROGRAMMING
C316	ADVANCED JAVA PROGRAMMING LAB
C317	UNIX AND OPERATING SYSTEMS LAB
C318	DATABASE MANAGEMENT SYSTEM LAB
C319	PE&HV
C321	COMPUTER NETWORKS
C324	SOFTWARE TESTING METHODOLOGIES
C325	ARTIFICIAL INTELLIGENCE
C322	DATA MINING
C323	WEB TECHNOLOGIES
C326	WEB TECHNOLOGIES LAB
C327	SOFTWARE TESTING LAB
C328	DATA MINING LAB
C329	IPR
C411	CRYPT. AND NETWORK SECURITY
C414	MEFA
C415	BIG DATA ANALYSIS
C412	MOBILE COMPUTING
C413	DWH AND BUSINESS INTE.
C417	MOBILE COMPUTING LAB
C418	CRYPT. AND NETWORK SECURITY LAB
C416	MACHINE LEARNING
C421	DISTRIBUTED SYSTEMS
C422	MANAGEMENT SCIENCE
C423	MANAGEMENT INFORMATION SYSTEM
C425	SEMINAR
C424	CYBER SECURITY
C426	PROJECT

9. COURSE OUTCOME STATEMENTS

- Course outcomes are what the student should be able to do at the end of the course.
- It is an effective ability, including attributes, skills and knowledge to successfully carry out some activity which is identified.
- The most important aspect of a course outcome (CO) is it should be measurable.
- These should be student-focused, not (not course coverage oriented)
- Focus on Objectives and Outcomes
- Focus on abilities central to discipline
- Focus on aspects of learning
- Are limited to a manageable number, like each unit should contain one course outcome

CO-PO-PSOMAPPINGPROCEDURE

All the courses together must cover all the POs (and PSOs). For a course we map the COs to POs through the CO-PO -PSOmatrix as shown below. The various correlation levels are:

- “3”–Substantial(High)Correlation
- “2”–Moderate(Medium)Correlation
- “1”–Slight(Low)Correlation
- “-”indicatethereisnocorrelation.

VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

CO-PO-PSO GRAND MATRIX

By the end of the each course student will be able to

1-1

C111	English	CO1	Identify the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English (I3)												
		CO2	Formulatesentencesusingpropergrammaticalstructuresandcorrectwordformsandtakenoteswhile listening to a talk/lecture to answer questions (I3)												
		CO3	Articulate clearly on a specific topic using suitable discourse markers in informal discussions (L3)												
		CO4	Write summaries based on global comprehension of reading/listening texts (L5)												
		CO5	Produce a coherent paragraph interpreting a figure/graph/chart/table (L4)												
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1	-	-	-	-	-	-	-	-	2	3	-	1	-	-
	CO2	-	-	-	-	-	-	-	-	2	3	-	1	-	-
	CO3	-	-	-	-	-	-	-	-	2	3	-	1	-	-
	CO4	-	-	-	-	-	-	-	-	2	3	-	1	-	-
CO5	-	-	-	-	-	-	-	-	2	3	-	1	-	-	
C112	Mathematics-I	CO1	Summarize the first order ordinary Differential equations and analyze their applications. Or analyze applications of first order ordinary Differential equations (L2)												
		CO2	Classify and solve the higher order ordinary differential equations and its applications.(I2)												
		CO3	Apply Laplace transformations and Evaluate the improper integral(L3)												
		CO4	Define partial differentiation and Compute extreme values.(L3)												
		CO5	Construct the Partial differential equations and Solve first order partial differential equations(L4)												
		CO6	Classify the nature of higher order partial differential equations(L2)												
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-	
CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-	
CO6	3	2	-	-	-	-	-	-	-	-	-	1	-	-	
C113	Mathematics-II	CO1	Apply Numerical methods to find roots of algebraic & transcendental equations (L3)												
		CO2	Summarize the interpolation and extrapolation techniques (L2)												
		CO3	Apply different numerical methods to Solve differential equations(L3)												
		CO4	Interpret Fourier series analysis which is central to many applications in engineering apart (L2)												
		CO5	Solve Higher order Partial differential equations and their application (L4)												
		CO6	Apply Fourier transforms to Evaluate improper integrals(L3)												
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-	

		CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-		
		CO6	3	2	-	-	-	-	-	-	-	-	-	1	-	-		
C114	APPLIED PHYSICS	CO1	Apply knowledge of Interference concepts of light(L3)															
		CO2	Apply knowledge of Diffraction concepts of light(L3)															
		CO3	Summarize the applications of Lasers(L2)															
		CO4	Interpret EMW wave propagation and its applications(L2)															
		CO5	Analyze technicalities in solving problems related to Quantum mechanics(L4)															
		CO6	Experiment Laws and principles of Semiconductor Physics(L4) design by analyzing Laws and principles of Semiconductor Physics(L4)															
					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
				CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
				CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
				CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
				CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-
				CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO6	3	2	-	-	-	-	-	-	-	-	-	1	-	-		
C115	Computer Programming	CO1	Formulate algorithmic solutions to problems by inferring basic jargon of Computer(L3)															
		CO2	Summarize programming style in C(L2)															
		CO3	Implement branching & iteration in Problem solving(L4)															
		CO4	Develop program blocks using Modular programming approach(L4)															
		CO5	Develop solutions to problems using Arrays & Strings(L4)															
		CO6	Choose apt structures for representing group data and implement File Management(L4)															
					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
				CO1	2	2	2	-	2	-	-	-	-	-	-	-	2	-
				CO2	1	1	1	-	2	-	-	-	-	-	-	-	2	-
				CO3	2	2	2	2	-	-	-	-	-	-	-	-	2	2
				CO4	1	2	3	3	-	-	-	-	-	-	-	-	2	2
				CO5	2	3	2	2	1	-	-	-	-	-	-	-	2	2
		CO6	2	3	3	3	-	-	-	-	-	-	-	-	2	2		
C116	Engineering Drawing	CO1	Draw various Engineering curves & polygons(L3)															
		CO2	Summarize different scales used in the industry, to recognize principles of projection & to draw Orthographic projections of points(L3)															
		CO3	Interpret the projection principles to draw projections of straight lines(L2)															
		CO4	Illustrate various ways to draw projections of planes(L3)															
		CO5	Draw the projections of solids by applying principles of Orthographic projections(L3)															
		CO6	Convert isometric views into orthographic views and vice versa(L4)															
					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
				CO1	1	1	1	-	-	-	-	-	-	-	-	1	-	-
				CO2	2	2	2	-	-	-	-	-	-	-	-	1	-	-
				CO3	2	2	2	-	-	-	-	-	-	-	-	1	-	-
				CO4	2	2	2	-	-	-	-	-	-	-	-	1	-	-
				CO5	2	2	2	-	-	-	-	-	-	-	-	1	-	-
		CO6	3	3	3	-	-	-	-	-	-	-	-	1	-	-		

C117	English Lab	CO1	Identify the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English and speak clearly on a specific topic using suitable discourse markers in informal discussions(L3)													
		CO2	Take notes while listening to a talk/lecture; to answer questions in English; formulate Sentences using proper grammatical structures and correct word forms; and use language effectively in competitive examinations (L3)													
		CO3	Write summaries based on global comprehension of reading/listening texts; produce a Coherent write-up interpreting a figure/graph/chart/table; and use English as a successful medium of communication. (L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	-	-	-	2	3	-	1	-	-
		CO2	-	-	-	-	-	-	-	-	2	3	-	1	-	-
		CO3	-	-	-	-	-	-	-	-	2	3	-	1	-	-
C118	Applied Physics Lab	CO1	Apply knowledge of Interference concepts of light(L3)													
		CO2	Apply knowledge of Interference concepts of light(L3)* repeated													
		CO3	Infer the applications of Lasers(L2)													
		CO4	Define Acoustics of buildings and NDT applications (L1)													
		CO5	Define material properties and nuclear power generation(L1)													
		CO6	Correlate the applications of magnetic and dielectric materials in industry and engineering (L2)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	3	3	2	2	-	-	-	-	-	-	-	-	-
CO2	2	2	2	3	2	-	-	-	-	-	-	-	-	-		
CO3	3	2	2	2	3	-	-	-	-	-	-	-	-	-		
CO4	2	2	3	3	3	-	-	-	-	-	-	-	-	-		
CO5	3	2	3	2	2	-	-	-	-	-	-	-	-	-		
CO6	3	3	2	2	1	-	-	-	-	-	-	-	-	-		
C119	Computer Programming Lab	CO1	Implement the basic terminology used in computer programming(L3)													
		CO2	Write, compile and debug programs in C language(L4)													
		CO3	Analyze different data types in a computer program(L4)													
		CO4	Develop C programs involving decision structures, loops and functions(L3)													
		CO5	Analyze the difference between call by value and call by reference(L4)													
		CO6	Develop C programs that utilize dynamics of memory by the use of pointers(L4)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	1	1	2	-	-	-	-	-	-	-	-	-		
CO2	3	3	1	1	2	-	-	-	-	-	-	-	1	-		
CO3	3	2	3	2	2	-	-	-	-	-	-	-	2	-		
CO4	3	3	2	3	2	-	-	-	-	-	-	-	2	-		
CO5	3	3	2	2	3	-	-	-	-	-	-	-	2	-		
CO6	3	2	2	2	2	-	-	-	-	-	-	-	3	-		
1-2																
C121	English II	CO1	Read and comprehend English stories and texts(L2)													
		CO2	Write effectively using appropriate format and transfer verbal information into nonverbal Information(13)													
		CO3	Articulate listening skills particularly related to Technical English and speak in English without Inhibition(L3)													
		CO4	Expand vocabulary range and use it effectively and grammatically for English communication(L3)													
		CO5	Improve life skills and core skills necessary for effective communication and critically respond in English to a real life situations(13)													
		CO6	Read and comprehend English stories and texts(L2)													

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	-	-	-	-	-	-	-	-	2	3	-	1	-	-	
	CO2	-	-	-	-	-	-	-	-	2	3	-	1	-	-	
	CO3	-	-	-	-	-	-	-	-	2	3	-	1	-	-	
	CO4	-	-	-	-	-	-	-	-	2	3	-	1	-	-	
	CO5	-	-	-	-	-	-	-	-	2	3	-	1	-	-	
	CO6	-	-	-	-	-	-	-	-	2	3	-	1	-	-	
C122	Mathematics III	CO1	Solve the system of linear equations and Analyze their applications(L4)													
		CO2	Compute an Eigen values and eigen vectors(L4)													
		CO3	Evaluate double and Triple integrals and Apply to find surface area and volumes of solids.(L4)													
		CO4	Compare definite integral with special functions(L2)													
		CO5	Differentiate the scalar and vector functions(L2)													
		CO6	Infer line, surface and volume integrals and Establish vector integral theorems(L2)													
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
		CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO6	3	2	-	-	-	-	-	-	-	-	-	1	-	-
C123	Applied Chemistry	CO1	Summarize synthesis, physical and mechanical properties, compounding and reframing & fabrication of polymers, plastics and elastomers and Applications of fibre reinforced polymers along with conducting polymers(L2)													
		CO2	Recognize specific characteristic properties of fuels including calorific value determination , Ranking and Analysis of coal by proximate and ultimate methods (L1)													
		CO3	Summarize the principles, Construction and working of galvanic cells, electrode potentials, concentration cells , rechargeable batteries, apply the knowledge of electro chemistry to corrosion, distinguish various types of corrosions and able to solve corrosion problems(L3)													
		CO4	Determine the advanced materials i.e. Nanomaterials, liquid crystals, super conductors and illustrate the applications of cleaner and greener synthetic methods adapted in industries for healthy living (L3)													
		CO5	Summarize the structures of solid crystalline structures, synthesis of ultra pure semiconductors, Working of rectifiers and transistors, insulating materials and distinguish various ferro and ferromagnetic materials(L3)													
		CO6	Recognize non-conventional energy sources, construction & working of photovoltaic cell, design of hydropower plant, tidal power, geothermal energy, bio gas for green environment(L3)													
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
		CO1	2	3	-	-	-	-	-	-	-	-	2	-	-	-
		CO2	3	3	-	-	-	-	-	-	-	-	2	2	-	-
		CO3	2	2	-	-	-	-	-	-	-	-	1	3	-	-
		CO4	3	2	-	-	-	-	-	-	-	-	1	3	-	-
		CO5	2	1	-	-	-	-	-	-	-	-	1	1	-	-
		CO6	2	2	-	-	-	-	-	-	-	-	1	2	-	-

C124	OOPS through C++	CO1	Summarize the basic terminology used in oops Concepts (L3)													
		CO2	Implement Scope rules, various members functions of Classes & Objects by summarizing the basic concepts (L3)													
		CO3	Implement OOPS features like Polymorphism & Inheritance by determining their behavior(L3)													
		CO4	Implement virtual functions & pointers by determining their basics (L3)													
		CO5	Implement Templates & Exceptions by determining their behavior(L3)													
		CO6	Summarize STL library and its usage(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	3	2	--	--	--	--	--	--	--	--	1	2	2
		CO2	1	2	3	1	--	--	--	--	--	--	--	-	2	2
		CO3	1	2	2	--	--	--	--	--	--	--	--	2	2	2
		CO4	1	3	3	--	--	--	--	--	--	--	--	2	2	2
		CO5	--	3	3	1	--	--	--	--	--	--	--	1	2	2
CO6	--	3	3	3	--	--	--	--	--	--	--	--	2	2		
C125	Environmental Studies	CO1	Illustrate the concepts of the ecosystem(L2)													
		CO2	Summarize the natural resources and their importance(L2)													
		CO3	Illustrate the biodiversity of India and categorize the threats to it and apply conservation practices(L3)													
		CO4	Summarize various attributes of the pollution and predict their impacts(L2)													
		CO5	Analyze the social issues both rural and urban environment(L4)													
		CO6	Illustrate environmental impact assessment and evaluate the stages involved in EIA(L4)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	-	3	-	-	-	-	3	-	-
		CO2	-	-	3	-	-	-	3	-	-	-	-	3	-	-
		CO3	-	-	-	-	-	-	3	-	-	-	-	3	-	-
		CO4	-	-	3	-	-	-	3	-	-	-	-	3	-	-
		CO5	-	-	3	-	-	-	3	-	-	-	-	3	-	-
CO6	-	-	3	-	-	-	3	-	-	-	-	3	-	-		
C126	Engineering Mechanics	CO1	Summarize concepts of force and friction, direction and its application(L2)													
		CO2	Determine application of free body diagrams, solution to problems using graphical methods and law of triangle forces (L2)													
		CO3	Define centroid and Centre of gravity(L1)													
		CO4	Summarize moment of inertia and polar moment of inertia including transfer(L2)													
		CO5	Distinguish the motion of a particle in straight line and in curvilinear path, its velocity and acceleration computation and methods of representing plane motion(L2)													
		CO6	Interpret the concepts of work, energy and particle motion(L2)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	3	2	1	-	-	-	-	-	-	-	-	2	-	-
		CO3	3	2	-	-	-	-	-	-	-	-	-	2	-	-
		CO4	3	2	1	-	-	-	-	-	-	-	-	2	-	-
		CO5	3	2	-	-	-	-	-	-	-	-	-	2	-	-
CO6	3	2	1	-	-	-	-	-	-	-	-	2	-	-		

C127	Applied Chemistry Lab	CO1	Estimate the amount of metal ions present in different solutions (L5)													
		CO2	Analyze the quality parameters of water (L4)													
		CO3	Determine the strength of different solutions by using different instrumentation techniques (L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	3	2	-	-	-	-	1	2	-	-	2	-	-
	CO2	-	2	3	-	-	-	-	1	3	-	-	1	-	-	
	CO3	-	1	2	-	-	-	-	1	2	-	-	1	-	-	
C128	English Lab II	CO1	Prioritize information from reading texts after selecting relevant and useful points and paraphrase Short academic texts using suitable strategies and conventions (I3)													
		CO2	Make formal structured presentations on academic topics using PPT slides with relevant graphical Elements (L3)													
		CO3	Participate in group discussions using appropriate conventions and language strategies (L3)													
		CO4	Prepare a CV with a cover letter to seek internship/ job (L2)													
		CO5	Collaborate with a partner to make presentations and Project Reports (L2)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	-	-	-	2	3	-	1	-	-
		CO2	-	-	-	-	-	-	-	-	2	3	-	1	-	-
		CO3	-	-	-	-	-	-	-	-	2	3	-	1	-	-
		CO4	-	-	-	-	-	-	-	-	2	3	-	1	-	-
CO5	-	-	-	-	-	-	-	-	2	3	-	1	-	-		
C129	OOPS LAB	CO1	Demonstrate the basic Problem solving techniques through C++ by developing programs(L5)													
		CO2	Implement polymorphism, inheritance & virtual functions(L3)													
		CO3	Apply exceptions and standard template libraries(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	2	2	2	-	-	-	-	-	-	-	2	2	-
	CO2	1	2	2	2	-	-	-	-	-	-	2	2	-		
	CO3	-	2	2	2	-	-	-	-	-	-	2	2	-		
2-1																
C211	Statistics with R Programming	CO1	Infer the concepts of Vectors and Lists for programming(L2)													
		CO2	Implement functions & pointers(L3)													
		CO3	Apply statistics over data sets(L3)													
		CO4	Discriminate the statistic results graphically(L4)													
		CO5	Differentiate probability distribution functions(L4)													
		CO6	Summarize linear models(L2)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	2
CO2	2	3	-	-	-	-	-	-	-	-	-	-	2	-		
CO3	2	3	2	-	-	-	-	-	-	-	-	-	-	2		
CO4	2	3	2	3	-	-	-	-	-	-	-	-	2	2		
CO5	2	3	2	2	-	-	-	-	-	-	-	-	2	2		
CO6	2	3	2	2	-	-	-	-	-	-	-	2	2	2		
C212	Mathematical Foundations of	CO1	Define the propositional logic and Mathematical Principles(L2)													
		CO2	Apply logical reasoning to solve a variety of problems in sets and relations(L3)													
		CO3	Solve problems on Number Theory and Analyze algebraic structures.(L3)													
		CO4	Build solutions to problems using counting techniques and combinatory logic (L5)													
		CO5	Solve problems on recurrence relations.													
		CO6	Infer Graphs, their representations, and solve problems using Graph Theory(L3)													

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	3	3	-	-	-	-	-	-	-	-	-	2	1	
	CO2	3	3	3	-	-	-	-	-	-	-	-	-	1	2	
	CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	-	
	CO4	3	2	2	-	-	-	-	-	-	-	-	-	2	-	
	CO5	2	3	2	-	-	-	-	-	-	-	-	-	3	-	
	CO6	3	2	2	-	-	-	-	-	-	-	-	-	2	1	
C213	Digital Logic Design	CO1	Determine the basics of Digital electronics, number systems and digital codes(L2)													
		CO2	Analyze the logic functions using k maps, in Boolean algebra(L4)													
		CO3	Analyze the design procedure for different combinational circuits(L4)													
		CO4	Summarize different synchronous sequential circuits and state machines(L2)													
		CO5	Design different types of registers and counters(L5)													
		CO6	Design different programmable logic devices(L5)													
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
		CO1	3	-	-	-	-	-	-	-	-	-	-	-	3	1
		CO2	2	2	-	-	-	-	-	-	-	-	-	-	2	1
		CO3	2	2	3	-	-	-	-	-	-	-	-	-	3	2
		CO4	2	2	-	-	-	-	-	-	-	-	-	-	2	1
		CO5	2	-	3	-	-	-	-	-	-	-	-	-	2	1
		CO6	2	-	2	-	-	-	-	-	-	-	-	2	2	1
C214	Python Programming	CO1	Summarize how software can be build right out of the box, with ease(L3)													
		CO2	Apply the interpreted language for problem solving through control statements Including loops and conditionals(13)													
		CO3	Implement data structures for quick programming solutions(L3)													
		CO4	Build software for real needs by breaking out code into reusable functions and modules(L5)													
		CO5	Implement software reliability through exception handling(L3)													
		CO6	Integrate Python standard library for problem solving and summarize the necessity of testing software(L3)													
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
		CO1	1	-	-	-	2	-	-	-	-	-	-	-	-	1
		CO2	2	1	-	-	2	-	-	-	-	-	-	-	1	-
		CO3	1	2	1		3	-	-	-	-	-	-	-	-	2
		CO4	2	2	2	1	2	-	-	-	-	-	-	-	2	2
		CO5	2	2	2	2	3	-	-	-	-	-	-	-	2	2
		CO6	2	2	2	2	3	-	-	-	-	-	-	2	2	2
C215	Data Structures through C++	CO1	Analyze the differences between procedures and object oriented programming and implement array data structures (L3)													
		CO2	Implement Stack and Queue data structure (L3)													
		CO3	Implement linked list data structure(L3)													
		CO4	Integrate apt data structures into the applications such as binary search trees, AVL, and B Trees (L3)													
		CO5	Apply Graph data structures(L3)													
		CO6	Illustrate various sorting techniques(L4)													
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
		CO1	2	1	1	1	2	-	-	-	-	-	-	3	2	2
		CO2	2	2	1	1	2	-	-	-	-	-	-	2	2	2
		CO3	2	2	-	-	1	-	-	-	-	-	3	-	2	2
		CO4	2	3	2	3	2	-	-	-	-	-	-	2	2	2
		CO5	2	3	2	3	2	-	-	-	-	-	3	3	3	2

		CO6	2	3	2	3	2	-	-	-	-	-	-	3	2	3	
C216	Software Engineering	CO1	Infer the basic software engineering methods , processes, process models and their applications(L2)														
		CO2	Apply the knowledge of requirements gathering methods to create an SRS document for a defined problem(L3)														
		CO3	Summarize various Software Design, UI design Techniques and apply that knowledge for a defined Problem((L3)														
		CO4	Analysis and implement concepts such as modularity, coding principles, Testing strategies and coding standards(L3)														
		CO5	Summarize the Software Reliability, Quality and CASE tools by practicing Ethics & Team Work(L3)														
		CO6	Distinguish the maintenance process models and importance of software reuse(L2)														
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	3	2	2	-	-	-	2	-	-	-	-	2	-
		CO2	2	2	2	2	2	-	-	-	2	-	-	-	-	2	-
		CO3	2	2	2	2	3	-	-	-	2	-	-	-	-	2	-
		CO4	2	1	2	2	2	-	-	-	3	2	-	-	-	1	1
		CO5	-	3	3	2	3	-	-	-	3	2	-	-	-	2	1
		CO6	-	2	2	3	3	-	-	-	2	-	-	-	-	2	1
C217	DS through C++ Lab	CO1	Implement Array data structures and its applications(L3)														
		CO2	Implement stacks and Queue data structures and its applications(L3)														
		CO3	Implement Linked List and its applications(L3)														
		CO4	Implement Tree data structures (L3)														
		CO5	Implement variants of Graph data structures and applications(L3)														
		CO6	Implement various sorting techniques(L3)														
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	1	1	1	2	-	-	-	-	-	-	-	3	2	2
		CO2	2	2	1	1	2	-	-	-	-	-	-	-	2	2	2
		CO3	2	2	-	-	1	-	-	-	-	-	-	3	-	2	2
CO4	2	3	2	3	2	-	-	-	-	-	-	-	2	2	2		
CO5	2	3	2	3	2	-	-	-	-	-	-	3	3	3	2		
CO6	2	3	2	3	2	-	-	-	-	-	-	-	3	2	3		
C218	Python Programming Lab	CO1	Build software with a perception of out of the box/unconventional procedures, with ease(L5)														
		CO2	Implement control statements including loops and conditionals for problem solving(L3)														
		CO3	Apply data structures for quick programming solutions(L3)														
		CO4	Implement reusable functions and modules (L3)														
		CO5	Develop reliable programs by incorporating exception handling(L5)														
		CO6	Develop solutions that use of apt modules of python standard library for problem solving and to test(L5)														
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	-	-	-	2	-	-	-	-	-	-	-	-	-	1
		CO2	2	1	-	-	2	-	-	-	-	-	-	-	-	1	-
		CO3	1	2	1	-	3	-	-	-	-	-	-	-	-	-	2
CO4	2	2	2	1	2	-	-	-	-	-	-	-	-	2	2		
CO5	2	2	2	2	3	-	-	-	-	-	-	-	-	2	2		
CO6	2	2	2	2	3	-	-	-	-	-	-	-	2	2	2		
2-2																	
C	C	CO1	Transform and analyze 2D Objects by learning output primitives (L3)														

		CO2	Summarize 3D Object representation models by learning various visualization techniques (L2)														
		CO3	Develop programs in OPENGL by using apt functions for efficacy in Computer Graphics 2D/3D and Animation(L5)														
		CO4	Perform Rendering of 2D/3D Objects by learning about shading, texture mapping techniques and drawing shadows(L3)														
		CO5	Design complicated Real World Scenes by learning Iterated Function Systems for implementing Fractals(L5)														
		CO6	Apply 3D Solid Geometric Techniques for representing 3D objects(L3)														
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
		CO1	2	-	2	2	-	-	-	-	-	-	-	1	1	1	
		CO2	2	-	-	3	-	-	-	-	-	-	-	-	2	-	
		CO3	2	-	3	3	-	-	-	-	-	-	-	-	3	-	
		CO4	2	1	3	-	-	-	-	-	-	-	-	-	2	-	
		CO5	2	-	3	2	-	-	-	-	-	-	-	-	3	-	
		CO6	2	3	3	-	-	-	-	-	-	-	-	-	-	-	
		C222	Java Programming	CO1	Summarize the concepts & principles of OOP(L1)												
				CO2	Illustrate simple java primitives and problem solving using OOP concept(L3)												
CO3	Implement packages, interfaces & exceptions(L3)																
CO4	Analyze the behavior of Threads and I/O Streams in java(L4)																
CO5	Create applications and Applets in java that can handle events(L5)																
CO6	Construct simple GUI applications using Frames & jframes (L5)																
	PO1			PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	1			1	-	-	-	-	-	-	-	-	-	1	2	2	
CO2	1			3	3	-	-	-	-	-	-	-	-	1	2	2	
CO3	1			3	3	2	-	-	-	-	-	-	-	1	2	2	
CO4	1			3	3	3	-	-	-	-	-	-	-	1	3	2	
CO5	1			3	3	3	-	-	-	-	-	-	-	1	3	2	
CO6	1			3	3	3	-	-	-	-	-	-	-	1	3	2	
C223	E-Commerce			CO1	Summarize major categories and trends of e-commerce applications(L1)												
		CO2	Classify various electronic payment types and associated security risks and the ways to protect against them(L2)														
		CO3	Summarize the essential processes of an e-commerce system(L1)														
		CO4	Classify several factors and web store requirements needed to succeed in e-commerce and the various marketing strategies for an online business(L2)														
		CO5	Analyse benefits and trade-offs of various e-commerce clicks and bricks alternatives(L4)														
		CO6	Categorize the primary technologies behind e-commerce systems and how these technologies interact(L4)														
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
		CO1	-	1	1	-	-	-	-	-	-	-	-	-	1	1	
		CO2	-	-	1	1	-	-	-	-	-	-	-	-	2	-	
		CO3	-	2	2	-	-	-	-	-	-	-	-	-	2	-	
		CO4	-	-	3	1	-	-	-	-	-	-	-	-	2	1	
		CO5	-	2	2	-	-	2	-	-	-	-	-	-	2	-	
		CO6	-	-	3	-	-	-	-	-	-	-	-	-	2	-	
		C224	Com	CO1	Compare modern computers with their processing units and also performance measurements of The computer system(12)												
CO2	Summarize the fundamentals of different addressing modes and instruction sets(L1)																

		CO3	Compare different processors and their instruction types and addressing modes respectively(L2)													
		CO4	Analyze the concepts of interfacing the I/O devices using different types of buses (L4)													
		CO5	Summarize the concepts of memory systems and their mapping functions(L2)													
		CO6	Analyze and design processing unit and micro programmed control unit(L4)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	1	-	-	-	-	-	-	-	-	-	-	2	-
		CO2	1	-	-	-	-	-	-	-	-	-	-	-	2	-
CO3	1	-	-	-	-	-	-	-	-	-	-	-	2	2		
CO4	1	2	2	-	-	-	-	-	-	-	-	-	2	-		
CO5	1	-	-	-	-	-	-	-	-	-	-	-	2	2		
CO6	1	2	2	-	-	-	-	-	-	-	-	-	2	-		
C225	OOAD Using UML	CO1	Summarize the basics of different complex systems(L2)													
		CO2	Build formal design solutions to the complex problems by applying object oriented approach(L5)													
		CO3	Interpret the notations of UML, Representation of classes and objects and their relationships(L2)													
		CO4	Analyze systems using the basic behavioral modelling through interaction diagrams, use case diagrams and Activity diagrams(L4)													
		CO5	Explore the systems using advanced behavioral modelling through state chart diagrams(L4)													
		CO6	Inspect the complex systems using architectural modelling through component and deployment diagrams(L4)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	3	-	3	-	-	-	-	-	-	-	-	3	2		
CO2	-	2	3	-	-	-	-	-	-	-	-	-	3	1		
CO3	3	-	-	-	-	-	-	-	-	-	-	-	2	1		
CO4	3	2	-	-	-	-	-	-	-	-	-	-	3	2		
CO5	-	-	-	-	2	-	-	-	-	-	-	-	3	2		
CO6	2	-	3	-	2	-	-	-	-	-	-	-	3	2		
C226	Principles of Programming Languages	CO1	Summarize the basic terminology related to syntax and semantics of programming languages(L1)													
		CO2	Compare various programming language constructs(L2)													
		CO3	Classify the design of subprograms in various programming languages(L2)													
		CO4	Analyze Object oriented programming concepts in different programming languages(L4)													
		CO5	Summarize the concepts of Functional Paradigm and develop basic scripts using Functional Programming (L5)													
		CO6	Summarize the concepts of Logic Programming and develop basic scripts using Logical Programming(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	-	-	-	-	-	-	-	-	2	2		
CO2	1	-	2	1	-	-	-	-	-	-	-	2	2	2		
CO3	2	2	1	1	-	-	-	-	-	-	-	-	2	3		
CO4	2	3	2	3	-	-	-	-	-	-	-	1	1	3		
CO5	2	2	2	2	-	-	-	-	-	-	-	1	2	2		
CO6	3	3	2	2	-	-	-	-	-	-	-	1	2	3		
C227	UML LAB	CO1	Incorporate standard procedure stated in Rational unified process and Agile process while building software models(L5)													
		CO2	Analyze complex software systems and provide formal design solutions (L4)													
		CO3	Incorporate Object-oriented approach against Traditional approach while doing systems analysis and design(L3)													
		CO4	Perform structural analysis of systems while developing models (L5)													
		CO5	Perform behavioral, architectural analysis of systems while developing models (L5)													

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	1	2	2	2	1	-	-	-	-	-	-	2	2	2	
	CO2	1	2	2	3	1	-	-	-	-	-	-	2	2	2	
	CO3	1	3	3	2	1	-	-	-	-	-	-	2	3	3	
	CO4	1	2	3	2	1	-	-	-	-	-	-	2	2	2	
	CO5	1	2	2	3	1	-	-	-	-	-	-	2	2	2	
	CO6	1	2	2	2	1	-	-	-	-	-	-	2	3	3	
C317	Unix and OS Lab	CO1	Simulate CPU Scheduling algorithms(FCFS, Round Robin, SJF, Priority) and analyse the performance (L4)													
		CO2	Implement different file and memory management techniques using system calls (L3)													
		CO3	Simulate Banker's and other page replacement algorithms and analyse performance (L4)													
		CO4	Implement basic utilities for navigation in system environment of LINUX operating system(L4)													
		CO5	Construct chained commands using grep, sed, awk and other data processing utilities that perform desired tasks(L5)													
		CO6	Develop basic and advanced shell scripts that support the OS Administration tasks(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	1	1	-	1	-	-	-	-	-	-	-	1	1
		CO2	-	2	-	-	1	-	-	-	-	-	-	-	2	2
		CO3	-	3	3	3	2	-	-	-	1	-	-	-	3	2
		CO4	1	3	3	3	2	-	-	-	-	-	-	-	3	2
		CO5	1	3	3	3	2	-	-	-	-	-	-	-	3	2
		CO6	2	2	2	-	-	-	-	-	-	-	-	-	2	1
C318	DBMS Lab	CO1	Create database for user (Creation of Database) (L5)													
		CO2	Develop SQL queries for user defined schemas(L5)													
		CO3	Build procedures and triggers using PL/ SQL blocks(L5)													
		CO4	Interpret the usage of predefined objects(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	2	2	3	-	-	-	-	-	-	-	-	-	-	2
		CO3	1	1	3	-	3	-	-	-	-	-	-	-	3	3
	CO4	1	2	3	-	-	-	-	-	-	-	-	-	3	3	
3-2																
C321	Computer Networks	CO1	Analyze the OSI and TCP/IP reference models and sample networks(L4)													
		CO2	Summarize characteristics of transmission media and classify multiplexing techniques(L2)													
		CO3	Interpret various error detection and control flow mechanism of data(L2)													
		CO4	Analyze channel allocation protocols and IEEE standards(L4)													
		CO5	Compute and implement routing algorithms and congestion control algorithms(L3)													
		CO6	Interpret the use of TCP, UDP, DNS and E-mail services role in WWW(L2)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO2	2	-	-	-	-	-	-	-	-	-	-	-	2	
		CO3	3	2	2	-	-	-	-	-	-	-	2	-	-	2
	CO4	2	2	2	-	-	-	-	-	-	-	2	-	2	2	
	CO5	-	-	2	-	-	-	-	-	-	-	2	-	2	2	
	CO6	-	-	2	-	-	-	-	-	-	-	2	2	2	2	

C322	Data Mining	CO1	Summarize the stages in building a Data Warehouse(L2)													
		CO2	Implement various preprocessing techniques(L3)													
		CO3	Interpret Similarity and dissimilarity techniques(L2)													
		CO4	Analyze and evaluate performance of algorithms for Association Rules(L6)													
		CO5	Analyze Classification and Clustering algorithms(L4)													
		CO6	Analyze various clustering algorithms (L4)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	--	--	-	2	-	--	--	--	--	--	--	2	--
		CO2	3	1	--	--	--	-	--	--	--	--	--	--	--	3
		CO3	2	--	2	--	2	-	--	--	--	--	--	--	2	--
CO4	--	3	2	2	3	-	--	--	--	--	--	--	2	3		
CO5	--	3	3	2	3	-	--	--	--	--	--	--	2	3		
CO6	--	3	3	2	3	-	--	--	--	--	--	--	2	3		
C323	Web Technologies	CO1	Analyze a web page and identify its elements and attributes(L4)													
		CO2	Create web pages using JS(L5)													
		CO3	Build dynamic web pages(L5)													
		CO4	Build web applications using PHP(L5)													
		CO5	Create programming through PERL and Ruby(L5)													
		CO6	Develop simple client(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	2	2	2	2	-	-	-	-	-	-	2	2	2
		CO2	1	2	2	3	2	-	-	-	-	-	-	2	2	2
		CO3	1	3	3	2	1	-	-	-	-	-	-	2	3	3
CO4	1	2	3	2	2	-	-	-	-	-	-	2	2	2		
CO5	1	2	2	3	2	-	-	-	-	-	-	2	2	2		
CO6	1	2	2	2	3	-	-	-	-	-	-	2	3	3		
C324	Software Testing Methodologies	CO1	Relate the methodologies used in Software Test Process (L1)													
		CO2	Apply the existing test tools to support test automation(L3)													
		CO3	Identify various software testing problems, and solve them by designing and selecting software test models, criteria, strategies, and methods(L3)													
		CO4	Implement various Communication methods and skills to communicate with their teammates to conduct their Practice-oriented software testing projects(L3)													
		CO5	Summarize contemporary software testing trends, such as Component based testing(L1)													
		CO6	Apply Software testing knowledge and engineering methods to modern tools for testing project.(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	1	2	-	-	-	-	-	-	-	-	-	2	-
		CO2	-	2	2	-	3	-	-	-	-	-	-	-	2	-
		CO3	1	2	2	-	2	-	-	-	-	-	-	-	2	-
CO4	1	2	2	-	2	-	-	-	-	-	-	-	2	-		
CO5	1	2	2	-	3	-	-	-	-	-	-	-	2	-		
CO6	-	-	2	-	3	-	-	-	-	-	-	-	2	2		
C325	OE-	CO1	Summarize syntactic abilities of traditional AI language and implement routines(L3)													
		CO2	Apply various heuristic search techniques and to improve designing and playing a game(L3)													
		CO3	Apply propositional calculus, proportional and predicate logic to understand few systems such as natural													

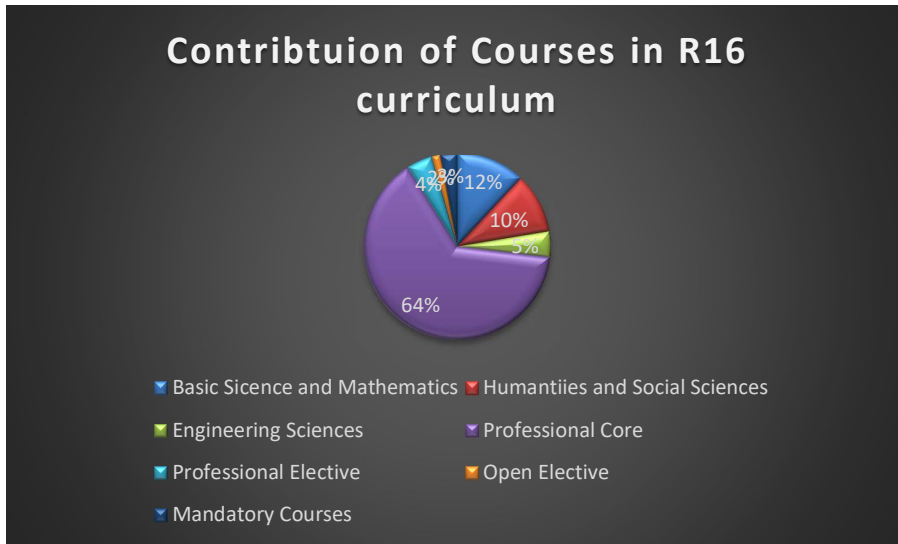
		CO4	-	3	1	1	-	3	-	-	-	-	-	-	3	
4-1																
C411	Cryptography & N/w Security	CO1	Summarize various security threats, services and solve modular and linear congruence equations(L3)													
		CO2	Distinguish stream ciphers, block ciphers and Algebraic Structures(L2)													
		CO3	Apply number theory in public key cryptographic algorithms(L3)													
		CO4	Implement Hash Algorithms and Digital Signatures for Online Authentication(L3)													
		CO5	Analyze various mail security protocols and e-commerce transaction protocols(14)													
		CO6	Implement various password protection mechanisms and tuning firewall to protect the system(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	2	2	-	-	-	-	-	-	-	-	-	2	2
		CO2	2	-	-	2	2	-	-	-	-	-	2	-	2	-
		CO3	3	-	2	2	-	-	-	-	-	-	2	-	2	-
CO4	-	-	2	2	-	-	-	-	-	-	-	-	2	-		
CO5	-	-	2	2	-	-	-	-	-	-	2	-	2	-		
CO6	-	-	-	-	-	-	-	-	-	-	2	2	2	2		
4-2																
C412	Mobile Computing	CO1	Interpret various mobile communication and computing terminologies, paradigms and architectures(L2)													
		CO2	Analyze problems in wireless MAC and infer different multiplexing techniques(L4)													
		CO3	Interpret the working of mobile network layer, based on Mobile IP(L2)													
		CO4	Analyze the working of conventional TCP/IP and infer different protocols for mobile transport layer(L3)													
		CO5	Analyze data synchronization, data hoarding issues and resolving techniques as part of mobile communication with various client server computing architectures(L4)													
		CO6	Interpret the working of manets and technologies in mobile computing environment.(L2)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	-	1	-	-	-	-	-	-	-	-	1	-	2
		CO2	3	2	1	-	-	-	-	-	-	-	-	-	2	1
		CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	1
CO4	3	2	1	-	-	-	-	-	-	-	-	-	2	1		
CO5	3	2	-	-	-	-	-	-	-	-	-	-	-	-		
CO6	2	1	1	-	-	-	-	-	-	-	-	2	2	3		
4-3																
C413	DWBI	CO1	Distinguish traditional databases over the Data Warehouse(L4)													
		CO2	Apply Preprocessing Techniques before Data Mining(L3)													
		CO3	Summarize the techniques in Data Warehouse : Architecture & Implementation(L2)													
		CO4	Implement different approaches of Classification(L3)													
		CO5	Implement various approaches for Association Analysis (L3)													
		CO6	Implement various approaches for Cluster Analysis(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	-	-	1	-	2	-	3	-	-	-	-	1	-
		CO2	3	1	-	-	-	-	-	-	-	-	-	-	-	3
		CO3	2	-	1	-	-	2	-	-	-	-	-	-	1	-
CO4	-	3	1	1	-	3	-	-	-	-	-	-	-	3		
CO5	-	3	1	1	-	3	-	-	-	-	-	-	-	3		
CO6	-	3	1	1	-	3	-	-	-	-	-	-	-	3		
4-4																
C414	MEF	CO1	Summarize basics of Managerial Economics and concepts of demand(L2)													
		CO2	Perform breakeven analysis to determine breakeven point by applying the concepts of production & cost(L3)													

		CO3	Analyze different market structures to determine pricing (L5)													
		CO4	Evaluate different forms of business organization(L5)													
		CO5	Apply accounting principles to know the financial position of the business organization(L3)													
		CO6	Analyze project worth by applying Capital budgeting method(L4)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	-	-	-	-	-	2	2	3	2
		CO2	-	2	-	-	-	-	-	-	-	-	2	2	3	3
		CO3	-	-	-	-	-	-	-	-	-	-	-	2	3	2
		CO4	-	-	-	-	-	3	-	-	-	-	2	2	3	3
		CO5	-	-	2	2	-	-	-	-	-	-	2	2	3	2
CO6	-	-	-	2	2	-	-	-	-	-	3	2	3	3		
C415	Big Data Analysis (BDA)	CO1	Apply Java concepts required for developing map reduce programs(L3)													
		CO2	Derive business benefits from structured and unstructured data(L3)													
		CO3	Implement data summarization, query, and analysis(L3)													
		CO4	Apply data modeling techniques to large data sets(L3)													
		CO5	Create applications for Big Data analytics(L5)													
		CO6	Build a complete business data analytic solution(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	1	-	-	1	-	-	-	-	-	-	-	1	-
		CO2	1	2	1	-	2	-	-	-	-	-	-	-	-	-
		CO3	1	2	2	-	2	-	-	-	-	-	-	-	1	1
CO4	1	1	1	-	2	-	-	-	-	-	-	-	1	-		
CO5	1	1	-	-	2	-	-	-	-	-	-	-	-	1		
CO6	1	2	1	-	-	-	-	-	-	-	1	-	1	1		
C416	Mobile Computing Lab	CO1	Implement software setup for creating mobile applications using Java2 Mobile Edition Software on the host Operating System(L3)													
		CO2	Develop new mobile applications in wireless application development environment(L5)													
		CO3	Analyze the software setup for creating mobile application using Android Software Development Kit using Android Studio IDE(L3)													
		CO4	Construct a story board design for the mobile applications (L5)													
		CO5	Implement MVC architecture in Mobile Applications(L3)													
		CO6	Creating Mobile Applications that are deployable on real time internet(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	2	1	-	-	-	-	-	-	-	-	-	1	2
		CO2	-	1	-	3	-	-	-	-	-	-	-	-	1	3
		CO3	2	2	2	-	-	-	-	-	-	-	-	-	2	-
CO4	1	-	2	2	-	-	-	-	-	-	-	-	-	2		
CO5	-	3	1	-	-	-	-	-	-	-	-	-	2	-		
CO6	2	1	2	-	-	-	-	-	-	-	-	-	-	3		
C417	C&NS Lab	CO1	Implement security threats, hijacking methods and cryptic algorithms(L3)													
		CO2	Design stream ciphers and block ciphers and custom-specific algorithm(L5)													
		CO3	Implement number theory and public key cryptographic algorithms.(L3)													
		CO4	Implement Hash Algorithms and digital signatures for online authentication(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	2											2
CO2	3			2	2						2		2			

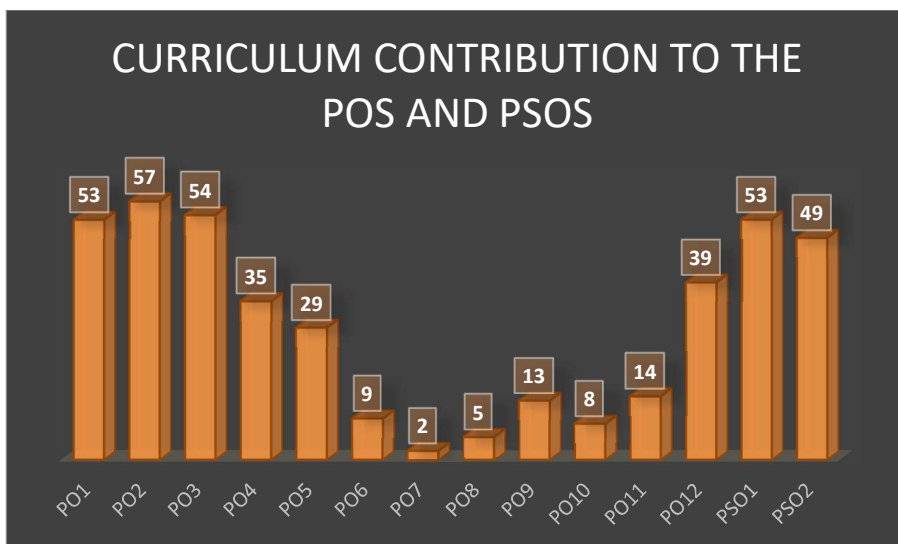
		CO3	3			2						2			2	
		CO4			2	2								2	2	
4-2																
C421	Distributed Systems	CO1	Recognize the properties of distributed systems(L2)													
		CO2	Summarize salient architectural features of such systems(L2)													
		CO3	Analyze inter-process communication in a distributed environment(L5)													
		CO4	Design and implement standard protocols which are used in distributed systems(L3)													
		CO5	Investigate various architectures designed for multithreaded servers(L4)													
		CO6	Implement the typical algorithms used in distributed systems(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	2	2	-	-	-	-	-	-	-	-	-	-	2
		CO2	1	-		-	-	-	-	-	-	-	-	-	2	-
		CO3	1	2	2	-	-	-	-	-	-	-	-	-	-	2
CO4	1	2	2	-	2	-	-	-	-	-	-	-	2	1		
CO5	-	-	2	-	-	-	-	-	-	-	-	-	2	2		
CO6	-	-	2	-	-	-	-	-	-	-	-	-	2	2		
C422	Management Systems	CO1	Summarize basics of management and organization(L2)													
		CO2	Exemplify principles of management and apply the concepts of work study and SQC to improve Productivity(L3)													
		CO3	Analyze the functions of HRM and marketing(L4)													
		CO4	Applying PERT & CPM techniques to solve project management problems(L3)													
		CO5	Evaluate SWOT Analysis for formulating and implementing strategies(L5)													
		CO6	Analyze modern or contemporary management practices(L4)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	-	-	-	2	2	2	2	-	2
		CO2	-	-	-	-	-	-	-	-	-	2	2	2	-	2
		CO3	-	-	-	-	-	-	-	-	2	3	2	2	-	2
CO4	-	-	2	-	-	-	-	-	-	2	3	2	-	2		
CO5	-	-	-	-	-	-	-	-	-	2	2	2	-	2		
CO6	-	-	-	-	2	-	-	-	-	2	2	2	-	2		
C423	Management Information Systems	CO1	Summarize effective planning and control functions of the management(L2)													
		CO2	Understand various knowledge representation methods, expert systems to make business more competitive(L3)													
		CO3	Summarize the inferences and uncertainty in managing the Information System(L2)													
		CO4	Implement MIS for controlling costs by giving information about idle time, labor turnover, wastages and losses and surplus capacity(L3)													
		CO5	Apply MIS tools for effective management(L3)													
		CO6	Evaluating performance of Managements by computing factual utilization of budget(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	1	-	-	-	-	-	-	2	-	2	2
		CO2	2	-	-	2	-	3	3	-	-	-	2	-	-	1
		CO3	-	-	-	-	-	-	-	-	-	-	-	-	1	2
CO4	-	-	-	2	-	-	-	3	-	-	-	-	2	1		
CO5	-	-	-	-	3	-	-	-	-	-	3	-	-	3		
CO6	-	-	2	-		-	-	-	-	-		-	1	1		
C424	Electi	CO1	Summarize principles and laws of Cyber Security (L2)													
		CO2	Categorize various cyber offenses and predict their ill-effects(L2)													
		CO3	Predict Cyber Crimes w.r.t mobile devices and wireless networks (L2)													

		CO4	Apply various tools to detect the attacks (L3)													
		CO5	Identify Indian acts of cyber security(L1)													
		CO6	Interpret cyber forensics(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	-	-	2	-	-	2	-	-	2
		CO2	-	-	-	-	-	-	-	2	-	-	2	-	2	-
		CO3	-	-	-	-	-	-	-	2	-	-	2	-	-	2
		CO4	-	-	-	-	3	-	-	2	-	-	2	2	-	2
CO5	-	-	-	-	-	-	-	2	-	-	2	-	2	2		
CO6	-	-	-	-	-	-	-	2	-	-	2	2	2	2		
C425	Seminar	CO1	Research for desired information from online/off-line resources (L1)													
		CO2	Compose the information collected, by employing various techniques of academic writing(L5)													
		CO3	Express the issue in public/professional contexts to gain experience in formal/ informal presentation(L2)													
		CO4	Collaborate with others by role playing in reading, writing, speaking, researching skills(L5)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	2	-	3	-	-	-	-	-	-	-	3	2	2
		CO2	-	-	-	-	-	-	-	2	3	3	-	2	-	-
		CO3	3	-	-	-	-	-	-	-	-	-	-	2	3	-
CO4	2	-	-	2	2	-	-	-	-	2	-	3	2	-		
C426	Project	CO1	Collaborate with team members in analyzing the requirements of the project to be developed(L5)													
		CO2	Build necessary design specifications and documents for the chosen project(L5)													
		CO3	Develop apt domain and technical knowledge to implement/code the application(L3)													
		CO4	Test and deploy the project after implementation(L4)													
		CO5	Demonstrate the project comprehensively with necessary tools(L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	3	2	3	3	1	1	1	3	2	2	2	3	-
		CO2	1	3	3	2	2	-	1	-	-	3	3	3	3	2
CO3	1	3	2	2	-	-	-	-	2	3	1	1	2	3		
CO4	-	3	3	2	1	1	1	-	1	1	2	-	2	2		
CO5	-	2	1	2	1	1	1	-	-	2	2	-	3	1		

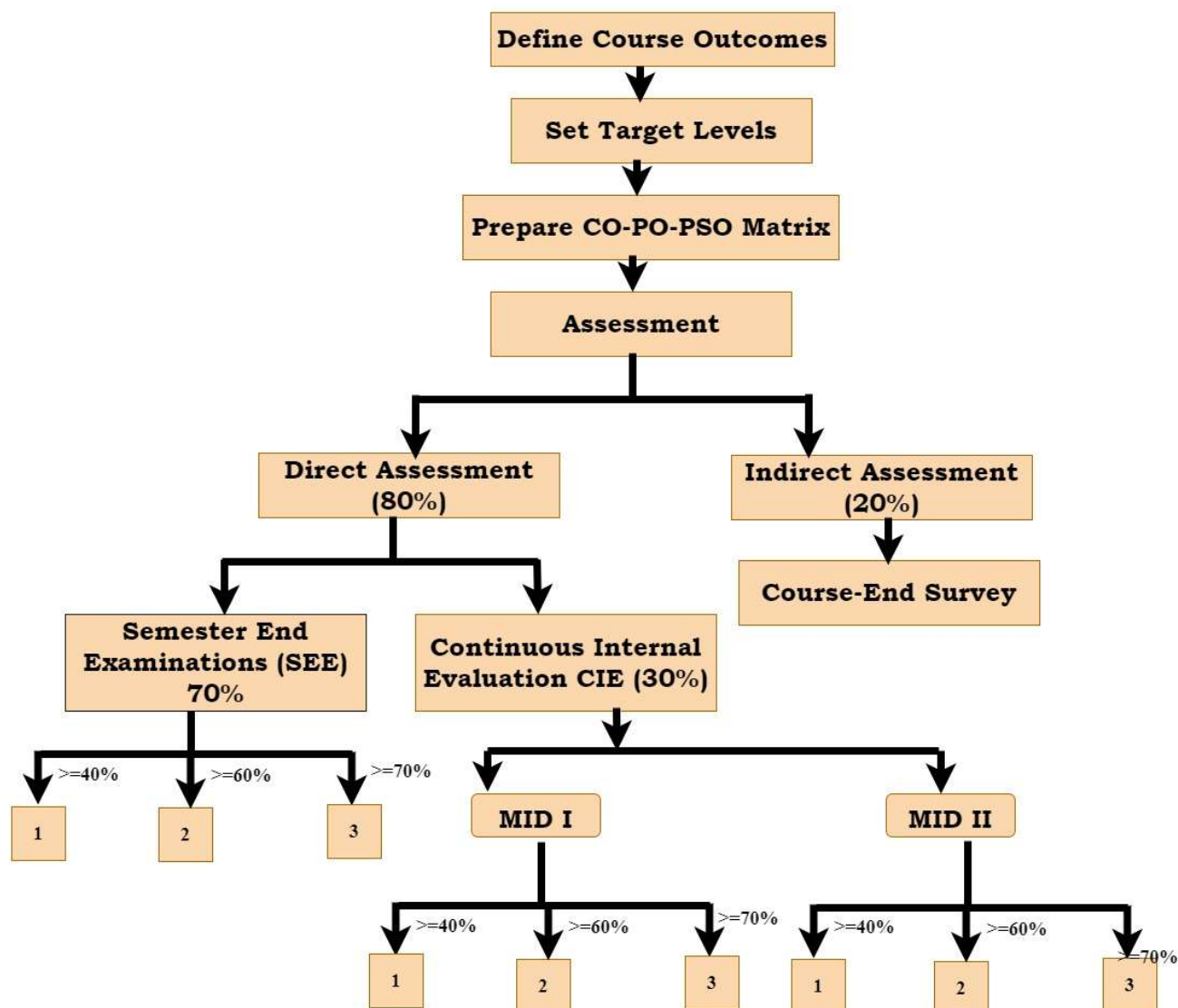
10. COURSE OUTCOME STATEMENTS



Curriculum Contribution to the POs and PSOs



11. PROCEDURE FOR ASSESSMENT OF COUSE OUTCOMES



Attainment Level 3: 70% students scoring more than Class average marks in the internal and external examinations.

Attainment Level 2: 60% students scoring more than Class average marks in the internal and external examinations.

Attainment Level 1: 40% students scoring more than Class average marks in both internal or external examinations.

12. CO RUBRICS

DIRECT and INDIRECT ASSESSMENT TOOLS				
CourseType	Assessment Type	AssessmentTools	MinimumFrequency	Marks
Theory	Continuous Internal Evaluation (CIE) 30M	Mid Examinations (Descriptive)	Two per Course	15 (80% from the best mid and 20% from the other mid)
		Assignments	Two per Course	5(80% from the best mid and 20% from the other mid)
		Online Quizzes	Two per Course	10(80% from the best mid and 20% from the other mid)
	Semester End Exams(SEE) 70M	Semester End Exams (University)	Once perCourse	70
Practical	Continuous Internal Evaluation (25)	Day to Day Evaluation	Everylabsession	10
		Internal Lab	OnceperCourse	15
	Semester End Exams (SEE) 50M	Semester End Exams (SEE)	Once perCourse	50
Seminar	Internal Evaluation	Presentation	OnceperCourse	50
Project	Continuous Internal Evaluation (50)	ZerothReview	Once per Project	5
		First Review		10
		Second Review		10
		Third Review		10
		Fourth Review		10
		Mock Viva Voce		5
	Semester End Exam (External appointed by University)	Viva -Voce	Once per Project	200

MID-I						
Details	Q1a (5)	Q1b(5)	Q2a(5)	Q2b(5)	Q3a(5)	Q3b(5)
No of Students Registered	57	57	57	57	57	57
No of Students Attained >=class average mark	51	49	54	49	51	43
%of students who got marks >= Class Avg marks	89.47368	85.9649	94.7368	85.9649	89.4737	75.439
Attainment Level	3	3	3	3	3	3

MID II						
Details	Q4a(7)	Q4b(3)	Q5a(8)	Q5b(2)	Q6a(8)	Q6b(2)
No of Students Registered	57	57	57		57	57
No of Students Attained >=class average mark	23	0	41		39	57
%of students who got marks >= Class Avg marks	40.35088	0	71.9298		68.4211	100
Attainment Level	0	0	3	0	2	3

ASSIGNMENTS		
Details	A1	A2
No of Students Registered	57	57
No of Students Attained >=class average mark	57	0
%of students who got marks >= Class Avg marks	100	0
Attainment Level	3	0

ONLINE QUIZZES		
Details	Q1	Q2
No of Students Registered	57	57
No of Students Attained >=class average mark	46	41
%of students who got marks >= Class Avg marks	80.7018	71.93
Attainment Level	3	3

C113	2.12	2.12	2.12	2.12	2.12	2.12
C114	1.85	1.85	1.85	1.85	1.85	1.85
C115	2.57	2.57	2.57	2.57	2.57	2.57
C116	1.15	1.15	1.15	1.15	1.15	1.15
C117	3	3	3	-	-	-
C118	2.25	2.25	2.25	2.25	2.25	2.25
C119	2.58	2.58	2.58	2.58	2.58	2.58
C11A	2.438	2.438	2.438	2.438	2.438	2.438
I B.TECH - II SEM						
C121	2.7	2.7	2.7	2.7	2.7	2.7
C122	2.21	2.21	2.21	2.21	2.21	2.21
C123	1.375	1.375	1.375	1.375	1.375	1.375
C124	1.9	1.9	1.9	1.9	1.9	1.9
C125	2.325	2.325	2.325	2.325	2.325	2.325
C126	1.75	1.75	1.75	1.75	1.75	1.75
C127	3	3	3	-	-	-
C128	2.85	2.85	2.85	2.85	2.85	-
C129	3	3	3	-	-	-
II B.TECH - I SEM						
C211	2.42	2.42	2.42	2.42	2.42	2.42
C212	1.82	1.82	1.82	1.82	1.82	1.82
C213	2.42	2.42	2.42	2.42	2.42	2.42
C214	2.31	2.31	2.31	2.31	2.31	2.31
C215	1.95	1.95	1.95	1.95	1.95	1.95
C216	2.11	2.11	2.11	2.11	2.11	2.11
C217	3	3	3	3	3	3
C218	3	3	3	3	3	3
II B.TECH - II SEM						
C221	2.09	2.09	2.09	2.09	2.09	2.09
C222	2.07	2.07	2.07	2.07	2.07	2.07
C223	2.28	2.28	2.28	2.28	2.28	2.28
C224	1.82	1.82	1.82	1.82	1.82	1.82
C225	2.16	2.16	2.16	2.16	2.16	2.16
C226	2.18	2.18	2.18	2.18	2.18	2.18
C227	3	3	3	3	3	-
C228	2.846	2.846	2.846	2.846	2.846	2.846
III B.TECH - I SEM						
C311	2.44	2.44	2.44	2.44	2.44	2.44
C312	2.4	2.4	2.4	2.4	2.4	2.4
C313	2.11	2.11	2.11	2.11	2.11	2.11
C314	2.39	2.39	2.39	2.39	2.39	2.39
C315	2.4	2.4	2.4	2.4	2.4	2.4
C316	3	3	3	3	3	3
C317	3	3	3	3	3	3
C318	2.934	2.934	2.934	2.934	-	-
C319	2.9	2.9	2.9	2.9	2.9	2.9
III B.TECH - II SEM						

C321	2.42	2.42	2.42	2.42	2.42	2.42
C322	2.25	2.25	2.25	2.25	2.25	2.25
C323	2.42	2.42	2.42	2.42	2.42	2.42
C324	2.3	2.3	2.3	2.3	2.3	2.3
C325	2.67	2.67	2.67	2.67	2.67	2.67
C326	2.802	2.802	2.802	2.802	2.802	2.802
C327	2.934	2.934	2.934	2.934	2.934	2.934
C328	2.702	2.702	2.873	2.72	-	-
C329	2.9	2.9	2.9	2.9	2.9	2.9
IV B.TECH - I SEM						
C411	2.25	2.25	2.25	2.25	2.25	2.25
C412	2.14	2.14	2.14	2.14	2.14	2.14
C413	2.42	2.42	2.42	2.42	2.42	2.42
C414	2.46	2.46	2.46	2.46	2.46	2.46
C415	2.19	2.19	2.19	2.19	2.19	2.19
C416	2.96	2.96	2.96	2.96	2.96	2.96
C417	3	3	3	3	-	-
C418	3	3	3	3	3	3
IV B.TECH - II SEM						
C421	2.42	2.42	2.42	2.42	2.42	2.42
C422	2.3	2.3	2.3	2.3	2.3	2.3
C423	2.76	2.76	2.76	2.76	2.76	2.76
C424	2.18	2.18	2.18	2.18	2.18	2.18
C425	3	3	3	3	-	-
C426	3	3	3	3	3	-

15. CO ATTAINMENT-INDIRECT (FOR ALL COURSES)

ii. CO InDirect Attainment for all the courses - 2016 Admitted Batch

COURSE	CO1	CO2	CO3	CO4	CO5	CO6
I B.TECH - I SEM						
C111	2.78	2.72	2.78	2.74	2.76	-
C112	2.60	2.64	2.78	2.71	2.76	2.56
C113	2.79	2.74	2.81	2.74	2.78	2.76
C114	2.78	2.45	2.68	2.77	2.76	2.81
C115	2.81	2.54	2.82	2.84	2.4	2.23
C116	2.57	2.66	2.74	2.64	2.62	2.57
C117	3	3	2.76	-	-	-

C118	2.58	2.59	2.61	2.61	2.84	2.68
C119	2.58	2.59	2.61	2.57	2.66	2.76
C11A	2.19	2.1	1.88	2.15	2.15	2.23
I B.TECH - II SEM						
C121	2.78	2.72	2.78	2.74	2.76	2.78
C122	2.79	2.74	2.79	2.76	2.76	2.79
C123	2.78	2.72	2.78	2.74	2.76	2.78
C124	2.81	2.54	2.82	2.84	1.96	1.81
C125	2.78	2.72	2.78	2.74	2.76	2.78
C126	2.88	2.84	2.89	2.90	2.90	2.86
C127	3	3	3	-	-	-
C128	3	3	3	3	3	-
C129	2.11	1.93	1.91	-	-	-
II B.TECH - I SEM						
C211	2.06	1.99	2	1.97	1.93	1.79
C212	2.15	2.35	2.75	2.86	2.4	2.79
C213	2.81	2.54	2.82	2.84	1.96	1.81
C214	2.71	2.74	2.72	2.84	1.86	2.81
C215	2.06	1.93	1.91	1.86	1.84	1.8
C216	2.25	2.13	2.18	2.39	2.27	2.36
C217	2.56	2.5	2.74	2.37	2.54	2.58
C218	2.11	1.93	1.91	1.86	1.84	1.8
II B.TECH - II SEM						
C221	2.07	2.09	2.01	3.09	2.03	2.8
C222	2.34	2.22	2.2	2.43	2.27	2.41
C223	2.81	2.54	2.82	2.84	1.96	1.81
C224	2.81	2.54	2.82	2.84	1.96	1.81
C225	2.23	2.13	2.16	2.39	2.27	2.36
C226	2.27	2.09	2.2	2.41	2.27	2.35
C227	2.23	2.3	2.2	2.25	2.36	-
C228	2.56	2.5	2.74	2.37	2.54	2.58
III B.TECH - I SEM						
C311	2.06	2.04	2	1.97	2.09	2.2
C312	2.12	2.03	2.2	2.04	2.32	2.02
C313	2.32	2.08	2.05	2.2	2.34	2.3
C314	2.81	2.54	2.82	2.84	1.96	1.81
C315	2.83	2.52	2.8	2.86	2.4	2.04
C316	2.25	2.13	2.18	2.39	2.27	2.36
C317	2.3	2.3	2.25	2.18	2.2	2.27
C318	2.19	2.1	1.88	2.15	-	-
C319	2.9	2.93	2.91	2.94	2.9	2.93
III B.TECH - II SEM						
C321	2.5	2.6	2.48	2.36	2.44	2.56
C322	2.23	2.35	2.42	2.21	2.24	2.33
C323	2.81	2.54	2.82	2.84	1.96	1.81
C324	2.23	2.35	2.19	2.21	2.16	2.33
C325	2.81	2.54	2.82	2.84	1.96	1.81

C326	2.5	2.6	2.48	2.36	2.44	2.56
C327	1.94	2.06	2.06	1.8	1.67	1.85
C328	2.19	2.1	1.88	2.15	-	-
C329	2.9	2.83	2.85	2.94	2.86	2.93
IV B.TECH - I SEM						
C411	2.03	2.56	2.45	2.4	2.4	2.3
C412	2.12	2.4	2.03	2.5	2.1	2.04
C413	2.01	2.4	2.34	2.03	2.4	2.03
C414	2.08	2.4	2.3	2.2	2.02	2.03
C415	2.08	2.4	2.34	2.03	2.4	2.03
C416	2.23	2.13	2.16	2.39	2.27	2.36
C417	2.19	2.1	1.88	2.15	-	-
C418	2.56	2.5	2.74	2.37	2.54	2.58
IV B.TECH - II SEM						
C421	2.81	2.54	2.82	2.84	1.96	1.81
C422	2.72	2.63	2.88	2.84	2.93	2.62
C423	2.3	2.03	2.2	1.91	1.95	2.12
C424	2.3	2.05	2.2	2.3	2.04	2.32
C425	2.46	2.3	2.23	2.22	-	-
C426	2.06	1.97	1.78	2.04	2.02	-

16. CO ATTAINMENT-DIRECT+INDIRECT (FOR ALL COURSES)

iii. CO Attainment for all the courses - 2016 Admitted Batch

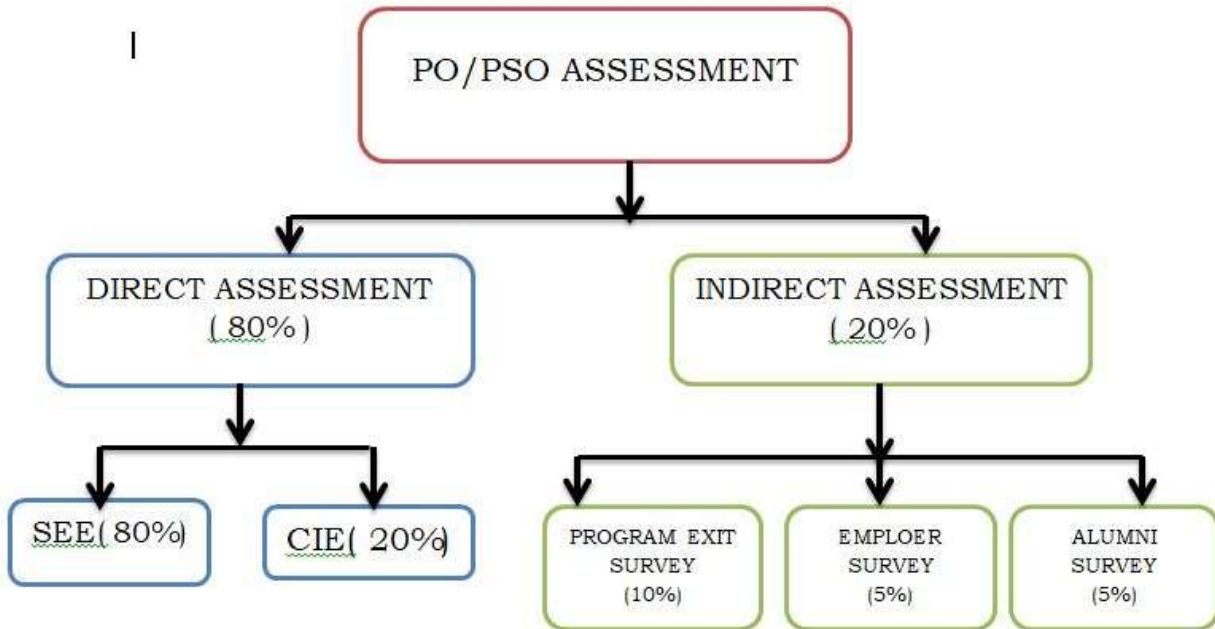
COURSE	CO1	CO2	CO3	CO4	CO5	CO6
I B.TECH - I SEM						
C111	2.78	2.76	2.78	2.77	2.77	-
C112	2.18	2.19	2.22	2.20	2.21	2.17
C113	2.25	2.24	2.26	2.24	2.25	2.25
C114	2.04	1.97	2.02	2.03	2.03	2.04
C115	2.62	2.56	2.62	2.62	2.54	2.50
C116	1.43	1.45	1.47	1.45	1.44	1.43
C117	3.00	3.00	2.95	-	-	-
C118	2.32	2.32	2.32	2.32	2.37	2.34
C119	2.58	2.58	2.59	2.58	2.60	2.62
C11A	2.39	2.37	2.33	2.38	2.38	2.40
I B.TECH - II SEM						
C121	2.72	2.70	2.72	2.71	2.71	2.72
C122	2.33	2.32	2.33	2.32	2.32	2.33
C123	1.66	1.64	1.66	1.65	1.65	1.66
C124	2.08	2.03	2.08	2.09	1.91	1.88
C125	2.42	2.40	2.42	2.41	2.41	2.42
C126	1.98	1.97	1.98	1.98	1.98	1.97
C127	3.00	3.00	3.00	-	-	-
C128	2.88	2.88	2.88	2.88	2.88	-
C129	2.82	2.79	2.78	-	-	-
II B.TECH - I SEM						
C211	2.348	2.334	2.336	2.33	2.322	2.294
C212	1.886	1.926	2.006	2.028	1.936	2.014
C213	2.498	2.444	2.5	2.504	2.328	2.298
C214	2.39	2.396	2.392	2.416	2.22	2.41
C215	1.972	1.946	1.942	1.932	1.928	1.92
C216	2.138	2.114	2.124	2.166	2.142	2.16
C217	2.912	2.9	2.948	2.874	2.908	2.916
C218	2.822	2.786	2.782	2.772	2.768	2.76
II B.TECH - II SEM						
C221	2.086	2.09	2.074	2.29	2.078	2.232
C222	2.124	2.1	2.096	2.142	2.11	2.138
C223	2.386	2.332	2.388	2.392	2.216	2.186
C224	2.018	1.964	2.02	2.024	1.848	1.818
C225	2.174	2.154	2.16	2.206	2.182	2.2
C226	2.198	2.162	2.184	2.226	2.198	2.214
C227	2.846	2.86	2.84	2.85	2.872	-
C228	2.7888	2.7768	2.8248	2.7508	2.7848	2.7928
III B.TECH - I SEM						
C311	2.364	2.36	2.352	2.346	2.37	2.392
C312	2.344	2.326	2.36	2.328	2.384	2.324

C313	2.152	2.104	2.098	2.128	2.156	2.148
C314	2.474	2.42	2.476	2.48	2.304	2.274
C315	2.486	2.424	2.48	2.492	2.4	2.328
C316	2.85	2.826	2.836	2.878	2.854	2.872
C317	2.86	2.86	2.85	2.836	2.84	2.854
C318	2.7852	2.7672	2.7232	2.7772	-	-
C319	2.9	2.906	2.902	2.908	2.9	2.906
III B.TECH - II SEM						
C321	2.436	2.456	2.432	2.408	2.424	2.448
C322	2.246	2.27	2.284	2.242	2.248	2.266
C323	2.498	2.444	2.5	2.504	2.328	2.298
C324	2.286	2.31	2.278	2.282	2.272	2.306
C325	2.698	2.644	2.7	2.704	2.528	2.498
C326	2.7416	2.7616	2.7376	2.7136	2.7296	2.7536
C327	2.7352	2.7592	2.7592	2.7072	2.6812	2.7172
C328	2.5996	2.5816	2.6744	2.606	-	-
C329	2.9	2.886	2.89	2.908	2.892	2.906
IV B.TECH - I SEM						
C411	2.206	2.312	2.29	2.28	2.28	2.26
C412	2.136	2.192	2.118	2.212	2.132	2.12
C413	2.338	2.416	2.404	2.342	2.416	2.342
C414	2.384	2.448	2.428	2.408	2.372	2.374
C415	2.168	2.232	2.22	2.158	2.232	2.158
C416	2.814	2.794	2.8	2.846	2.822	2.84
C417	2.838	2.82	2.776	2.83	-	-
C418	2.912	2.9	2.948	2.874	2.908	2.916
IV B.TECH - II SEM						
C421	2.498	2.444	2.5	2.504	2.328	2.298
C422	2.384	2.366	2.416	2.408	2.426	2.364
C423	2.668	2.614	2.648	2.59	2.598	2.632
C424	2.204	2.154	2.184	2.204	2.152	2.208
C425	2.892	2.86	2.846	2.844	-	-
C426	2.812	2.794	2.756	2.808	2.804	-

17. PO/PSOS ASSESSMENT TOOLS

(i) POandPSOAssessmentTools:

The process used to assess POs& PSOs is depicted in the following diagram



18. PROCEDURE FOR CALCULATING THE ATTAINMENT OF PO/PSOS (FOR ONE COURSE)

MECHANISM FOR THE ATTAINMENTS OF Pos/PSOs OF THE COURSE:																	
In view of the threshold assumed for each course, Individual course assessment is calculated																	
CO	CO Attainment Level			Level of Mapping of CO-PO													
	SEE+CIE(A)	COURSE END SURVEY(B)	A*0.8+B*0.2	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2.25	2.68	2.34	2	2	2										2	2
C02	2.25	2.98	2.4	2			2	2						2		2	
C03	2.25	2.64	2.33	3		2	2							2		2	
C04	2.25	2.78	2.36			2	2									2	
C05	2.25	2.63	2.33			2	2							2		2	
C06	2.25	2.69	2.34											2	2	2	2

For example, Attainment of PO1 for the table given above:

$$\text{PO Attainment} = \frac{\sum(\text{level of mapping of PO-CO} \times \text{CO attainment})}{\sum(\text{level of mapping of PO-CO})}$$

$$\text{PO1 Attainment} = \frac{2.34 \times 2 + 2.4 \times 2 + 2.33 \times 3}{2 + 2 + 3} = 2.35$$

Similarly calculate all PO's

Set the target level of attainment for PO1 say 70% then it is concluded that PO1 has attained accordingly, PSO attainment are also calculated based on direct and indirect attainment values.

$$\text{PSO Attainment} = \frac{\sum(\text{level of mapping of PSO-CO} \times \text{CO attainment})}{\sum(\text{level of mapping of PSO-CO})}$$

$$\text{PSO1 Attainment} = \frac{2.34 \times 2 + 2.4 \times 2 + 2.33 \times 2 + 2.36 \times 2 + 2.33 \times 2 + 2.34 \times 2}{2 + 2 + 2 + 2 + 2 + 2} = 2.35$$

Similarly calculate all PSO's

The PO and PSO attainments calculated using the above equations are given in the below table

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
2.35	2.34	2.34	2.35	2.4	0	0	0	0	0	2.35	2.34	2.35	2.34

19. PO/PSOS ATTAINMENTS (FOR ALL COURSES)

S.No	Program Level Attainment	Program Outcomes												Program Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Course1	0	0	0	0	0	0	0	0	2.35	2.35	0	2.35	0	0
2	Course2	2.19	2.19	0	0	0	0	0	0	0	0	0	2.19	0	0
3	Course3	2.25	2.25	0	0	0	0	0	0	0	0	0	2.25	0	0
4	Course4	2.021	2.021	0	0	0	0	0	0	0	0	0	2.021	0	0
5	Course5	2.57	2.56	2.57	2.56	2.58	0	0	0	0	0	0	0	2.57	2.57
Average=(course1+course2+course3+...+courseN)/Total number of courses		1.80	1.80	2.57	2.56	2.58	0	0	0	0	0	0	2.204	2.57	2.57

$$\text{Attainment of PO}_i = \frac{\sum_{j=1}^k \text{PO}_{ij}}{\text{Number of Courses Mapped}} \text{ where } j=1,2,\dots,12$$

PO_{ij} is the part contribution of i-th Course to the j-th PO, and K is the total number of the courses in the program.

$$\text{Attainment of PSO}_i = \frac{\sum_{j=1}^k \text{PSO}_{ij}}{\text{Number of Courses Achieved}} \text{ where } j=1,2,\dots,12$$

PSO_{ij} is the part contribution of i-th Course to the j-th PO, and K is the total number of the courses in the program.

20. PO/PSOS ATTAINMENTS FOR THE ENTIRE PROGRAMME

S. No	Assessment Components (Direct + Indirect)	Program Outcomes											Program Specific Outcomes		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Direct Assessment (CEE+SEE+ Course End Survey)	2.41	2.42	2.44	2.49	2.50	2.52	2.53	2.69	2.70	2.69	2.45	2.41	2.44	2.46
2	Program Exit Survey	2.45	2.5	2.65	2.82	2.55	2.65	2.35	2.5	2.58	2.7	2.4	2.62	2.44	2.64
3	Alumni Survey	2.82	2.62	2.85	2.85	2.62	2.95	2.28	2.4	2.65	2.68	2.68	2.82	2.83	2.82
4	Employer Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Average	2.75667	2.70667	2.83333	2.89	2.72333	2.86667	2.54333	2.63333	2.74333	2.79333	2.69333	2.81333	2.75667	2.82
	Final Attainment=80% of direct assessment + 10% of Program Exit Survey + 5% of Alumni Survey + 5% of Employer Survey	2.48	2.48	2.52	2.57	2.54	2.59	2.53	2.68	2.71	2.71	2.5	2.49	2.51	2.53

21. PO/PSOs Attainment Levels and Actions for Improvement

POs	Target Level	Attainment Level	Observations
PO1: Engineering Knowledge			
PO1	2.5	2.48	Not Attained
To improve the attainment, bridge courses and Induction Programs are conducted for first year students and bridge courses on Engineering subjects to the lateral entry students			
PO2: Problem Analysis			
PO2	2.5	2.48	Not Attained
To enhance the problem analytical skills, students are given hands on training on Wipro TNP modules, InfyTQ modules, HackerRank and HackerEarth platforms are used. Weekly technical events are conducted by the Professional societies to enhance the student skill set			
PO3: Design/development of Solutions			
PO3	2.5	2.52	Attained
To train the students in System design and development, Mini Projects, Socially Relevant Projects are introduced to encourage the students and to improve their skill set			
PO4: Conduct Investigations of Complex Problems			
PO4	2.5	2.57	Attained
A Guest Lecture is conducted on Data Integration in IT Industry, The Real-Time Scenario on 19/07/2018 by APSSDC Team. Students are encouraged to participate in Smart India Hackathon, Google's Skillenza, Design Thinking Workshops, IUCEE Project based Learning			
PO5: Modern Tool Usage			
PO5	2.5	2.54	Attained
A Guest Lecture on CISCO Networking on 26/02/2020 by Mr. Piyush Kamal, Tech Consulting Engineer.			
PO6: The Engineer and Society			
PO6	2.5	2.59	Attained
Students are encouraged to develop projects based on the needs of the society. A few examples of the projects done by the students are Crop Doctor, E-Marketing, Road Traffic Accident Prediction, Driver Drowsiness			

Detection			
PO7:EnvironmentandSustainability			
PO7	2.5	2.53	Attained
Workshops are conducted on Swatchh Bharath, As part of NSS, students participate in Blood Donation Camps, Tree Planting, Clean and Green Programs,			
PO8:Ethics			
PO8	2.5	2.68	Attained
AGuestLectureisconductedonEthicsinlifeon10/12/2018byShriChagantiKoteswaraRao			
PO9:IndividualandTeamWork			
PO9	2.5	2.71	Attained
Toimprovethe teamworkandCodingSkillsInternships,SociallyRelevantProjects,MiniandMajorprojectsaremandatedintheR19andR20Curriculum.			
PO10:Communication			
PO10	2.5	2.71	Attained
ToimproveCommunicationskillsspecialclassesandcompetitionsareconductedregularly by the English department. Soft skills are imparted in the regular time table itself.			
PO11:ProjectManagementandFinance			
PO11	2.5	2.5	Attained
Students are encouraged to do multi disciplinary projects			
PO12:Life-longLearning			
PO12	2.5	2.49	NotAttained
Toimproveself-learninginstudents,studentsareencouragedtodoonlineself-pacedcoursesinCoursera,Udemy,NasscomFutureSkills and also encouraged to do Masters in prestigious institutions and also encouraged to do research on recent developments of IT.			

PSOs Attainment Levels and Actions for Improvement

PSOs	Target Level	Attainment Level	Observations
------	--------------	------------------	--------------

PSO1: The ability to model and develop efficient algorithms and software applications as safe and secure Information Technology Solutions

PSO1	2.5	2.51	Attained
<p>To enhance coding skills, conducted training classes by Edyst, E-box, InfyTQ, Wipro TNP. A Guest Lecture is conducted on Technology trends and Job Opportunities on 01/03/2019 by Mr. Krishna Mohan Jampala, Enterprise Architect, TCS. An Online Webinar on Cyber Safety on 28/05/2020 by Manjunath Mattam, Head MSIT</p>			

PSO2: The ability to embark on research and development after mastering modern computer languages, environments and platforms by pursuing higher education, to manage an IT infrastructure in a qualitative manner

PSO2	2.5	2.53	Attained
<p>Students are encouraged to select research based problems as their Major project and publish the same in an UGC Care International Journals and IEEE and Springer Conferences</p> <p>A Guest Lecture is conducted on Technology trends and Job Opportunities on 01/03/2019 by Mr. Krishna Mohan Jampala, Enterprise Architect,</p> <p>To make students Industry ready, many certification programs are conducted on emerging technologies like Robotic Process Automation, Salesforce Automation, AWS Cloud Fundamentals, Solution Architect, Fullstack Development</p>			

22. PEO Assessment

Procedure for Assessment of PEOs

1. POs and PSOs are mapped with relevant PEOs
2. Direct attainment of PEO=sum of the attainment level of POs and PSOs mapped to a PEO with Total number of POs and PSOs

PO/PSO – PEO Mapping:

	PEO1	PEO2	PEO3	PEO4
PO1				X
PO2	X	X		
PO3	X	X	X	X
PO4		X		X
PO5			X	
PO6			X	
PO7			X	
PO8		X	X	
PO9	X	X		
PO10	X			X
PO11		X	X	X
PO12		X	X	
PSO1	X	X	X	
PSO2	X	X		X

PO & PSO Attainment for the Batch 2016-2020

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO-PO-PSO Attainment	2.41	2.42	2.44	2.49	2.50	2.52	2.53	2.69	2.70	2.69	2.45	2.41	2.44	2.46
Placements and Higher Education	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Direct Attainment (Avg of the above two)	2.70	2.71	2.72	2.74	2.75	2.76	2.76	2.84	2.85	2.85	2.73	2.70	2.72	2.73
Indirect Attainment														
Program Exit survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Alumni Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Employer Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Parent Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Avg of Indirect Attainment	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall PO/PSO Attainment (80%of Direct +20%of indirect)														
Overall PO/PSO Attainment	2.76	2.77	2.77	2.79	2.8	2.81	2.81	2.87	2.88	2.88	2.78	2.76	2.78	2.78

PO/PSO Attainments w.r.t relevant PEOs for 2016-2020

	PEO1	PEO2	PEO3	PEO4
PO1				2.76
PO2	2.77	2.77		
PO3	2.77	2.77	2.77	2.77
PO4		2.79		2.79
PO5			2.8	
PO6			2.81	
PO7			2.81	
PO8		2.87	2.87	
PO9	2.88	2.88		
PO10	2.88			2.88
PO11		2.78	2.78	2.78
PO12		2.76	2.76	
PSO1	2.78	2.78	2.78	
PSO2	2.78	2.78		2.78
AVG	2.81	2.8	2.8	2.79
Average attainment of PEO=2.8				

PO & PSO Attainment for the Batch 2017-2021

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Attainment	2.30	2.30	2.32	2.39	2.37	2.44	2.51	2.61	2.58	2.62	2.35	2.30	2.30	2.30
Placements and Higher Education	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Direct Attainment(Avg of the above two)	2.65	2.65	2.66	2.70	2.68	2.72	2.75	2.81	2.79	2.81	2.67	2.65	2.65	2.65
Indirect Attainment														
Program Exit survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Alumni Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Employer Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Parent Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Avg Indirect Attainment	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall PO/PSO Attainment (80%of Direct +20%of indirect)														
Overall PO/PSO Attainment	2.72	2.72	2.73	2.76	2.75	2.78	2.8	2.84	2.83	2.85	2.74	2.72	2.72	2.72

PO/PSO Attainments w.r.t relevant PEOs for 2017-2021

	PEO1	PEO2	PEO3	PEO4
PO1				2.72
PO2	2.72	2.72		
PO3	2.73	2.73	2.73	2.73
PO4		2.76		2.76
PO5			2.75	
PO6			2.78	
PO7			2.8	
PO8		2.84	2.84	
PO9	2.83	2.83		
PO10	2.85			2.85
PO11		2.74	2.74	2.74
PO12		2.72	2.72	
PSO1	2.72	2.72	2.72	
PSO2	2.72	2.72		2.72
AVG	2.76	2.75	2.76	2.75
Average attainment of PEO = 2.76				

PO & PSO Attainment for the Batch 2018-2022

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Attainment	2.34	2.36	2.39	2.46	2.44	2.45	2.50	2.69	2.69	2.69	2.40	2.38	2.35	2.36
Placements and Higher Education	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Direct Attainment(Avg of the above two)	2.67	2.68	2.70	2.73	2.72	2.73	2.75	2.85	2.85	2.85	2.70	2.69	2.67	2.68
Indirect Attainment														
Program Exit survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Alumni Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Employer Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Parent Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Avg Indirect Attainment	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall PO/PSO Attainment (80%of Direct +10%of Exit+5%of Alumni+5%of Employer Survey)														
Overall PO/PSO Attainment	2.74	2.74	2.76	2.78	2.77	2.78	2.8	2.88	2.88	2.88	2.76	2.75	2.74	2.74

PO/PSO Attainments w.r.t relevant PEOS for 2018-2022 Batch

	PEO1	PEO2	PEO3	PEO4
PO1				2.74
PO2	2.74	2.74		
PO3	2.76	2.76	2.76	2.76
PO4		2.78		2.78
PO5			2.77	
PO6			2.78	
PO7			2.8	
PO8		2.88	2.88	
PO9	2.88	2.88		
PO10	2.88			2.88
PO11		2.76	2.76	2.76
PO12		2.75	2.75	
PSO1	2.74	2.74	2.74	
PSO2	2.74	2.74		2.74
AVG	2.79	2.78	2.78	2.78
Average attainment of PEO = 2.78				

Methodology for feedback from stakeholders:

Google forms with questionnaire framed as per the program Outcomes were sent to the students. A questionnaire is distributed to students and Parents. Each of the questions were to be rated on a scale of 5. Data collected was analyzed. The target level aimed is 60% target. Only those stakeholders who have given score of more than 3 (60%) out of 5 in each question were considered for analysis.

Details of 2016-2020 Batch:

Placement & Higher Education Details of 2016-2020	
No of students Appeared for Final Year Exams	57
No of Students placed and got admission to Higher studies	40(33+7)
%of the Placements and Higher Education	70.17%
Attainment Level	3

EXIT Survey 2016-2020 Batch														
No of students Surveyed=50	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses >60%	30	48	38	36	28	39	37	29	28	28	27	38	38	27
No of students given scores responses <60%	20	2	12	14	22	11	13	21	22	22	23	12	12	23
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Alumni Survey 2016-2020 batch														
No of students Surveyed=35	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses >60%	35	35	35	33	35	32	31	31	32	32	33	33	32	33
No of students given scores responses < 60%				2		3	4	4	3	3	2	2	3	2
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Parents Survey 2016-2020 Batch														
No of Parents Surveyed=50	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

No of students given scores responses >60%	36	35	38	40	45	33	38	33	32	39	32	45	40	36
No of students given scores responses <60%	14	25	12	10	5	17	12	17	18	11	18	5	10	14
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Details of 2017-2021 Batch:

Placement & Higher Education Details of 2017-2021	
No of students Appeared for Final Year Exams	163
No of Students placed and got admission to Higher studies	125(95+30)
%of the Placements and Higher Education	76.68%
Attainment Level	3

EXIT Survey 2017-2021 Batch														
No of students Surveyed=50	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses >60%	30	48	38	36	28	39	37	29	28	28	27	38	38	27
No of students given scores responses <60%	20	2	12	14	22	11	13	21	22	22	23	12	12	23
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Alumni Survey 2017-2021 batch														
No of students Surveyed=75	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses >60%	64	64	64	62	64	63	65	65	63	63	62	62	63	62
No of students given scores responses <60%	11	11	11	13	9	12	10	10	12	12	13	13	12	13

Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Parents Survey 2017-2021 Batch														
No of Parents Surveyed=	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses > 60%	60	55	58	67	57	51	50	57	56	52	59	62	63	60
No of students given scores responses <60%	10	15	12	3	13	19	20	13	14	18	11	8	7	10
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Details of 2018-2022 Batch:

Placement & Higher Education Details of 2018-2022	
No of students Appeared for Final Year Exams	165
No of Students placed and got admission to Higher studies	150(129+20+1)
%of the Placements and Higher Education	90.9%
Attainment Level	3

EXIT Survey 2018-2022 Batch														
No of students Surveyed=60	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses > 60%	40	58	48	46	48	49	47	39	38	38	37	48	48	37
No of students given scores responses <60%	20	2	12	14	22	11	13	21	22	22	23	12	12	23
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Alumni Survey 2018-2022 batch														
No of students Surveyed=85	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses >60%	75	75	75	70	75	74	78	78	74	74	70	70	74	70

No of students given scores responses <60%	10	10	10	15	10	11	7	7	11	11	15	15	11	15
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Parents Survey 2018-2022 Batch														
No of Parents Surveyed=60	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No of students given scores responses >60%	50	45	48	57	47	41	40	47	46	42	49	52	53	50
No of students given scores responses <60%	10	15	12	3	13	19	20	13	14	18	11	8	7	10
Attainment Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3

ANNEXURE-I PROGRAM EXIT SURVEY

An exit survey is conducted for students who have graduated out of the department for that year. Relevant questionnaire in exit survey format to evaluate attainment of POs and PSOs is given in section (a) and the relation of POs & PSOs with each question is given in section (b).

(a) Questionnaire Format

Assessment of Abilities, Skills and Attributes acquired at VVIT.

Please rate each of the following items in terms how well your education at VVIT prepared you for them. After graduating the four years degree, your expertise in the following areas is

PO/PS O	Attribute	Excellent	Good	Satisfactory	Unsatisfactory
1	The level of your Engineering knowledge				
2	Problem Analysis skills				
3	Skills in designing and developing solutions are				
4	Strength in investigating complex problems				
5	Skills in using modern tools is				
6	Applicability of Engineering Knowledge towards the society needs				
7	Impact on environmental sustainability is				
8	Your professional ethics are				
9	Your individual and team work is				
10	Your Communication Skills are				
11	Managing projects in multidisciplinary areas				
12	Ability to engage in lifelong learning				
13	Ability to develop safe and secure IT solutions				
14	Ability to pursue higher education and get placed				

in MNCs				
---------	--	--	--	--

(b) Relation of Pos and PSOs with Questionnaire:

Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14

(c) Evaluation Process:

The questionnaire consists of 14 questions which are relevant for assessing each PO and PSO. The first 12 questions correspond to the 12 POs and the remaining 2 questions are for PSOs (Questions 13 is used to evaluate PSO1, Question 14 is used to evaluate PSO2). Each question is having 4 options namely: Excellent, Good, Satisfactory and Unsatisfactory, which is given marks 4, 3, 2 and 1 respectively. The survey results are tabulated and the average values corresponding to each PO and PSO are calculated.

ANNEXURE- II ALUMNI SURVEY

Feedback is taken from alumni. The questionnaire format in the alumni survey form to evaluate attainment of POs and PSOs is given in section (a) and the relation of POs & PSOs with each question is given in section (b).

(a) Questionnaire Format:

Assessment of Knowledge, Skills, Abilities, Attitude, and attributes acquired at VVIT

Please rate each of the following Knowledge, skills, abilities, attitudes (K, S, A) or attribute in terms how well VVIT inculcated them in your education

SNo	Attribute	Assessment (Please tick one)				
		1	2	3	4	5
SECTION –A						
1	I am proud of being alumni of the institution					
2	The institution has groomed me as a full-fledged engineer					
3	I have benefitted by the new teaching – learning methodology – student centric learning process adopted by the institution.					
4	I am able to solve real-life problems with the knowledge acquired in the institution					
5	The student mentoring and career guidance provided by the institution helped me to excel in my career					
6	The practical exposure in the labs is sufficient to understand/implement the basic concepts					
7	The institution provides guidance in curricular, co-curricular and extra-curricular activities.					
8	The faculty are friendly and are available all the time for clarifications					
9	The clubs organized by the institution gave me the opportunity for all-round development of my personality					
10	The institution emphasises more on ethics and professionalism					
SECTION – B						
B1. HIGHER EDUCATION / RESEARCH						
11	Institution provides enough background to pursue higher education at reputed institutions in India and abroad.					
12	Institution stresses more on fundamental concepts and gives enough mathematical background to pursue research.					
13	The practical training given over and above the JNTUK curriculum enables to pursue experimental research.					
14	Institution tunes the Students towards comprehension, analysis, and design.					
15	Institution encourages and supports participation in conferences/ workshops/research publications.					
B2. SERVING THE SOCIETY THROUGH WORKING IN INDUSTRY						
16	I found myself employable in the organization without any additional training.					
17	I am able to easily adopt myself to different functions of the organization.					
18	I am able to adopt organizational goals as my goals					
19	I am proud to be part of developing society with service as maxim					
20	I am comfortable leading a team or working in a group					

B3. ENTERPRENUERSHIP						
21	I am able to conceptualize and start an enterprise myself.					
22	I am able to produce goods to suit the market.					
23	The products coming from my organization continuously strive to meet the international standards.					
24	I am able to serve the society by providing jobs to the needy people.					
25	The products developed by my organization conform to green policy					

(b) Relation of Pos and PSOs with Questionnaire:

POs/PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Questions	A	A	A	B1	A	B3	B2	B2	B3	B3	B1	B1	B3	B1

(c) Evaluation Process:

The questionnaire consists of 25 questions which are relevant for assessing each PO and PSO. The section-A questions are used to evaluate the PO1, PO2, PO3, and PO5, section-B questions are used to evaluate the PO4, PO6, PO7, PO8, PO9, PO10,, PO11, PO12, PSO1 and PSO2. Each question is having 5 options namely: Excellent (5), Very Good (4), Good (3), Average (2) and Poor (1) respectively. These marks are tabulated and the average values corresponding to each PO and PSO are determined

S No	Attribute	Assessment (Please tick one)				
		1	2	3	4	5
1	The candidate is good enough to be able to put in project developmental / R&D activities.					
2	The candidate possesses sound fundamental concepts in the domain area.					
3	The candidate possesses basic analytical skills to solve the problems.					
4	He/she is able to apply the knowledge in comprehension, analysis and design.					
5	The candidate is socially aware of his responsibilities and working towards achieving better goals through team work, keeping in view the ethics.					
6	The candidate can work on multidisciplinary projects and can work in a team with social consciousness.					
7	The candidate exhibits professionalism and upholds ethical standards in his dealings.					
8	/she is ready to continuously upgrade his/her knowledge through training programs.					
9	e candidate is clear in his/her goals and following the path to achieve it.					

ANNEXURE-III EMPLOYER SURVEY

Feedback is taken at a frequency of once in two years from the employers who had given jobs to our graduates. The questionnaire format in the employer survey form to evaluate attainment of POs and PSOs is given in section (a) and the relation of POs & PSOs with each question is given in section(b)

(a) Questionnaire Format:

Rate the VVIT graduates working in your organization using the following criterion. Put a tick mark (√) Knowledge, Skills, Abilities, Attitude and other Attributes expected out of VVIT graduates

(b) Relation of POs and PSOs with questionnaire:

POs/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Questions	2	3	4	1	11	6	7	8	5	9	6	8	1	1

(c) Evaluation Process:

The questionnaire consists of 9 questions. These questions are relevant for assessing each PO and PSO. If multiple questions satisfy a PO, then their average is taken. A similar procedure is followed for PSOs also. Each question is having 5 options namely: Excellent (5), Very Good (4), Good (3), Average (2) and Poor (1) respectively. These marks

are tabulated and the average values corresponding to each PO and PSO are determined

ANNEXURE-IV PARENT FEEDBACK

Name of the Parent : -----: Age:----- Sex(M/F)-----

Qualification :----- Occupation : ----- : Age :-----

Name of the Student:-----Regd No:-----

Make a tick mark in the appropriate cell:

S.No	Particulars	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
1	Getting admission in the college for my ward is a matter of pride for me					
2	The college admission process (management quota) is fair and accurate					
3	My ward is improving his/her knowledge base through interaction with faculty of the college					
4	The discipline in the college is good					
5	The atmosphere in the college is conducive for learning					

6	There is a positive change in the behaviour of my ward after joining in the college					
7	Student attendance details are informed regularly through SMS					
8	VVIT web site is very informative and regularly updated					
9	The college staff are very cooperative					
10	The college bus services are timely and good					
11	Hostel facilities are good					
12	Placements are good					
13	Special training for placements is effective					
14	Remedial classes/makeup classes for slow learners are effective					
15	Students are encouraged to participate in Co-Curricular and Extra-Curricular activities					

SIGNATURE OF THE PARENT