



Department of ECE

(Accredited by NBA)

CO-PO/PSO Assessment and Attainment

For Student Batches Under JNTUH

Process Manual



Geethanjali College of Engineering and Technology
(UGC Autonomous and NAAC Accredited)
(Approved by A.I.C.T.E & Affiliated to JNTUH)

Table of Contents

S. No	Name of the Content	Page No.
1	Institution Vision and Mission	1
2	Department Vision and Mission	1
3	Program Educational Objectives (PEOs)	1
4	Program Outcomes	2
5	Program Specific Outcomes	3
6	Consistency between Department Vision and Institution Vision	3
7	Consistency between Department Vision and Department Mission	3
8	Correlation between POs, PSOs and PEOs	4
Course wise attainments and POs attainments for 2011-15 and 2012-16 Batches		
9	R09 Course structure	6
10	Process of mapping of COs with POs and PSOs	8
11	Identification of Curriculum gaps	9
12	CO - PO Mapping for all Courses of R09 Curriculum	10
13	Procedure for Measuring the COs and POs Attainment (JNTUH-R09)	44
14	Course wise attainment for all courses of 2011-15 Batch	46
15	POs and PSOs attainment for 2011-15 Batch	51
16	Course wise attainment for all courses of 2012-16 Batch	57
17	POs and PSOs attainment for 2012-16 Batch	62
Course wise attainments and POs attainments for 2013-17, 2014-18 and 2015-19 Batches		
18	R13/R15 Course structure	71
19	CO - PO Mapping for all Courses - R13/R15 Curriculum	75
20	Identification of Curriculum gaps	114
21	Procedure for Measuring the COs and POs Attainment (JNTUH-R13)	115
22	Course wise attainment for all courses of 2013-17 Batch	117
23	POs and PSOs attainment for 2013-17 Batch	135
24	Course wise attainment for all courses of 2014-18 Batch	141
25	POs and PSOs attainment for 2014-18 Batch	176
26	Course wise attainment for all courses of 2015-19 Batch	181
27	POs and PSOs attainment for 2015-19 Batch	232
28	Appendix A: Format of Course End Survey	239
29	Appendix B: Format of Graduate Survey	241
30	Appendix C: Format of Alumni Feedback	242
31	Appendix D: Format of TLP Feedback	243

Vision of the Institution

Geethanjali visualizes dissemination of knowledge and skills to students, who would eventually contribute to well being of the people of the nation and global community.

Mission of the Institution

- i. To impart adequate fundamental knowledge in all basic sciences and engineering, technical and Inter-personal skills to students.
- ii. To bring out creativity in students that would promote innovation, research and entrepreneurship.
- iii. To preserve and promote cultural heritage, humanistic and spiritual values promoting peace and harmony in society.

Vision of the Department

To impart quality technical education in Electronics and Communication Engineering emphasizing analysis, design/synthesis and evaluation of hardware/ embedded software using various Electronic Design Automation (EDA) tools with accent on creativity, innovation and research thereby producing competent engineers who can meet global challenges with societal commitment.

Mission of the Department

- i. To impart quality education in fundamentals of basic sciences, mathematics, electronics and communication engineering through innovative teaching-learning processes.
- ii. To facilitate Graduates define, design, and solve engineering problems in the field of Electronics and Communication Engineering using various Electronic Design Automation (EDA) tools.
- iii. To encourage research culture among faculty and students thereby facilitating them to be creative and innovative through constant interaction with R & D organizations and Industry.
- iv. To inculcate teamwork, imbibe leadership qualities, professional ethics and social responsibilities in students and faculty.

Program Educational Objectives (PEOs)

- I. To prepare students with excellent comprehension of basic sciences, mathematics and engineering subjects facilitating them to gain employment or pursue postgraduate studies with an appreciation for lifelong learning.
- II. To train students with problem solving capabilities such as analysis and design with adequate practical skills that are Program Specific wherein they demonstrate creativity and innovation that would enable them to develop state of the art equipment and technologies of multidisciplinary nature for societal development.
- III. To inculcate positive attitude, professional ethics, effective communication and interpersonal skills which would facilitate them to succeed in the chosen profession exhibiting creativity and innovation through research and development both as team member and as well as leader

Program Outcomes

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

1. An ability to design an Electronic and Communication Engineering system, component, or process and conduct experiments, analyze, interpret data and prepare a report with conclusions to meet desired needs within the realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
2. An ability to use modern Electronic Design Automation (EDA) tools, software and electronic equipment to analyze, synthesize and evaluate Electronics and Communication Engineering systems for multidisciplinary tasks.

Consistency between Department Vision and Institution Vision

Department Vision	Institute Vision
Impart quality technical education in Electronics and Communication Engineering emphasizing analysis, design/synthesis and evaluation of hardware/ embedded software using various Electronic Design Automation (EDA) tools	Dissemination of knowledge and skills to Students
Producing competent engineers who can meet global challenges with societal commitment.	Contribute to well being of the people of the nation and global community

Correlation between POs, PSOs and PEOs

Department Vision	Department Mission
To impart quality technical education in Electronics and Communication Engineering	To impart quality education in fundamentals of basic sciences, mathematics, electronics and Communication
Emphasizing analysis, design/synthesis and evaluation of hardware/ embedded software using various Electronic Design Automation (EDA) tools	To facilitate Graduates define, design, and solve engineering Problems in the field of Electronics and Communication Engineering using various Electronic Design Automation (EDA) tools.
Accent on creativity, innovation and research	To encourage research culture among faculty and students thereby facilitating them to be creative and innovative through constant interaction with R & D organizations and Industry.
Engineers who can meet global challenges with societal commitment.	To inculcate teamwork, imbibe leadership qualities, professional ethics and social responsibilities in students and faculty.

Correlation between POs, PSOs and PEOs

Program Educational Objectives of B. Tech (ECE) Program :

- I. To prepare students with excellent comprehension of basic sciences, mathematics and engineering subjects facilitating them to gain employment or pursue postgraduate studies with an appreciation for lifelong learning.
- II. To train students with problem solving capabilities such as analysis and design with adequate practical skills that are Program Specific wherein they demonstrate creativity and innovation that would enable them to develop state of the art equipment and technologies of multidisciplinary nature for societal development.
- III. To inculcate positive attitude, professional ethics, effective communication and interpersonal skills which would facilitate them to succeed in the chosen profession exhibiting creativity and innovation through research and development both as team member and as well as leader

Course wise attainments and POs/PSOs attainments
for
2011-15 and 2012-16 Batches
(R09)

R09 Course structure

B.Tech. I Year				
Code	Subject	L	T/P/D	C
51001	English	2		4
51002	Mathematics-I	3	1	6
51003	Mathematical Methods	3	1	6
51004	Engineering Physics	2	1	4
51005	Engineering Chemistry	2		4
51006	Computer Programming & Data structures	3		6
51007	Engineering Drawing	2	3	4
51616	Computer Programming lab		3	4
51617	Engineering Physics/ Engineering Chemistry lab		3	4
51618	English Language Communication Skills lab		3	4
51619	IT Workshop / Engineering Workshop		3	4
B.Tech. II Year - I Semester				
Code	Subject	L	T/P/D	C
53007	Mathematics-III	3	1	3
53019	Probability Theory and Stochastic Processes	3	1	3
53013	Environmental Science	3	1	3
53020	Electrical circuits	4	1	4
53009	Electronic Devices and Circuits	4		4
53021	Signals and Systems	4	1	4
53606	Electronic Devices and Circuits Lab		3	2
53607	Basic Simulation lab		3	2
B.Tech. II Year - II Semester				
Code	Subject	L	T/P/D	C
54019	Principles of Electrical Engineering	3	1	3
54020	Electronic Circuit Analysis	4		4
54021	Pulse and Digital Circuits	4	1	4
54010	Switching Theory and logic Design	4	1	4
54011	Electro-magnetic theory and Transmission lines	4	1	4
54606	Electrical Engineering Lab		3	2
54607	Electronic Circuits analysis Lab		3	2
54608	Pulse and Digital Circuits Lab		3	2
B.Tech. III Year - I Semester				
Code	Subject	L	T/P/D	C
55012	Control Systems Engineering	4		4
55021	Computer Organization	4	1	4
55022	Antennas and Wave Propagation	3	1	3
55023	Electronic Measurements and Instrumentation	4	1	4
55024	Analog Communications	3	1	3
55009	IC Applications	3	1	3
55606	Analog Communications Lab		3	2
55607	IC Applications Lab		3	2
B.Tech. III Year - II Semester				
Code	Subject	L	T/P/D	C
55023	Managerial Economics and Financial Analysis	4		4

Open Elective				
56024	Operating Systems	4	1	4
56025	Object Oriented Programming			
56014	Nano Technology			
56026	Digital Communications	3	1	3
56012	Microprocessors and Microcontrollers	4	1	4
56027	Digital Signal Processing	4	1	4
56606	Microprocessors and Microcontrollers lab		3	2
56607	Digital signal processing Lab		3	2
56608	Advanced English Communication skills lab		3	2
B.Tech. IV Year - I Semester				
Code	Subject	L	T/P/D	C
57034	Management Science	4		4
57035	VLSI Design	4		4
57036	Microwave Engineering	4		4
57037	Computer Networks	4	1	4
Elective – I				
57038	EMI/EMC	3	1	3
57039	DSP Processors and Architectures			
57040	Telecommunication switching systems			
57041	Digital image processing			
Elective – II				
57042	Optical Communications	4	1	4
57043	Embedded Systems			
57044	Television Engineering			
57045	Multimedia and signal Coding			
57607	E CAD & VLSI lab		3	2
57608	Microwave Engineering and Digital Communications lab		3	2
B.Tech. IV Year - II Semester				
Code	Subject	L	T/P/D	C
Elective – III				
58024	Cellular and Mobile Communications	3	1	3
58025	Satellite Communications			
58026	Biomedical Instrumentation			
58016	Artificial Neural networks			
Elective – IV				
58027	Inter Networking	3	1	3
58028	Radar Systems			
58029	Spread spectrum communications			
58030	Network Security			
Elective – V				
58031	RF Circuit Design	3	1	3
58032	Wireless communication and networks			
58033	Digital design through Verilog HDL			
58034	Pattern Recognition			
58613	Industry Oriented Mini Project			2
58614	Seminar		6	2
58615	Major Project		15	10
58616	Comprehensive Viva			2

Process of mapping of COs with POs and PSOs

- The National Board of Accreditation (NBA) defined Graduate Attributes (GAs) in the form of Program Outcomes (POs) for Outcome Based Education. The Program Assessment Committee (PAC) of our department recommended two PSOs after making deliberations with stakeholders. The Department Advisory Committee (DAC) approved the PSOs recommended by the PAC.

The Course Outcomes for each course of the curriculum are defined by the affiliating university (JNTUH).

- Correlation strength of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs) is tabulated. A strong correlation is given a value of '3' while moderate and weak correlations are indicated with values of '2' and '1' respectively. Where there is no correlation it is indicated with "--"

The above exercise was done for all the courses of the undergraduate program a student studies from 1st year to 4th year in Electronics and Communication Engineering discipline.

- From the above process, percentage contribution of curriculum to Program Outcomes (POs) and Program Specific Outcomes (PSOs) is measured and assessed by the Program Assessment Committee. The committee also identifies the curriculum gaps and suggests suitable measures for filling those gaps. The gaps so identified are filled with by way of conducting guest lectures, workshops, training sessions, industrial visits and other academic activities. In some cases faculty members are suggested to cover the content beyond the syllabus to bridge the curriculum gaps.
- The defined POs and PSOs are listed below. The Course Outcomes (COs) of all the courses of the undergraduate program of B.Tech ECE are mapped with POs and PSOs as per their correlation strengths of relevance to POs and PSOs.

Identification of Curriculum gaps

Program outcomes and Program Specific Outcomes are derived from Graduate Attributes.

- Course outcomes (COs) with Pos and PSOs are provided by JNTUH as part of Curriculum/ syllabus for each of the specified course.
- Correlation strength of COs with POs and PSOs is determined as stated above.
- Percentage contribution of curriculum to POs & PSOs is calculated..
- If the percentage contribution is less than 70%, then there is a gap in curriculum to meet POs & PSOs attainment.

Program Assessment Committee meeting is conducted under the chairmanship of the HoD to identify such curriculum gaps and suitable actions to be initiated to fill those gaps by way of adding content beyond syllabus, conducting guest lectures, introducing foreign languages, industrial visits, providing training to enhance communication skills and other employable skills.

CO - PO Mapping for all Courses of R09 Curriculum

Title of the Course	Course outcomes	Pos												PSOs	
		PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
English	CO 1: Usage of English Language, written and spoken				3		1	3			3		1		
	CO 2: Enrichment of comprehension and fluency				2		1	3		2	2		1		
	CO 3: Gaining confidence in using language in verbal situations.				3		1	3	1	3	3		1		
	Average Correlation				2.67		1	3	1	2.67	2.67		1		
Title of the Course	Course outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Mathematics-I	CO1: Write the matrix representation of a set of linear equations and to analyze solutions of systems of equations	3	2	1			1						2		
	CO2: Understand the methods of differential calculus to optimize single and multivariable functions	3	2	1			1						2		
	CO3: Evaluate the multiple integrals and can apply the concepts to find the areas, volumes, Moment of inertia etc, of regions on a plane or in space	3	2	1			1						2		
	CO4: Identify the types of differential equations and uses the right method to solve the differential equations. Able to apply the theory of differential equations to the real world problems	3	2	2			1						2	1	
	CO5: Solve certain differential equations using Laplace Transform and be able to transform functions on time domain to frequency domain using Laplace transforms	3	2	2			1						2	1	
	Average Correlation	3	2	1.4			1						2	1	
Title of the Course	Course outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
	CO1: Find a root of a given equation and will be able to find a numerical solution for a given differential equation	3	2	1			1						2		
	CO2: Describe a system by an ODE, and find the solution as a first approximation	3	2	1			1						2		

Mathematical Methods	CO3: Find the expansion of given function by Fourier Series and Fourier Transform	3	2	1			1						2		
	CO4: Carry out phase transformation, phase change and attenuation coefficients in acoustics	3	2	2			1						2	1	
	CO5: Find a corresponding partial differential equation for an unknown function with many independent variables and their solution	3	2	2			1						2	1	
	Average Correlation	3	2	1.4			1						2	1	
Title of the Course	Course outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Engineering Physics	CO1: Learn the fundamental concepts on behavior of crystalline solids	2	2							1			1		
	CO2: Learn the fundamentals of Quantum Mechanics and apply to various systems like communications Solar Cells, Photo Cells and so on	2	2							1			1	1	
	CO3: Design and study of properties of materials	2	2							1			1	1	
	CO4: Learn non-destructive testing methods	2	2							1			1	1	
	CO5: Develop problem solving skills and analytical skills	2	2							1			1	1	
Average Correlation	2	2							1			1	1	1	
Title of the Course	Course outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Engineering Chemistry	CO1: Apply the methods of inquiry in a discipline of their choosing	2	1	1					1						
	CO2: Interpret information, respond and adapt to changing situations, make complex decisions, solve problems and evaluate actions	2	1	1					1						
	CO3: Learn the skills necessary to live and work in a diverse engineering world	2	1	1					1					1	1
	Average Correlation	2	1	1					1					1	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Computer Programming and Data Structures	CO1: Demonstrate the basic knowledge of computer hardware and software	2											1	1	
	CO2: Ability to apply solving and logical skills to programming in C language and in other languages	2											1	1	
	CO 3: Explain Stacks-Operations, array and linked representations of stacks, Queues-operations,	3	2	1									1	2	1

	array and linked representations														
	Average Correlation	2.33	2	1									1	1.33	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Engineering Drawing	CO1: Demonstrate the curves used in engineering.	2	1	1									1		
	CO2: Explain the theory of projection.	2	1	1									1		
	CO3: Familiar and use the conventions and the methods of engineering drawing.	2	1	1									1		
	CO4: Improve their visualization skills so that they can apply these skills in developing new products.	2	1	1									1		
	CO5: Prepare simple layout of factory buildings.	2	1	1									1		
	CO6: Prepare sectional views prism, cylinder, pyramid and cones.	2	1	1									1		
	CO7: Distinguish planes of different solid materials	2	1	1									1		
	Average Correlation	2	1	1									1		
Title of the course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Computer Programming Lab	CO1: Do Programs using if statement, while, do-while, for, switch statements	2											2		
	CO2: Do Programs using go to, break and continue statement	2											2		
	CO3: Do Programs using one dimensional and two dimensional arrays	2											2		
	CO4: Do Programs using functions, pointers and strings	2											2		
	CO5: Do Programs using stacks, queues and linked list	2											2		
	Average Correlation	2											2		
Title of the course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
	CO1: do experiments on RC and LCR circuits and calculate resonant frequency, bandwidth, quality factor and time constant.	2	1	1					1						
	CO2: do experiments to differentiate the refractive, interference and diffraction powers for light signals from LASER, LED and mercury/sodium vapour lamps	2	1	1					1						
	CO3: Calculate the frequency of electrical vibrating material and rigidity modulus of torsional pendulum.	2	1	1					1						
	CO4: Calculate the Numerical aperture, attenuation,	2	1	1					1						

Engineering Physics/ Engineering Chemistry lab	bending losses and coupling losses of optical fibers.														
	CO5: Calculate the energy gap of a semi conductor material to identify the material.	2	1	1					1						
	CO6: Estimate the hardness of water and estimate calcium in limestone	2	1	1					1						
	CO7: Determine percentage of copper in brass	2	1	1					1						
	CO8: Determine the viscosity of sample oil	2	1	1					1						
	CO 9: Determine surface tension of lubricants	2	1	1					1						
	Average Correlation	2	2	1					1						
Title of the Course	Course outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
English Language communication skills lab	CO1: Communicate effectively in different situations														
	CO2: Develop their vocabulary and prepares them to use appropriate words and make use of idioms and phrases wherever necessary.				1			2							
	CO3: Develop good team spirit to reach a common objective				1			2							
	CO4: Learn necessary interview skills and face the interviews confidently.				1			2							
	CO5: Learn to prepare effective and updated resumes				1			2							
	CO6: Learn to read and comprehend the given text and be able to answer the ensuing questions correctly.				1			2							
	CO7: Gain knowledge on different aspects of a technical report and will be able to prepare an effective technical report.				1			2							
Average Correlation				1			2								
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
	CO1: Identify different peripherals of a computer and demonstrate how Assemble and Disassemble PC	2								1					
	CO2: Attain basic knowledge on hardware (I/O devices, Mother board, processor, etc...)	2								1					
	CO3: Install Operating Systems like Windows XP, Linux in PC.	2								1					
	CO4: identify and fix Hardware/software trouble shooting.	2								1					
	CO5: attain basic knowledge on Web Browsers, LAN	2								1					

IT workshop / Engineering workshop	and TCP/IP setting.														
	CO6: design personal web page using HTML.	2								1					
	CO7: get awareness of viruses, worms, cyber hygiene and cyber attacks.	2								1					
	CO8: apply MS Office tools (Microsoft word, Excel, power point) to prepare power point presentation and document preparation	2								1					
	CO9: prepare a given model in carpentry using wood material.	2								1					
	CO10: prepare a given model in fitting using iron material.	2								1					
	Average Correlation	2								1					
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Mathematics-III	CO1:Apply Beta, Gamma functions to evaluate integrals which cannot be expressed in terms of elementary functions.	3	3												
	CO2: Apply analytic functions and harmonic functions to problems in engineering	3	2												
	CO3: Integrate complex functions.	3	2												
	CO4:Use contour integrals where the closed contour contains several singularities inside.	3	2												
	CO5:Use conformal mapping by transforming a complicated region to a simpler standard regions.	3	1												
	CO6:Apply graph theory in electrical, electronic engineering and in computer science engineering.	3	2												
	CO7: Apply Bessel's, Legendre polynomials to solve problems in Engineering	3	1												
	CO8: Use Taylor's and Laurent's series expansions in the given regions.	3	1												
	Average Correlation	3	1.75												
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Probability Theory and Stochastic Processes	CO1:Simple probabilities using an appropriate sample space.	2	3										1	3	2
	CO2:Simple probabilities and expectations from probability density functions (pdfs).	2	3	3									1	3	2

	CO3:Likelihood ratio tests from pdfs for statistical engineering problems.	2	3	3									1	3	2
	CO4: Least -square & maximum likelihood estimators for engineering problems.	2	3	3									1	3	2
	CO5:Mean and covariance functions for simple random processes.	2	3	3									1	3	2
	Average Correlation	2	3	2.4									1	3	2
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Environmental Science	CO1:Explain ecosystem and its functions namely	3						3							
	CO2:Acquire knowledge about different types of natural resources such as land, water, minerals, non-renewable energy and their excessive usage leading to detrimental effects on environment.	1						3							
	CO3:Comprehend ecosystem diversity, its values and importance of hot spots to preserve the same	2						3							
	CO4: Explain different types of pollution, its control and impact on global environment.	3						3							
	CO5:Recognize various environmental impacts and the importance of various acts and policies towards environmental sustainability.	3						3							
	Average Correlation	2.4						3							
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Electrical Circuits	CO1:Analyze R, L, C parameters with the applied ac sinusoidal voltage.	3	3	3	3							1		3	1
	CO2: Explain the concept of unity power factor	3	3	1	2							1		3	1
	CO3:Apply the concept of dot convention	3	2	1	1							1		3	1
	CO4:Apply the concept of duality and dual networks	2	2	1								1		3	1
	CO5:Analyze and apply various network theorems for DC and AC excitations	3	2	2	1	1	1					1		3	1
	Average Correlation	2.8	2.4	1.6	1.4	1	1					1		3	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Electronic Devices and Circuits	CO1:Analyze characteristics of PN junction diode ,Zener diode and different special function diodes like tunnel diode , SCR ,varactor, photo diode.	3	2	2	1								1	2	
	CO2:Analyze the applications of the diode as rectifiers	2	2	2	2								1	2	

	and regulators														
	CO3:Analyze operation of BJT ,UJT and FET from their V-I characteristics	3	3		2									1	
	CO4:Design BJT biasing circuits for specified operation.	2	2	3	2									3	1
	CO5:Analyze operation of BJT using h-parameters.	2	2	2										2	
	CO6:Analyze small signal low frequency FET models.	2	2	2										2	
	Average Correlation	2.33	2.17	2.06	1.16								1	2	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Signals and Systems	CO1:Analyze different types of signals and systems and describe their properties on continuous time and discrete time domains	3	1	2									2	3	
	CO2: Formulate & Solve problems using Fourier Series and Inverse Fourier Series.	3	1	3									2	3	
	CO3:Formulate & Solve problems using Fourier Transform and Inverse Fourier transform	3	1	3									2	3	
	CO4: Derive the input-output relationship of linear, time-invariant systems using time- domain techniques and transform methods.	2	1	3									2	3	
	CO5: Obtain the similarities between two signals in frequency domain.	2	1	3									2	3	
	CO6: Convert Analog signal to digital signal using Sampling Theorem and reconstruction of signal from samples.	3	1	3									2	3	
	CO7: Formulate & Solve problems of Analog signals using Laplace and Inverse Laplace Transform	3	1	3									2	3	
	CO8: Formulate & Solve problems of Discrete signals using Z -Transform and Inverse Z -Transform	3	1	3									1	3	
	Average Correlation	2.75	1	2.87										1.87	3
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Electronic Devices and Circuits Lab	CO1:Analyze the characteristics of PN diode and Zener diode and calculate the dynamic and static resistance in forward bias and reverse bias	3												2	2
	CO2:Calculate the ripple factor and efficiency of Half Wave and Full wave rectifiers with and without filter.	1												2	2

	CO3:Analyze the characteristics of BJT in Common Emitter and Common Collector configurations.	1												2	2
	CO4:Analyze the characteristics of FET in Common Source configuration	2												2	2
	CO5:Calculate the Bandwidth of BJT Common Emitter and Common Collector Amplifiers from the frequency response.	2												2	2
	CO6:Calculate the Bandwidth of FET Common Source Amplifier from the frequency response	2												2	2
	CO7:Obtain the characteristics of UJT and SCR and calculate the frequency of oscillations for UJT relaxation oscillator.	2												2	2
	Average Correlation	1.87												2	2
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Basic Simulation Lab	CO1: Generate different types of signals and sequences using MATLAB/SCILAB	3	2	2	2	3							1	3	3
	CO2: Perform different operations on signals and sequences Using MATLAB.	1	2	2	3	3							1	3	3
	CO3: Find the fourier transform of a given signal and to plot its spectrums using MATLAB.	1	2	2	2	3							1	3	3
	CO4: Verify Gibbs phenomenon and sampling theorem using MATLAB	2	2	3	2	3							1	3	3
	CO5: To remove noise by Autocorrelation or Cross correlation using MATLAB.	2	3	2	2	3							1	3	3
	CO6: To demonstrate intricacies of sampling theorem using MATLAB	2	2	2	3	3							1	3	3
	CO7: Able to plot the response of discrete linear time invariant system in Z-plane using MATLAB	2	2	2	3	3							1	3	3
	CO8: Able to Analyze system stability based on BIBO criteria using MATLAB.	2	2	3	2	3							1	3	3
	Average Correlation	1.87	2	2.25	2.37	3							1	3	3
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Principles of Electrical Engineering	CO1: Analyze methods used in networks and working principle of electrical machines.	2	1											1	
	CO2: Write the differential equations for a given RLC	2	1											1	

	network and solve them analytically for the transient and steady state responses to a step input.															
	CO3: Predict qualitatively and quantitatively and compute the steady state AC responses of basic circuits using the phasor method.	2	1											1		
	CO4: Explain the principles of electric filters.	2	1											1		
	CO5: Explain the characteristics of various types of motors.	2	1											1		
	CO6: Explain how the speed of a DC shunt motor can be controlled	2	1											1		
	CO7: Calculate efficiency and regulation of a transformer	2	1											1		
	CO8: Explain the characteristics of stepper motors, servo motors and synchronous motors	2	1											1		
	Average Correlation	2	1											1		
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Electronic Circuit Analysis	CO1: Distinguish classification of amplifiers and analyze the CE, CB, CC amplifiers using small signal hybrid model and derive the voltage gain, current gain, input impedance and output impedance.	2	3										1	3		
	CO2: Design and analyze the cascaded RC coupled BJT amplifier and different types of the coupled amplifiers.	2	3	3									1	3		
	CO3: Design and analyze single stage amplifiers and their frequency response, its gain band width product and effect of coupling and bypass capacitors in amplifiers.	2	3	3										1	3	
	CO4: .Design and analyze the different types of feedback amplifiers.	2	3	3										1	3	
	CO5: Design and analyze different types of the MOS amplifiers and their frequency response by using the small signal model	2	3	3										1	3	
	CO6: Explain the condition for oscillations in oscillators and design and analyze different types of oscillators.	2	3	3										1	3	

	CO7:Design and analyze different types of power amplifiers and compare them in terms of efficiency.	2	3	3									1	3	
	CO8: Design and analyze the effects of cascading on single, double tuned amplifiers on bandwidth and explain their stability.	2	3	3									1	3	
	Average Correlation	2	3	2.62									1	3	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Pulse and Digital Circuits	CO1: design non-linear wave shaping circuits.		2	3	3	3							1	3	2
	CO2: Use diodes and transistors as switches.		2	3	1	3							1	3	1
	CO3: Design and analyze multivibrators.		2	3	2	3							1	3	3
	CO4:Design time base generators for different frequencies.		2	3	1	2							1	3	2
	CO5: Work with synchronization and frequency division circuits.		1	3	1	2							1	3	2
	CO6: Work with various sampling gates		1	3	2	1							1	3	3
	CO7: Design logic gates using diodes and transistors		1	3	1	2							1	3	3
	Average Correlation		1.6	3	1.75	2.3							1	3	2.25
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Switching Theory and logic Design	CO1: Convert numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, Gray, and BCD.	3	3	1	2								1	3	
	CO2: Simplify Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.	2	3	1	2								1	3	
	CO3: Design and analyze combinational circuits and to use standard combinational blocks to build more complex circuits.	3	3	3	2								1	3	
	CO4: Design and analyze sequential circuits and devices and to use sequential functions/building blocks to build more complex circuits.	2	3	3	2								1	3	
	Average Correlation	2.5	3	2	2								1	3	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Electro-magnetic theory and Transmission lines	CO1:Study time varying Maxwell's equations and their applications in electromagnetic problems.	3	3	3	1	1							1	3	1
	CO2:Determine the relation between time varying	1	1	1	1	1							1	3	2

	electric and magnetic field and electromotive force														
	CO3: Analyze basic transmission line parameters in phasor domain	2	2	2	2	2							1	3	2
	CO4: Use Maxwell's equations to describe the propagation of electromagnetic waves in free space	3	3	3	3	2							1	3	1
	CO 5: Show how waves propagate in dielectrics and lossy media	3	3	3	3	3							1	3	2
	CO6: Demonstrate the reflection and refraction at boundaries	2	2	2	2	2							1	3	2
	CO7: Explain the basic waveguide operation and parameters	1	1	1	1	1							1	3	1
	Average Correlation	2.14	2.14	2.14	1.84	1.71							1	3	1.57
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Pulse and Digital Circuits lab	CO 1: Implement digital circuits using flip-flops.	2								1				2	1
	CO 2: Design sampling gates.	2								1				2	1
	CO 3: Design and analyze astable multivibrator.	2								1				2	1
	CO 4: Design and analyze mono multivibrator.	2								1				2	1
	CO 5: Design and analyze bi-stable multivibrator.	2								1				2	1
	CO 6: Design and analyze Schmitt trigger.	2								1				2	1
	CO 7: Able to design UJT relaxation oscillator.	2								1				2	1
	CO 8: Design Bootstrap sweep generator.	2								1				2	1
	Average Correlation	2								1				2	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Electrical Engineering lab	CO1: Learn how to use a digital multi meter (DMM) to measure DC current, DC voltage and Verify KVL & KCL for DC circuits incorporating series and parallel resistances.	3								1				2	
	CO2: Solve problems related to RLC circuits	3								1				2	
	CO3: Plot the AC steady-state response of a series <i>RL</i> and RC circuits.	2								1				2	
	CO4: Explain the significance of Z, Y, ABCD and h-parameters, derive their relationships and solve Simple problems on Two-port networks.	3									1			2	
	CO5: Verify Network Theorems by comparing	3									1			2	

	Theoretical and experimental values.														
	CO6: calculate the critical resistance and critical speed from the characteristics and how to run the generator used prime mover.	2								1				2	
	CO7: calculate the efficiency of dc shunt motor as well as dc shunt generator and how to vary the speed of the machine corresponding load.	2								1				2	
	CO8: identify the winding on the transformers and can perform load test on single phase transformers	2								1				2	
	Average Correlation	2.5								1				2	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Electronic circuits Analysis Lab	CO1:Measure the overall frequency response of a common-emitter amplifier circuit, a voltage amplifier using N-channel JFET device in common source configuration_two-stage RC coupled common emitter amplifier with coupling capacitors.	3								1				2	
	CO2: Plot the frequency response of a Single Tuned voltage amplifier and find the resonant frequency.	3								1				2	
	CO3: Determine the frequency of oscillations - Hartley oscillator and Colpitts oscillator RC phase shift oscillator and Wein Bridge Oscillator.	2									1			2	
	CO4: Plot the frequency response of MOS amplifier.	3									1			2	
	CO5: Calculate the bandwidth of Class A power amplifier.	3									1			2	
	Average Correlation	2.38									1				2
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Control Systems Engineering	CO1:Explain the fundamentals of (feedback) control systems.	1	2												
	CO2: determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.	2	2												
	CO3: express and solve system equations in state-variable form (state variable models).	3	2												
	CO4:Determine the time and frequency-domain responses of first and second-order systems to step and	3	2												

	sinusoidal (and to some extent, ramp) inputs.														
	CO5: Determine the (absolute) stability of a closed-loop control system	2	2												
	CO6: Use root-locus technique to analyze and design control systems.	3	2												
	CO7: Determine parameters for the compensators to meet specified requirements on phase margin, SSE and speed of response.	3	2												
	Average Correlation	2.42	2												
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Computer Organization and Operating Systems	CO1: Explain the basic operation of the computer systems.	3	2												
	CO2: Explain the operations of ALU and control unit in computers.	1	2												
	CO3: Explain various methods of improving the computer performance like pipelining, MIMD systems, and cache memory utilization.	2	2												
	CO4: Have the knowledge of computer memory and various peripheral systems and their interface with the processor.	3	2												
	CO5: Know algorithms for implementing different arithmetic operations in the computer system.	3	2												
	CO6: Identify different interconnection methods for multi-processor and multi-computer systems.	3	2												
	CO7: compare the specifications given by the various computer suppliers for the products available in the computer market, at present and able to compare & select a good computer system	-	2												
	Average Correlation	2.5	2												
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Antennas and Wave Propagation	CO1: Define antenna parameters such as antenna efficiency, beam efficiency, radiation resistance etc. and explain the mechanism of radiation of an antenna.	3	3	3	1	1							1	3	1
	CO2: Analyze electric and magnetic fields of various antennas for far field and near field conditions.	1	1	1	1	1							1	3	2

	CO3:Design the various types of arrays of different antennas and explain the mechanism involved	2	2	2	2	2							1	3	1
	CO4:Analyze design parameters of fundamental antennas like Yagi-Uda, Horn antennas and helical structure and also explain their operation principle.	3	3	3	3	2							1	3	1
	CO5:Design a lens antenna and also explain the methods of measurement of antenna parameters such as gain, directivity etc.	3	3	3	3	2							1	3	2
	CO6: knowledge about the means of propagation of Electromagnetic wave i.e. free space propagation and also about frequency dependent layer selection, its respective issues for an effective transmission of information in the form of EM wave to a remote location and related issues.	3	3	3	2	1							1	3	2
	Average Correlation	2.5	2.5	2.5	2	1.5							1	3	1.5
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Electronic Measurements and Instrumentation	CO1: Describe the parameters of electronic measurement.	2	1												
	CO 2: Identify different types of electronic instruments.	3	1												
	CO3: Analyze the real applications of electronic measurement.	3	1												
	CO4: Derive the expressions for unknown parameters from known parameters.	3	1												
	CO5: Analyze the features of basic types of CROs.	3	1												
	CO6: Analyze the modern types like Digital Storage CROs.	3	1												
	CO7: Design the parameters of Transducers.		1												
	CO8: Calculate the Physical parameters like water flow, temperature, pressure.		1												
	Average Correlation	2.83	1												
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
	CO1:Analyze the basic units of an analog communication system along with the knowledge of the need for modulation.	1	1	1	1	1							1	1	1
	CO2: Learn and implement the basic analog modulation	2	2	3	2	1							2	3	2

Analog Communications	techniques like AM & DSB-SC. Also solve problems based on modulation index and power relations.															
	CO3: Illustrate and differentiate the analog modulation techniques like AM, DSB-SC, SSB & VSB and analyze the same in frequency and time domains.	3	2	3	2	1							2	3	2	
	CO4: Relate and demonstrate the Frequency Modulation and Phase Modulation –their various techniques. Also can compute numerical on deviation, Band width and spectrum parameters.	3	2	3	2	1							2	3	2	
	CO5: Compare the FM wave generation methods and to demonstrate PLL.	3	2	2	2	1							2	3	2	
	CO6: Identify the effect of noise during signal transmission in different analog modulation schemes.	3	2	2	2	2							2	3	2	
	CO7: Explore the various blocks in Transmitters and Receivers for AM and FM techniques and also the parameters related to the circuitry of the system.	3	2	2	2	1							2	3	2	
	CO8: Implement the different analog pulse modulation techniques as part of introduction to Digital Communication system.	3	2	2	2	1							2	3	2	
	Average Correlation	2.62	1.87	2.25	1.87	1.12							1.87	2.75	1.87	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Linear and Digital IC Applications	CO1: Explain the concepts of Operational Amplifier and its features and apply the concepts of Op-Amps in the design of Summing Amplifier, Subtractors, Comparators, Differentiators, Integrators and Voltage Regulators.	2	2	3		1							1	3	1	
	CO2: Analyze and design Op-Amp based circuits namely Active Filters, Waveform generators; Design and apply Astable and Mono stable multi vibrator modes using 555 Timer IC; Conceptualize Phase Locked Loop using 565 IC and explain its applications.	2	3	3		1								1	3	1
	CO3: Analyze and design DACs and ADCs using various methods of implementation.	2	3	3		1								1	3	1
	CO4: Compare different families of digital integrated circuits namely TTL and CMOS and their	2	3	3		1								1	3	2

	characteristics; Design various combinational circuits using digital ICs.														
	CO5:Design Sequential Circuits and memories using digital ICs.	2	2	3		1							1	3	2
	Average Correlation	2	2.6	3		1							1	3	1.4
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Analog Communications lab	CO1:Identify, compare and discriminate the various AM modulation and demodulation techniques using hardware and can develop the code required to verify the same using simulation software.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO2:Apply pre-emphasis and de-emphasis circuits in frequency modulation and can interpret the effect of noise on frequency modulated signal, as well can develop the code to analyze the same using MATLAB software.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO3:Calculate the deviation and modulation index of FM through calibration using hardware and conclude whether the modulated signal is a Narrow band or Wide band FM signal and also can verify the same by developing the code in MATLAB.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO4:Calculate the capture range and lock range of PLL circuit through hardware implementation and can write the program required for simulation.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO5:Reconstruct the original signal by illustrating the Sampling Theorem through hardware circuit and can prove the same using MATLAB program.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO6:Generate frequency and time division multiplexed	3	1	1	2	2		2	1	2	2	1	2	2	1

	signal and recover back the demultiplexed signals without interference using hardware. Verify the same using simulation software by developing appropriate code.														
	CO7: Implement a super heterodyne receiver using hardware and examine the AGC characteristics by relating the input and output voltages of AM signal. Prove the same using MATLAB program.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO8: Compare, discriminate and implement the different analog pulse modulation techniques (PAM, PWM, and PPM) on hardware and also can verify through simulation software.	3	1	1	2	2		2	1	2	2	1	2	2	1
	Average Correlation	1.75	1	1	2	2		2	1	2	2	1	2	2	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
IC Applications and HDL Simulation lab	CO1: Understand the basics of Op-Amp, design and implement the linear applications using IC 741 such as, Adder, Subtractor, Differentiator, Integrator, active filters, multivibrators, waveform generators, Schmitt trigger.		2	1	2	1	1	2	2	1	1	1	2	3	2
	CO2: Understand the functionality of Phase locked loops (PLL) and its applications		2	1	2	1	1	2	2	1	1	1	2	3	2
	CO3: Understand the functionality and determine the load and line regulations of various voltage regulators such as IC 723, IC 7805, IC 7809 and IC 7912		2	1	2	1	1	2	2	1	1	1	2	3	2
	CO4: Design and simulate the logic gates, combinational circuits and sequential circuits using verilog HDL on Xilinx software package		2	1	1	3	1	2	2	1	1	1	1	1	3
	Average Correlation		2	1	1.75	1.5	1	2	2	1	1	1	1.75	2.5	2.25
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Managerial Economics and Financial Analysis	CO1: Apply the managerial economics principles in various decisional areas of business organization and Estimate demand for the product by using the tools of other disciplines like operation research, psychology, anthropology etc.	2		2			2		3	1		2			
	CO2: Determine producer's equilibrium for optimum	2	2	3	2		2		3	1	1	3	2		

	productivity and Determine optimum size of the firm.														
	CO3: Identify the suitable market and suitable firm for the product and fixing price for the product by using different pricing strategies.		2	2	3	1	1		2	2	1	3	2		
	CO4: Evaluate the investment by using capital budgeting techniques.		1	2	3	1	1		2	2	1	2	2		
	CO5: understand, prepare and analyze financial statements.		1	2	2	1	1	1	2	2	1	2	2		
	Average Correlation	2	1.5	2.2	2.5	1	1.4	1	2.4	1.6	1	2.4	2		
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Human Values and Professional Ethics	CO1: It ensures students sustained happiness through identifying the essentials of human values and skills.							2	2	2	2		2		
	CO2: It facilitates a correct understanding between profession and happiness						1	2	2	2	2		2		
	CO3: It helps students understand practically the importance of trust, mutually satisfying human behavior and enriching interaction with nature.							2	2	2	2		2		
	CO4: Ability to develop appropriate technologies and management patterns to create harmony in professional and personal life						1	2	2	2	2	1	2		
	Average Correlation						1	2	2	2	2	1	2		
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2

Disaster Management	CO1: Explain about the environmental hazards and Disasters and their types	1					3							1	1	
	CO2: Explain about the Cyclonic hazards, Cumulative atmospheric hazards	1					3							1	1	
	CO3: Explain about the Chemical hazards and disasters	1					3							1	1	
	CO4: Explain about Endogenous hazards	1					3							1	1	
	Average Correlation	1					3							1	1	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Intellectual Property Rights	CO1: Explain the types of intellectual properties rights and Purpose and function of Trade marks	1												1	1	
	CO2: Explain the law of copy rights	1												1	1	
	CO3: Explain Trade secrets	1												1	1	
	CO4: Explain New developments of intellectual property	1												1	1	
	Average Correlation	1												1	1	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Digital Communications	CO1:Explain the basic elements of Digital communication Systems, SNR trade off with channel bandwidth, sampling theorem and pulse code modulation, its advanced versions	1	1	2	2								1	2	1	
	CO2:Compare different pass band digital modulation techniques like ASK, PSK etc and compute the Probability of error in each scheme and explain optimum receiver concept	2	2	2	2									1	2	1
	CO3:Calculate different parameters like power spectrum density, probability of error etc of Base Band transmission and optimum reception and analyze the eye diagrams for ASK, FSK and PSK	2	2	2	2									1	2	1
	CO4:Analyze the concepts of Information theory, Huffman coding, Shannon Fano coding etc to increase average information per bit.	1	1											1	2	1
	CO5:Generate and retrieve data using block codes, Convolutional codes and solve numerical problems on error detection and correction capabilities.	1	1	2	2									1	2	1
	CO6: Describe the different criteria in spread spectrum	1	1	1	1									1	1	1

	modulation scheme and its applications.															
	Average Correlation	1.33	1.33	1.5	1.5								1	1.83	1	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
VLSI Design	CO 1: Demonstrate the Fabrication of IC	3	2													
	CO2: Calculate the electrical properties of MOS Transistor	3	2											2	1	
	CO3: Draw the Stick Diagram and Layout of Logic Circuit.	3	2											2	1	
	CO4: Design a Logic Circuit with MOS Transistors	3	2											2	1	
	CO5: Implement Subsystems with CMOS Technology.	3	2											2	1	
	CO6: Design various forms of memories.	3	2											2	1	
	CO7: Design PAL, PLA, CPLD and FPGA	3	2											2	1	
	CO8: Distinguish the various Testing Techniques of CMOS	3	2											2	1	
	Average Correlation	3	2											2	1	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Microprocessors and Microcontrollers	CO1: Explain the architecture and modes of operation of 8086 Microprocessor	2	2	2	3								1	3	2	
	CO2: Write Assembly language program (ALPs) for 8086 Microprocessor	2	2	2	3								1	3	3	
	CO3: Design 8251, 8255 interfaces for 8086 Microprocessor.	2	2	2	3									1	3	2
	CO4: Explain the Architecture and features of 8051	2	2	2	3									1	3	2
	CO5: Design and develop ALP code for 8051 Microcontroller	2	2	2	3									1	3	3
	CO6: Explain the operation of the interrupts, timers / counters and serial communication interface for 8051 Microprocessor.	2	2	2	3									1	3	2
	Average Correlation	2	2	2	3									1	3	3
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	

Digital Signal Processing	CO1: Represent Analog and Discrete time signals in frequency domain.	3												2	1
	CO2: Calculate discrete time domain and frequency domain of signals using discrete Fourier Series and Fourier transform.	2												2	1
	CO3: Develop Fast Fourier Transform (FFT) algorithms for faster realization of signals and systems.	3												2	1
	CO4: Calculate Z-transforms for discrete time signals and system functions.	3												2	1
	CO 5: Design Digital IIR filters.	2	2											2	1
	CO 6: Design Digital FIR filters.	2	2											2	1
	CO7: Design different kinds of interpolator and decimator.	2	3											2	1
	CO8: Demonstrate the impacts of finite word length effects in filter design.	3	2											2	1
	Average Correlation	2.5	2.25												2
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Micro processors and microcontrollers lab	CO1: Design and develop ALP programs for 8086 Microprocessor for executing various requirements.	3	3	2	1					1			1	3	2
	CO2: Develop interfaces with external peripherals and I/O devices and design necessary programs for communication with them.	3	3	2	1					1			1	3	2
	CO 3: Design methods to communicate data serially.	3	3	2		1				1	1			3	1
	CO4: Write Interrupt Service Routines (ISRs) to handle different types of interrupts generated in 8086 and 8051.	3	3	2	1					1				3	2
	CO 5: Develop ALP programs for 8051 Microcontrollers.	3	3	3	1					1			1	3	3
	Average Correlation	3	3	2.75	1	1				1	1		1	3	2
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Digital signal processing lab	CO1: Generate different types of Signals using MATLAB and DSP Processor.	2	1											1	
	CO2: Plot DFT, FFT, and phase and Magnitude spectrums of various signals.	2	1											1	
	CO3: Implement low pass and high pass FIR and IIR Filters	2	1											1	

	CO 4: Generate DTMF Signals	2	1											1		
	CO 5: Explain the working of TMS320C67xx kit.	2	1											1		
	Average Correlation	2	1											1		
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Management Science	CO1: Apply the concepts & principles of management in real life industry.											3		1		
	CO2: Design & develop organization chart & structure for an enterprise.											3		1		
	CO3: Apply PPC techniques, Quality control in industry											3		1		
	CO4: Identify Marketing Mix Strategies for an enterprise.											3		1		
	CO5: Apply the concepts of HRM in Recruitment, Selection, and Training & Development.											3		1		
	CO6: Develop PERT/CPM Charts for projects of an enterprise and estimate time & cost of project.											3		1		
	CO7: Develop Mission, Objectives, Goals & strategies for an enterprise in dynamic environment.											3		1		
	CO8: Apply modern management techniques MIS, ERP, MRP, TQM, CMM, SCM, BPO, BPR, Bench Marking and Balance Score Card wherever possible.											3		1		
	Average Correlation											3		1		
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Microwave Engineering	CO1: Ability to design of microwave wave guides and its mode characteristics at various frequency bands to design communication systems.	3	3	2	2	1	2	1	1		1	1	2	2	2	
	CO2: Ability to design rectangular cavity resonators, filters and solve the problems . students are having knowledge of Microstrip lines.	3	3	2	2	2	1	1	2	1	2	2	2	2	1	
	CO3: Explain microwave coupling mechanisms, waveguide discontinuities, attenuators and phase shifters. (b)A knowledge about microwave T-Junctions, Directional coupler properties and Applications.	3	3	2	1	1	1			1	1	1	2	2	2	1
	CO4: A knowledge of ferrite materials in designing microwave components and apply s-matrix properties to	3	3	2	1	1	1	1	1		1	1	2	2	2	1

	analyze the characteristics of microwave components.														
	CO5: Analyze and interpretation of microwave oscillators (Reflex Klystron), amplifiers(Two cavity klystron) operation, bunching process, output power and efficiency.	3	3	2	1	1	1	1	1	1	1	2	2	2	2
	CO6: Analyze and interpretation of microwave slow wave structures use in designing efficient microwave oscillator(M-Type) and Amplifiers(O-Type).	3	3	2	1	1	1		1	1	1	2	2	2	2
	CO7: Explain microwave solid state devices operation, characteristics and types of devices	3	3	2	1	1	1	1	1		1	2	2	2	2
	CO8: Carry out measurement and testing of microwave physical parameters like impedance, power, VSWR, efficiency and attenuation using microwave test bench setup.	2	1	1	1	2	2	1		1	2	2	2	2	2
	Average Correlation	2.87	2.75	1.87	1.25	1.25	1.25	1	1.16	1	1.25	1.87	2	2	1.62
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Computer Networks	CO 1: Identify the different types of network topologies, protocols and enumerate the layers of the OSI and TCP/IP references model.	1	1	2									1		1
	CO 2: Identify the different types of network devices and their functions within a network.	2	1	2									1		1
	CO3: Develop the skills of Subnetting and routing algorithms.	2	1	2									1		1
	CO4: Demonstrate the principal communication protocol and internetworking which establishes the internet.	1	1	3									1		1
	CO5: Understand the working functions of UDP and TCP Protocols in internet.	3	1	3									2		1
	Average Correlation	1.8	1	2.4									1.2		1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Cellular and Mobile Communications	CO1: Explain the basic cellular mobile telephone systems (limitations, elements and evolution) and the techniques to improve the capacity of the system.	2	2	1	2		1	3	2				2	2	
	CO2: Solve for the propagation attenuation in the mobile environment and explain the causes of long-term	3	2	2	1			1					1	1	

	and short term fading, and various diversity techniques to overcome different fading effects at the mobile and cellsite.														
	CO3: Distinguish between the co-channel and non-cochannel interferences. Determine the desired C/I, methods/techniques/analytic solutions, antenna parameters/patterns, antenna configurations and type of antennas (at mobile and cellsite) to reduce their effects.	3	3	2	3			1	2				1	2	1
	CO4: Derive the expression to obtain the path loss from propagation models for mobile signals in different conditions.	3	3	1	2			2					1	1	1
	CO5: Demonstrate the concept of frequency management and explain the channel assignment schemes and different Handoff strategies to overcome the situations of interference and call drops in the system.	2	2	1	1		2	2	2				1	2	
	Average Correlation	2.6	2.4	1.4	1.8		1.5	1.8	2				1.2	1.6	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Digital Image Processing	CO1: Explain the concepts of Image fundamentals and different types of Image Transforms Sampling and Quantization, relationship between pixels	1	2		1	2							2	3	3
	CO2: Explain the Image enhancement in spatial domain and Histogram manipulation.	1	2	3	2	3	1	1					2	3	3
	CO3: Explain Image enhancement in frequency domain.	1	2	3	2	3	1	1					2	3	3
	CO4: Explain Image restoration techniques.	1	2	3	2	3	1	1					2	3	3
	CO5: Explain image segmentation techniques.	1	2	3	2	3	1	1					2	3	3
	CO6: Explain Morphological image processing	1	2	3	2	3	1	1					2	3	3
	CO 7: Explain image compression techniques.	1	2	3	2	3	1	1					2	3	3
	Average Correlation	1	2	2.5	1.8	2.8	1	0.8					2	3	3
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Multimedia and Signal Coding	CO1: Explain the concepts of multimedia signal processing and multimedia compression	3	2											2	
	CO2: Explain the existing multimedia compression and communication standards.	3	2											2	

	CO3:Apply knowledge to solve specific multimedia problems.	3	2											2	
	Average Correlation	3	2											2	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Object Oriented Programming	CO1: Explain OOP concepts and Basic JAVA Programming	3	2											2	
	CO2: Apply knowledge of OOP and JAVA to solve real world problems.	3	2											2	
	Average Correlation	3	2											2	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Television Engineering	CO1: Explain the basic function of picture tube and TV standards	2	1											1	
	CO2: Distinguish between monochrome and colour Television transmitters and Receivers	2	1											1	
	CO3: Analyze and evaluate the NTSC and PAL colour systems	2	1											1	
	Average Correlation	2	1											1	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Optical Communications	CO1: Explain the basic concepts and advantages of fiber optics communication.	2	1											1	
	CO2: Make theoretical calculations for coupling light efficiently into optical fibers using lens coupling.	2	1											1	
	CO3: Calculate pulse spread in optical fiber and use it to calculate the bandwidth and data rate of an optical fiber link.	2	1											1	
	CO4: Solve the wave equation and apply it in the analysis of symmetric slab waveguide.	2	1											1	

	CO5: Analyze the concept of source to fiber power launching	2	1											1	
	CO 6: Explain Fiber Splicing and Splicing techniques	2	1											1	
	CO7: Explain the concept and conditions for light guidance.	2	1											1	
	CO8: Calculate the number of guided modes, the condition for single and multimode operation of optical waveguides, etc.	2	1											1	
	Average Correlation	2	1											1	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Embedded System Design	CO1: Design a basic Embedded System.	1	1	3	2									3	
	CO2: Comprehend basics of OS and RTOS.	1	1	3										3	
	CO3: Analyze the different types of memories and interfacing to external world in relation to Embedded Systems.	1	1	3	2									3	
	CO4: Design Embedded firmware based on various approaches.	1	1	3	2									3	
	Average Correlation	1	1	3	2									3	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Advanced Communication Skills Lab	CO1: Explain the importance of sound vocabulary and its proper use contextually					2	1							2	
	CO 2: Write effective English					2	1							2	
	CO 3: Speak effectively					2	1							2	
	Average Correlation					2	1							2	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Microwave Engineering and Digital Communication Lab	CO1: Measure and Plot the characteristics of Klystron and Gunn oscillators	3	2							2			1	3	2
	CO2: Measure various parameters pertaining to Rectangular waveguide	3	2							2			1	3	2
	CO3: Setup Microwave bench and carryout various measurements	3	2							2			1	3	2
	CO4: Perform experiments of various types of digital modulation techniques	3	2							2			1	3	2
	Average Correlation	3	2								2			1	3

Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Satellite Communications	CO1: Explain the basic concepts and frequency allocations for satellite communications	1	2	3	1	1							1	2	1	
	CO2: Explain orbital mechanics, launch vehicles and launchers	1	2	3	1	1							1	2	2	
	CO3: Design satellite links for specified C/N with system design examples	2	3	3	2	2								1	3	1
	CO4: Explain satellite sub-systems like telemetry, tracking, command and monitoring power systems	2	3	3	1	1								1	2	1
	CO5: Explain various multiple access systems	3	3	3	1	3								1	3	2
	Average Correlation	1.8	2.6	3	1.2	1.6								1	2.4	1.4
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Biomedical Instrumentation	CO1: Explain the basic concepts of Bio-medical instrumentation	2	2		2	2							1	3	1	
	CO2: Explain bio-electrodes and activities of heart	2	2		2	1							1	2	1	
	CO3: Analyze ECG,EEG and EMG recordings for disorder identification	2	2		2	3							1	3	2	
	Average Correlation	2	2		2	2							1	2.6	1.33	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Artificial Neural Networks	CO1: Explain the function of artificial neural networks of the Back-prop, Hopfield and SOM type	3	2										1	2	1	
	CO2: Explain the difference between supervised and unsupervised learning	3	2										1	2	1	
	CO 3: Derive the ANN algorithms dealt with the course	3	2										1	2	1	
	CO4: Implement ANN algorithms to achieve signal processing, optimization, classification and process modeling	3	2										1	2	1	
	Average Correlation	3	2										1	2	1	
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
Telecommunication Switching System and Networks	CO1: Explain the main concepts of telecommunication network design	3	2										1	2	1	
	CO2: Analyze and evaluate fundamental telecommunication traffic models	3	2										1	2	1	
	CO 3: Explain the basic modem signaling system	3	2										1	2	1	

	CO4: Solve traditional interconnection switching system design problems and packet switching	3	2										1	2	1
	Average Correlation	3	2										1	2	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Radar Systems	CO1: Demonstrate the basic principle of RADAR System.	3	3	3	2	2						1	1	3	1
	CO2: Solve the RADAR Equation and to calculate Transmitter power.	3	3	3	2	1						1	1	3	2
	CO3: Analyze the working principle of CW and Frequency Modulated Radar.	3	3		2	2						1	1	3	2
	CO4: Draw the block diagram of FM-CW Radar and also calculate Measurement errors.	3	1		2	1						1	1		
	CO5: Analyze the principle of each and every block of MTI and Pulse Doppler Radar.	3	1		2	2						1	1	3	2
	CO6: Analyze Tracking Radar principle.	3	1		2	2						1	1	3	2
	CO7: Demonstrate the basic principle of Receiver and also extraction of signal in Noise.	3	1		2							1	1	3	1
	CO 8: Calculate Noise Figure and Noise Temperature in Radar Receivers and can describe antennas used for Radars.	3	1	3	2							1	1	3	2
	Average Correlation	3	1.75	3	2	1.66						1	1	3	1.71
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Network Security	CO1: Explain network security and its changing character	3	2										1	2	1
	CO2: Illustrate conventional encryption and cryptography techniques	3	2										1	2	1
	CO3: Analyze issues related to network IP security	3	2										1	2	1
	CO4: Investigate and explain web security requirements	3	2										1	2	1
	Average Correlation	3	2										1	2	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Wireless Communications and Networks	CO 1:To analyze the performance of different cellular network generations and to understand the basic cellular system, frequency reuse, channel assignment strategies, handoff strategies and interference.	1	3	3	1	3	1	1	3	1	1	3	3	3	2

	CO 2:To analyze the Indoor and outdoor mobile radio channel models and estimate the large scale path loss during mobile radio propagation.	1	3	1	1	3	1	2	1	1	1	1	2	3	2
	CO 3: To analyze small scale fading effects and multipath effect during mobile radio propagation.	1	3	1	1	3	1	1	2	1	1	3	3	3	2
	CO 4: To understand the fundamentals of Equalization and Diversity techniques.	1	3	1	1	3	1	2	1	1	1	3	3	3	2
	CO 5: To understand the evolution of the wan industry, wireless home networking IEEE 802.11,the Physical layer.	1	3	2	1	3	1	1	2	1	1	3	3	3	2
	Average Correlation	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Digital Signal Processors and Architectures	CO1: Distinguish between DSP Processors and General Purpose Processors.	2	2	3									1	3	1
	CO2: Explain various architectures of TMS320C54xx, ADSP 2100 and Blackfin Processors.	2	2	3									1	3	1
	CO3: Design and interfacing techniques for memory to programmable DSP devices.	2	2	3									1	3	1
	CO4: Interface I/O peripherals for programmable DSP devices	2	2	3									1	3	1
	Average Correlation	2	2	3									1	3	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
RF Circuit Design	CO1: Explore fundamental RF Circuit and System Design Skills	3	2											2	1
	CO2: Explain the basic transmission line theory, Single and Multiport networks, RF Component modeling	3	2											2	1
	CO3: Design matching and biasing networks and RF transistor amplifiers	3	2											2	1
	Average Correlation	3	2											2	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Industry Oriented Mini Project	CO1: Identify the literature survey	3											1	3	2
	CO2: Do the formulation of problem/ project	3	3	3		3							1	3	2
	CO3: Do Mathematical modeling	3	3	3		3							1	3	2
	CO4: Do Programs in MATLAB/ PSPICE/ VHDL/ VERILOG/ EMBEDDED C.	3	3	3		3							1	3	2

	CO5: Do compilation / simulation & synthesize	3	2	2	3	3							1	3	2
	CO6: Do the fabrication/assemble/load	3	3	3		3				3			1	3	2
	CO7: Do testing	3	3	3		3					3		1	3	2
	CO8 : Write thesis	3		3							3		1	3	2
	Average Correlation	3	2.1	2.5	3	3				3	3		1	3	2
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Seminar	CO1: Identify the field on which they have to present.	2	2		1		1	1		2			2	2	1
	CO2: Do the survey on the latest developments in that field.	2	2		1		1	1		2			2	2	1
	CO3: Gather the data related to the topic selected.	2	2		1		1	1		2			2	2	1
	CO4: Sort the data on what to present.	2	2		1		1	1		2			2	2	1
	CO5: List out the books referred.	2	2		1		1	1		2			2	2	1
	CO6: List out the websites referred.	2	2		1		1	1		2			2	2	1
	CO7: Prepare the power point presentation on the topic selected.	2	2		1		1	1		2			2	2	1
	CO8: Prepare the report of the technical seminar on the topic selected.	2	2		1		1	1		2			2	2	1
	Average correlation	2	2		1		1	1		2			2	2	1
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Major Project	CO1: Apply fundamental concepts of engineering	3								3			1	3	2
	CO2: Identify and formulate of the problem	3	3	3		3				3			1	3	2
	CO3:Design as per the requirements	3	3	3		3				3			1	3	2
	CO4:Simulate by using MATLAB/ PSPICE/ VHDL/ VERILOG/ EMBEDDED C	3	3	3		3				3			1	3	2
	CO5: Fabricate ,assemble , compile and synthesize	3	2	2	3	3				3			1	3	2
	CO6: Work individual and with team	3	3	3		3				3			1	3	2
	CO7: Test and demonstrate	3	3	3		3				3	3		1	3	2
	CO8:Write thesis	3		3						3	3		1	3	2
	Average Correlation	3	2.1	2.5	3	3				3	3		1	3	2
Title of the Course	Course Outcomes	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Comprehensive Viva	CO1: Analyze the concepts in the core areas of Communication Systems, analog & digital Electronics, Microprocessors and Signal Processing	3	2	1			1			3					
	Average Correlation	3	2	1			1			3					

CO - PO Mapping for all Courses - R09 Curriculum of JNTUH

Course - PO matrix of all courses for 2011-15 and 2012-16 Batches (R09 JNTUH)

Course Code	Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	English	-	-	-	2.67	-	1.00	3.00	1.00	2.67	2.67	-	1.00	-	-
C102	Mathematics-I	3.00	2.00	1.40	-	-	1.00	-	-	-	-	-	2.00	1.00	-
C103	Mathematical Methods	3.00	2.00	1.40	-	-	1.00	-	-	-	-	-	2.00	1.00	-
C104	Engineering Physics	2.00	2.00	-	-	-	-	-	-	1.00	-	-	1.00	1.00	-
C105	Engineering Chemistry	2.00	1.00	1.00	-	-	-	-	1.00	-	-	-	-	1.00	1.00
C106	Computer Programming and Data Structures	2.00	-	-	-	-	-	-	-	-	-	-	1.00	1.00	-
C107	Engineering Drawing	2.00	1.00	1.00	-	-	-	-	-	-	-	-	1.00	-	-
C108	Computer Programming lab	2.00	-	-	-	-	-	-	-	-	-	-	2.00	-	-
C109	Engineering Physics/ Engineering Chemistry lab	2.00	2.00	1.00	-	-	-	-	1.00	-	-	-	-	-	-
C110	English Language Communication Skills lab	-	-	-	1.00	-	-	2.00	-	-	-	-	-	-	-
C111	IT Workshop / Engineering Workshop	2.00	-	-	-	-	-	-	-	1.00	-	-	-	-	-

C201	Mathematics-III	3.00	1.75	-	-	-	-	-	-	-	-	-	-	-	-
C202	Probability Theory and Stochastic Processes	2.00	3.00	2.40	-	-	-	-	-	-	-	-	1.00	3.00	-
C203	Environmental Studies	2.40	-	-	-	-	-	3.00	-	-	-	-	-	-	-
C204	Electrical circuits	2.80	2.40	1.60	1.40	1.00	1.00	-	-	-	-	1.00	-	3.00	1.00
C205	Electronic Devices and Circuits	2.33	2.17	2.06	1.16	-	-	-	-	-	-	-	1.00	2.00	1.00
C206	Signals and Systems	2.75	1.00	2.87	-	-	-	-	-	-	-	-	1.87	3.00	-
C207	Electronic Devices and Circuits Lab	1.87	-	-	-	-	-	-	-	-	-	-	-	2.00	2.00
C208	Basic Simulation lab	1.87	2.00	2.25	2.37	3.00	-	-	-	-	-	-	1.00	3.00	3.00
C209	Principles of Electrical Engineering	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	-
C210	Electronic Circuit Analysis	2.00	3.00	2.62	-	-	-	-	-	-	-	-	1.00	3.00	-
C211	Pulse and Digital Circuits		1.60	3.00	1.75	2.30	-	-	-	-	-	-	1.00	3.00	2.25
C212	Switching Theory and Logic Design	2.50	3.00	2.00	2.00	-	-	-	-	-	-	-	1.00	3.00	-
C213	Electro-magnetic theory and Transmission lines	2.14	2.14	2.14	1.84	1.71	-	-	-	-	-	-	1.00	3.00	1.57
C214	Electrical Engineering Lab	2.00	3.00	3.00	1.00	-	-	-	-	1.00	-	-	2.00	3.00	3.00
C215	Electronic Circuit Analysis Lab	2.38	-	-	-	-	-	-	-	1.00	-	-	-	2.00	-
C216	Pulse and Digital Circuit Lab	2.38	-	-	-	-	-	-	-	1.00	-	-	-	2.00	-
C301	Control Systems Engineering	2.42	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C302	Computer Organization	2.50	2.00	-	-	-	-	-	-	-	-	-	-	-	-
C303	Antennas and Wave Propagation	2.50	2.50	2.50	2.00	1.50	-	-	-	-	-	-	1.00	3.00	1.50
C304	Electronic Measurements and Instrumentation	2.83	1.00	-	-	-	-	-	-	-	-	-	-	-	-
C305	Analog Communications	2.62	1.87	2.25	1.87	1.12	-	-	-	-	-	-	1.87	2.75	1.87
C306	IC Applications	2.00	2.60	3.00	-	1.00	-	-	-	-	-	-	1.00	3.00	1.40
C307	Analog Communications Lab	1.75	1.00	1.00	2.00	2.00	-	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
C308	IC Applications Lab		2.00	1.00	1.75	1.50	1.00	2.00	2.00	1.00	1.00	1.00	1.75	2.50	2.25
C309	Managerial Economics and Financial Analysis	2.00	1.50	2.20	2.50	1.00	1.40	1.00	2.40	1.60	1.00	2.40	2.00	-	-
C310	Operating Systems	2.00	2.00	2.00	3.00	-	-	-	-	-	-	-	1.00	3.00	3.00
C311	Object Oriented Programming	2.00	2.00	2.00	3.00	-	-	-	-	-	-	-	1.00	3.00	3.00
C312	NANO Technology	2.00	2.00	2.00	3.00	-	-	-	-	-	-	-	1.00	3.00	3.00
C313	Digital Communications	1.33	1.33	1.50	1.50	-	-	-	-	-	-	-	1.00	1.83	1.00
C314	Microprocessors and Microcontrollers	2.00	2.00	2.00	3.00	-	-	-	-	-	-	-	1.00	3.00	3.00
C315	Digital Signal Processing	2.50	2.25	-	-	-	-	-	-	-	-	-	-	2.00	1.00
C316	Microprocessors and Microcontrollers lab	3.00	3.00	2.75	1.00	1.00	-	-	-	3.00	1.00	-	1.00	3.00	2.00
C317	Digital signal processing Lab	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	-
C318	Advanced English Communication Skills Lab	-	-	-	-	2.00	1.00	-	-	-	-	-	-	2.00	-
C401	Management Science	-	-	-	-	-	-	-	-	-	-	3.00	-	1.00	-

C402	VLSI Design	3.00	2.00	-	-	-	-	-	-	-	-	-	-	2.00	1.00
C403	Microwave Engineering	2.87	2.75	1.87	1.25	1.25	1.25	1.00	1.16	1.00	1.25	1.87	2.00	2.00	1.62
C404	Computer Networks	1.80	1.00	2.40	-	-	-	-	-	-	-	-	1.20	-	1.00
C405	EMI/EMC	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C406	DSP Processors & Architecture	2.00	2.00	3.00	-	-	-	-	-	-	-	-	1.00	3.00	1.00
C407	Telecommunication Switching Systems	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C408	Digital Image Processing	1.00	2.00	2.50	1.80	2.80	1.00	0.80	-	-	-	-	2.00	3.00	3.00
C409	Optical Communications	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	-
C410	Embedded Systems	3.00	3.00	2.75	1.00	1.00	-	-	-	3.00	1.00	-	1.00	3.00	2.00
C411	Television Engineering	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	-
C412	Multimedia and Signal Coding	3.00	2.00	-	-	-	-	-	-	-	-	-	-	2.00	-
C413	e-CAD and VLSI lab	3.00	3.00	2.75	1.00	1.00	-	-	-	3.00	1.00	-	1.00	3.00	2.00
C414	Microwave Engineering and Digital Communications lab	3.00	2.00	-	-	-	-	-	-	2.00	-	-	1.00	3.00	2.00
C415	Cellular and Mobile Communications	2.00	3.00	2.00	1.00	1.00	-	-	-	-	-	-	1.00	1.60	1.00
C416	Satellite Communications	1.80	2.60	3.00	1.20	1.60	-	-	-	-	-	-	1.00	2.40	1.40
C417	Biomedical Instrumentation	2.00	2.00	-	2.00	2.00						-	1.00	2.60	1.33
C418	Artificial Neural Networks	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C419	Internetworking	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C420	Radar Systems	3.00	1.75	3.00	2.00	1.66	-	-	-	-	-	1.00	1.00	3.00	1.71
C421	Spread Spectrum Communications	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C422	Network Security	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C423	RF Circuit Design	3.00	2.00	-	-	-	-	-	-	-	-	-		2.00	1.00
C424	Wireless communications & Networks	1.00	3.00	1.60	1.00	3.00	1.00	1.40	1.80	1.00	1.00	2.60	2.80	3.00	2.80
C425	Digital Design through Verilog HDL	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C426	Pattern Recognition	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C427	Industry Oriented Mini Project	3.00	2.10	2.50	3.00	3.00	-	-	-	3.00	3.00	-	1.00	3.00	2.00
C429	Seminar	2.00	2.00	-	1.00		1.00	1.00	-	2.00		-	2.00	2.00	1.00
C430	Project Work	3.00	2.10	2.50	3.00	3.00	-	-	-	3.00	3.00	-	1.00	3.00	2.00
C431	Comprehensive Viva	3.00	2.00	1.00	-	-	1.00	-	-	3.00	-	-	-	-	-
	Average correlation strength (out of 3) - PO and PSO wise	2.39	2.00	2.11	1.87	1.79	1.09	1.73	1.48	1.91	1.63	1.73	1.27	2.27	1.66
	Average correlation strength (in terms of Percentage) - PO and PSO wise	79.68	66.57	70.18	62.35	59.76	36.28	57.58	49.48	63.63	54.30	57.79	42.28	75.78	55.33
	Level of contribution of the curriculum - PO and PSO wise	H	M	H	M	M	L	M	L	M	M	M	L	H	M

Note: Contribution of Course component of 70% or more is taken as **HIGH LEVEL** and 50% to 69% contribution is taken as **MODERATE LEVEL** while less than 50% of contribution is construed as **LOW LEVEL**

S. No	Curriculum Component Level	Pos	PSOs	Remarks
1	HIGH LEVEL	1,3	1	No specific action is required
2	MODERATE LEVEL	2, 4,5,7,9,10,11	2	Suitable measures have been taken by way of conducting guest lectures, workshops, training sessions, value added courses/events and others to fill the curricular gaps.
3	LOW LEVEL	6, 8, 12		

Percentage Contribution of the Curriculum - POs and PSOs wise	POs												PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
	79.68	66.57	70.2	62.4	59.76	36.3	57.6	49.5	63.63	54.3	57.79	42.28	75.78	55.33

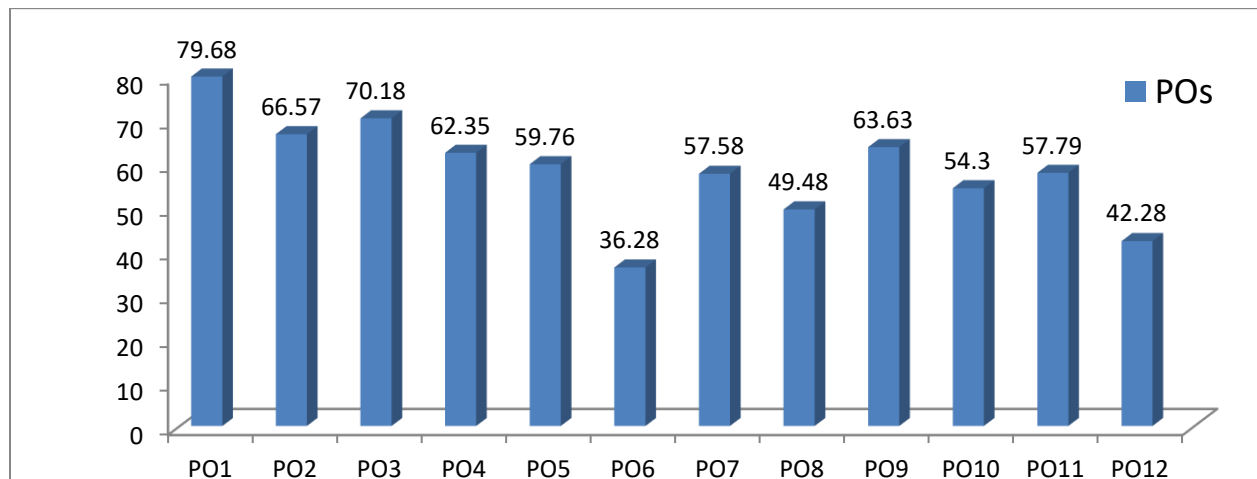


Fig Percentage Contribution of Curriculum - PO wise

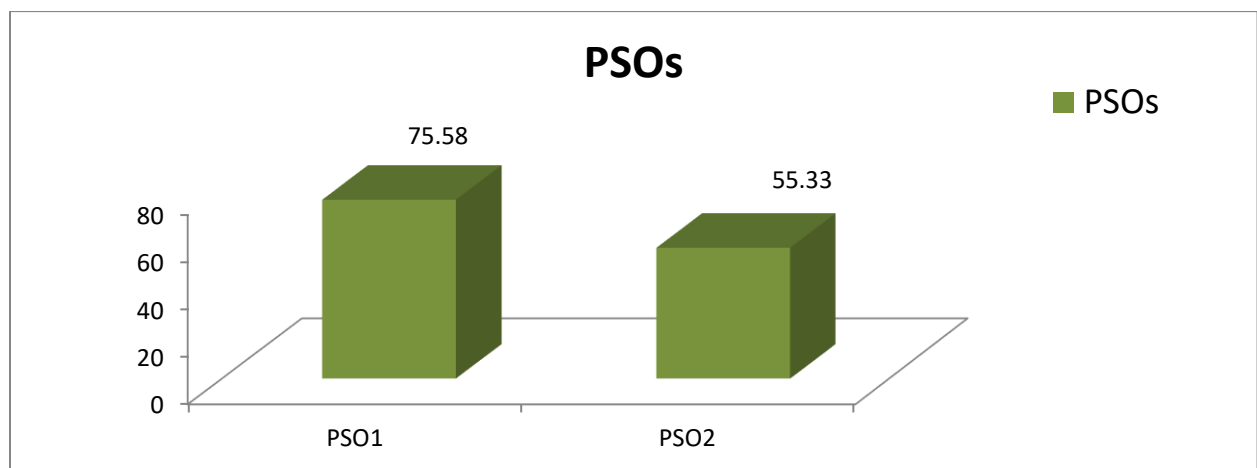


Fig Percentage Contribution of Curriculum - PSO wise

PROCEDURE FOR MEASURING THE COs ATTAINMENT (JNTUH-R09)

For measuring the attainments of COs of a theory course, the targets for the attainment are to be fixed as indicated below:

- **Mid Paper Subjective:** 60% of maximum marks (15 marks out of 25)
- **Assignments and Tutorials** (if any): 60% of maximum marks (3 marks out of 5)
- **Mid Paper Objective :** Average Marks obtained
- **Semester End Examination:** Average Marks obtained subject to a minimum of 26 marks

The attainment levels are to be fixed using the above targets as follows:

Semester End Exam & Objective	
Target is the Average Marks Obtained	
Level 1	If 40% to 49% of Students attain the Average Marks
Level 2	If 50% to 59% of Students attain the Average Marks
Level 3	If more than 59% of Students attain the Average Marks

Mid-term Exams – Subjective and Assignments	
Target is 60% of Max Marks	
Level 1	If 60% to 69% of students attain the target
Level 2	If 70% to 79% of students attain the target
Level 3	If more than 80% of students attain the target

1. In measuring the overall course attainment,
 - 75% of weightage should be given for the Direct measurement that includes attainments in mid-term examinations (both subjective and objective), semester end examinations, assignments, tutorials
 - 25% of weightage for Indirect measurement that includes Students' online feedback on TLP (15% weightage) and Course End Survey (10% weightage).
2. For determining the Direct measurement
 - 60% weightage should be given for the Semester End Examination and
 - 40% weightage for the internal marks that includes
 - Mid-term examinations subjective (20%),
 - mid-term examinations objective (10%),
 - Assignments (5%) and
 - Tutorials (5%).
 - In the absence of tutorials, 10% of weightage should be given to Assignments.

3. Both mid -1 and mid -2 should be considered together in measuring the attainment levels.

Direct Attainment of CO = 0.2* Mid-term Subjective + 0.1* Mid-term Objective + 0.05* Assignment +

0.05* Tutorial + 0.6* End Sem. Exam

Indirect Attainment of CO = 0.4* Course End Survey + 0.6* Feedback on TLP

Overall CO Attainment = 0.75* Direct Attainment Level + 0.25* Indirect Attainment Level

4. In case of labs, 60% of Internal marks and average of External marks are considered for attainment.

Direct Attainment of CO = 0.4* Mid-term Exam + 0.6* End Sem Exam

Indirect Attainment of CO = 0.4* Course End Survey + 0.6* Feedback on TLP

Overall CO Attainment = 0.75* Direct Attainment Level + 0.25* Indirect Attainment Level

Calculation of POs Attainment

1. In measuring the attainment level of each PO,
 - 75% of weightage should be given for the Direct attainment of that PO obtained in terms of Levels 1,2 and 3 of all the courses related to that PO and
 - 25% of weightage for Indirect measurement that includes
 - Exit feedback on POs (15% weightage) and
 - Alumni Survey on POs (10% weightage).
2. For calculating the indirect attainment levels of POs, graduate exit feedback on POs (15% weightage) and Alumni feedback on POs (10% weightage), the following criteria is adopted:

Attainment Levels for Measuring Indirect attainment of PO

Level 1 If attainment is 70% to 79%

Level 2 If attainment is 80% to 89%

Level 3 If attainment is more than 90%

3. In measuring the attainment level of each PEO,
 - 75% of weightage should be given for the Direct attainment of that PEO obtained in terms of Levels 1,2 and 3 of all the POs related to that PEO and
 - 25% of weightage for Indirect measurement that includes
 - Alumni feedback on PEOs (10% weightage),
 - Employers feedback on PEOs (10% weightage) and
 - Parents feedback on PEOs (5% weightage).
4. For calculating the indirect attainment levels of PEOs, Alumni feedback on PEOs (10% weightage), Employers feedback on PEOs (10% weightage) and Parents feedback on PEOs (5% weightage), the following criteria is adopted:

Attainment Levels for Measuring Indirect attainment of PO

Level 1 If attainment is 70% to 79%

Level 2 If attainment is 80% to 89%

Level 3 If attainment is more than 90%

Course wise attainment of all Courses of 2011-15

2011-2015

I YEAR

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
English	3	2	2.4	3	3	3	2.6
Mathematics-I	3	1	1.8	3	3	3	2.1
Mathematical Methods	3	1	1.8	3	3	3	2.1
Engineering Physics	3	2	2.4	3	3	3	2.6
Engineering Chemistry	3	1	1.8	3	3	3	2.1
Computer Programming and Data Structures	3	3	3	3	3	3	3
Engineering Drawing	3	2	2.4	3	3	3	2.6
Computer Programming lab	3	2	2.4	3	3	3	2.6
Engineering Physics/ Engineering Chemistry lab	3	2	2.4	3	3	3	2.6
English Language Communication Skills lab	3	2	2.4	3	3	3	2.6
IT Workshop / Engineering Workshop	3	2	2.4	3	3	3	2.6

II-I

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Mathematics III	3	1	1.8	3	3	3	2.1
Probability Theory and Stochastic Process	3	1	1.8	3	3	3	2.1
Environmental Science	3	2	2.4	3	3	3	2.6
Electrical Circuits	3	3	3	3	3	3	3
Electronic Devices and Circuits	3	1	1.8	3	3	3	2.1
Signals and Systems	3	2	2.4	3	3	3	2.6
Electronic Devices and Circuits Lab	3	3	3	3	3	3	3
Basic Simulation Lab	3	3	3	3	3	3	3

II-II

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Principles of Electrical Engineering	3	2	2.4	3	3	3	2.6
Electronic Circuit Analysis	3	2	2.4	3	3	3	2.6
Pulse and Digital Circuits	3	2	2.4	3	3	3	2.6
Switching Theory and Logic Design	1	2	1.6	3	3	3	2.0
Electro-magnetic theory and Transmission lines	1	2	1.6	3	3	3	2.0
Electrical Engineering Lab	3	3	3	3	3	3	3
Electronic Circuit Analysis Lab	3	2	2.4	3	3	3	2.6
Pulse and Digital Circuits Lab	3	3	3	3	3	3	3

III-I

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Control Systems Engineering	3	2	2.4	3	3	3	2.6
Computer Organization	3	3	3	3	3	3	3
Antennas and Wave Propagation	3	2	2.4	3	3	3	2.6
Electronic Measurements and Instrumentation	3	2	2.4	3	3	3	2.6
Analog Communications	3	2	2.4	3	3	3	2.6
IC Applications	1	2	1.6	3	3	3	2.0
Analog Communications Lab	3	3	3	3	3	3	3
IC Applications Lab	3	3	3	3	3	3	3

III-II

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Managerial Economics and Financial Analysis	3	2	2.4	3	3	3	2.55
Operating Systems	3	1	1.8	3	3	3	2.1

Digital Communications	3	2	2.4	3	3	3	2.6
Microprocessors and Microcontrollers	2	2	2	3	3	3	2.3
Digital Signal Processing	3	2	2.4	3	3	3	2.6
Microprocessors and Microcontrollers lab	3	2	2.4	3	3	3	2.6
Digital signal processing Lab	3	3	3	3	3	3	3
Advanced English Communication Skills Lab	3	2	2.4	3	3	3	2.6

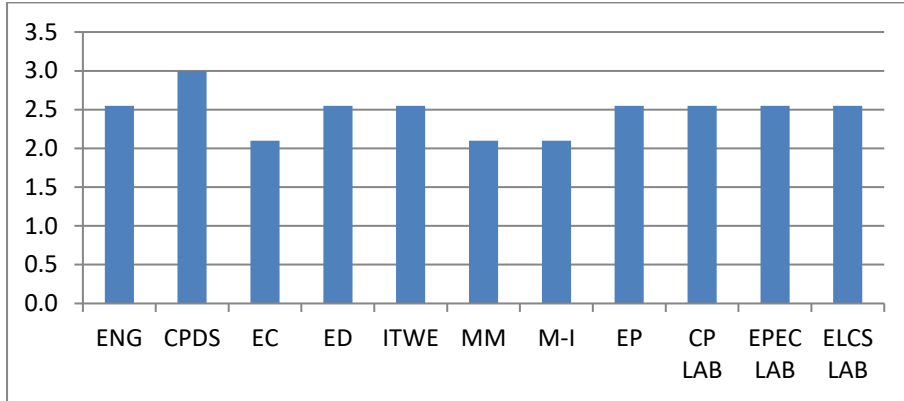
IV-I

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Management Science	3	2	2.4	3	3	3	2.6
VLSI Design	3	1	1.8	3	3	3	2.1
Microwave Engineering	3	2	2.4	2	3	2.4	2.4
Computer Networks	3	2	2.4	3	3	3	2.6
Digital Image Processing	3	2	2.4	3	3	3	2.6
Embedded Systems	3	2	2.4	3	3	3	2.6
E-CAD and VLSI lab	3	3	3	3	3	3	3
Microwave Engineering and Digital Communications lab	3	3	3	3	3	3	3

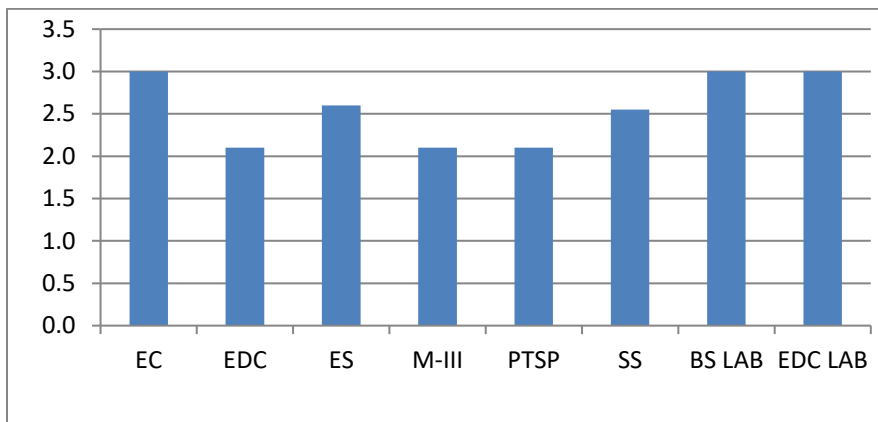
IV-II

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Cellular and Mobile Communications	3	2	2.4	3	3	3	2.6
Radar Systems	2	1	1.4	3	3	3	1.8
Wireless communications & Networks	2	2	2	3	3	3	2.3
Industry Oriented Mini Project	-	2	2	-	-	-	2
Seminar	3	-	3	-	-	-	3
Project Work	3	3	3	-	-	-	3
Comprehensive Viva	-	1	1	-	-	-	1

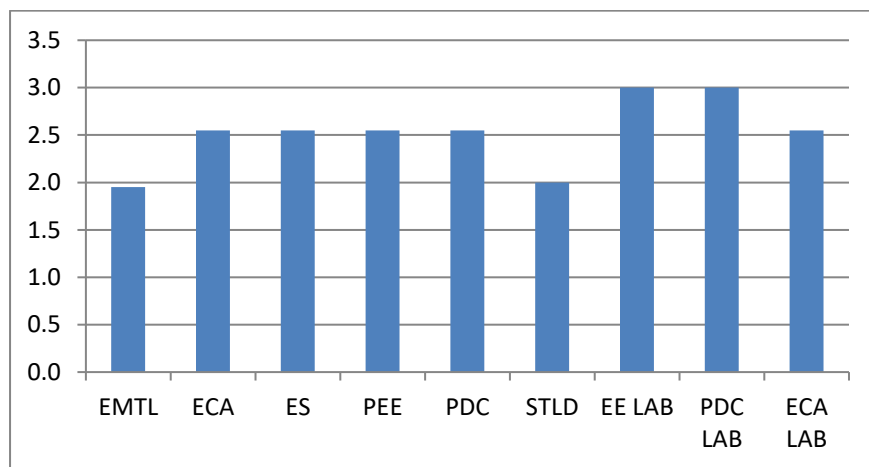
I Year



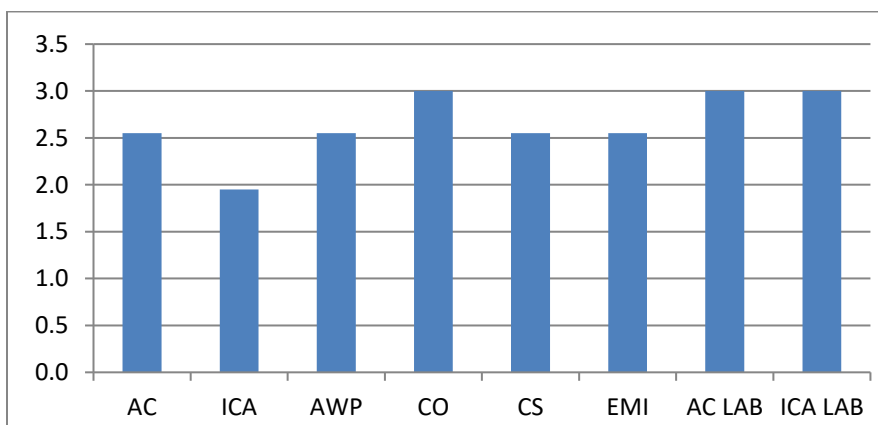
II-I



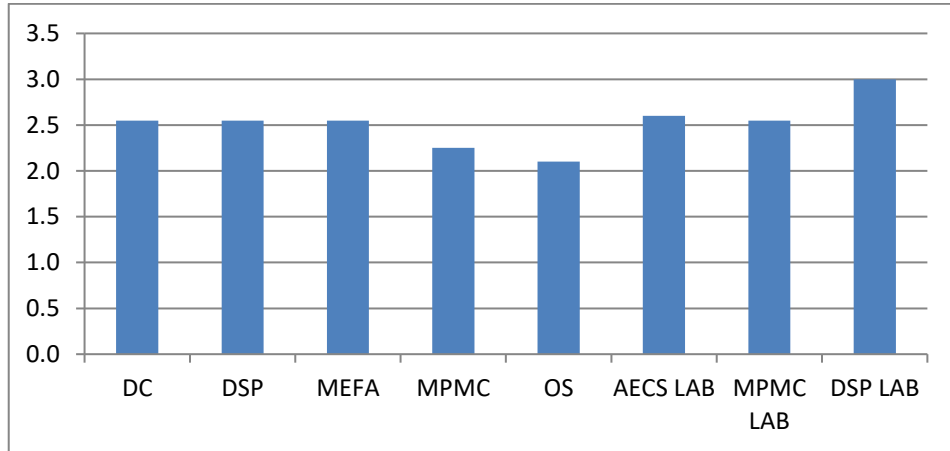
II-II



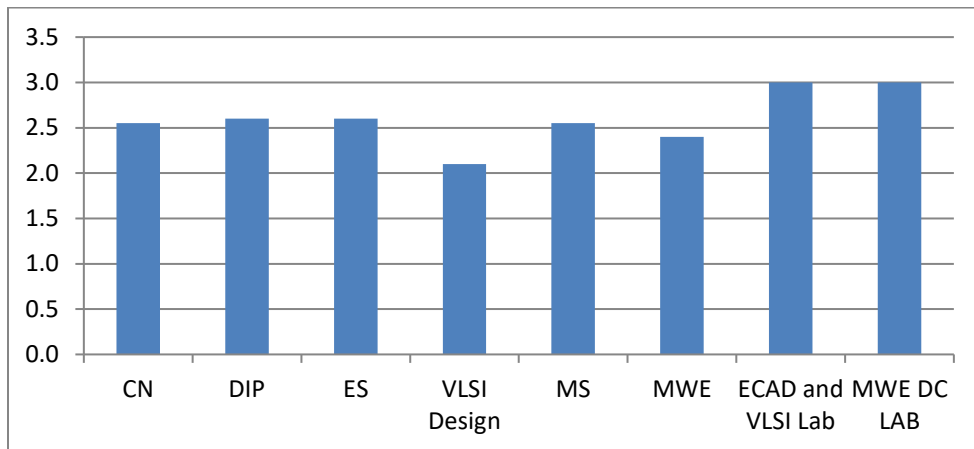
III-I



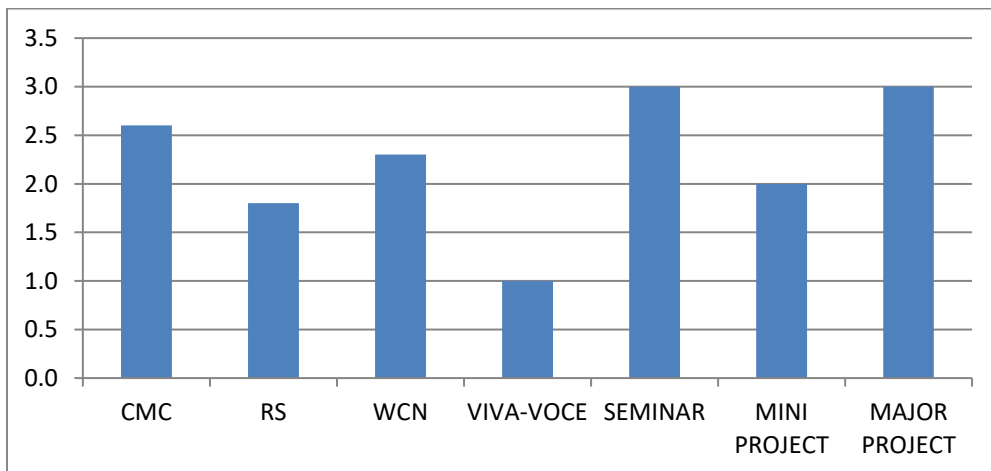
III-II



IV-I



IV-II



GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

R09 (JNTUH) - POs and PSOs attainment for 2011-15 Batch

2011-2015

Code	Name of the Course	Pos												PSOs	
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
51001	English				2.7		1	3	1	2.7	2.7		1		
51002	Mathematics-I	3	2	1.4			1						2	1	
51003	Mathematical Methods	3	2	1.4			1						2	1	
51004	Engineering Physics	2	2							1			1	1	
51005	Engineering Chemistry	2	1	1										1	1
51006	Computer Programming and Data Structures	2.33	2	1									1	1.33	1
51007	Engineering Drawing	2	1	1									1		
51616	Computer Programming lab	2											2		
51617	Engineering Physics/ Engineering Chemistry lab	2	2	1											
51618	English Language Communication Skills lab				1						2				
51619	IT Workshop / Engineering	2											1		

POs												PSOs		CO
PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
			2.3		0.9	2.6	0.9	2.3	2.3		0.9			2.6
2.1	1.4	1.0			0.7						1.4	0.7		2.1
2.1	1.4	1.0			0.7						1.4	0.7		2.1
1.7	1.7							0.9			0.9	0.9		2.6
1.4	0.7	0.7					0.7					0.7	0.7	2.1
2.3	2.0	1.0									1.0	1.3	1.0	3
1.7	0.9	0.9									0.9			2.6
1.7											1.7			2.6
1.7	1.7	0.9					0.9							2.6
			0.9							1.7				2.6
1.7								0.9						2.6

	Workshop														
53007	Mathematics-III	3	1.8												
53019	Probability Theory and Stochastic Processes	2	3	2.4						1	3				
53013	Environmental Studies	2.4						3							
53020	Electrical circuits	2.8	2.4	1.6	1.4	1	1			1	3	1			
53009	Electronic Devices and Circuits	2.3	2.2	2.1	1.2					1	2	1			
53021	Signals and Systems	2.8	1	2.9						1.9	3				
53606	Electronic Devices and Circuits Lab	1.9									2	2			
53607	Basic Simulation lab	1.9	2	2.3	2.4	3				1	3	3			
54019	Principles of Electrical Engineering	2	1								1				
54020	Electronic Circuit Analysis	2	3	2.6						1	3				
54021	Pulse and Digital Circuits		1.6	3	1.8	2.3				1	3	2.3			
54010	Switching Theory and Logic Design	2.5	3	2	2					1	3				
54011	Electro-magnetic theory and Transmission lines	2.1	2.1	2.1	1.8	1.7				1	3	1.6			
54606	Electrical Engineering Lab	2	3	3	1				1		2	3	3		
54607	Electronic Circuit Analysis Lab	2.4							1			2			
54608	Pulse and Digital Circuits Lab	2.4							1			2			
55012	Control Systems Engineering	2.42	2												

2.1	1.2														2.1
1.4	2.1	2										0.7	2.1		2.1
2										2.6					2.6
2.8	2.4	1.6	1.4	1	1					1		3	1		3
1.6	1.5	1.4	0.8									0.7	1.4	0.7	2.1
2.3	0.9	2.4										1.6	2.6		2.6
1.9													2	2	3
1.9	2	2.3	2.4	3								1	3	3	3
1.7	0.9												0.9		2.6
1.7	2.6	2.2										0.9	2.6		2.6
	1.4	2.6	1.5	2								0.9	2.6	1.9	2.6
1.6	2	1.3	1.3									0.7	2		2
1.4	1.4	1.4	1.2	1.1								0.7	2	1	2
2	3	3	1							1		2	3	3	3
2										0.9			1.7		2.6
2.4										1			2		3
2.1	1.7														2.6

55021	Computer Organization	2.5	2												
55022	Antennas and Wave Propagation	2.5	2.5	2.5	2	1.5						1	3	1.5	
55023	Electronic Measurements and Instrumentation	2.83	1												
55024	Analog Communications	2.62	1.9	2.25	1.9	1.12						1.9	2.75	1.87	
55009	IC Applications	2	2.6	3		1						1	3	1.4	
55606	Analog Communications Lab	1.75	1	1	2	2		2	1	2	2	1	2	2	1
55607	IC Applications Lab		2	1	1.8	1.5	1	2	2	1	1	1	1.8	2.5	2.25
55023	Managerial Economics and Financial Analysis	2	1.5	2.2	2.5	1	1.4	1	2.4	1.6	1	2.4	2		
56024	Operating Systems	2	2	2	3							1	3	3	
56026	Digital Communications	1.33	1.3	1.5	1.5							1	1.83	1	
56012	Microprocessors and Microcontrollers	2	2	2	3							1	3	3	
56027	Digital Signal Processing	2.5	2.3										2	1	
56606	Microprocessors and Microcontrollers lab	3	3	2.75	1	1				3	1		1	3	2
56607	Digital signal processing Lab	2	1											1	
56608	Advanced English Communication Skills Lab					2	1							2	
57034	Management Science											3		1	

2.5	2.0														3		
2.1	2.1	2.1	1.7	1.3										0.9	2.6	1.3	2.6
2.4	0.9																2.6
2.2	1.6	1.9	1.6	1.0										1.6	2.3	1.6	2.6
1.3	1.7	2.0		0.7										0.7	2.0	0.9	2
1.8	1.0	1.0	2.0	2.0			2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	1.0	3
	2.0	1.0	1.8	1.5	1.0	2.0	2.0	1.0	1.0	1.0	1.0	1.8	2.5	2.3	3		
1.7	1.3	1.9	2.1	0.9	1.2	0.9	2.0	1.4	0.9	2.0	1.7						2.6
1.4	1.4	1.4	2.1											0.7	2.1	2.1	2.1
1.1	1.1	1.3	1.3											0.9	1.6	0.9	2.6
1.5	1.5	1.5	2.3											0.8	2.3	2.3	2.3
2.1	1.9														1.7	0.9	2.6
2.6	2.6	2.3	0.9	0.9						2.6	0.9			0.9	2.6	1.7	2.6
2.0	1.0														1.0		3
				1.7	0.9										1.7		2.6
														2.6		0.9	2.6

57035	VLSI Design	3	2											2	1
57036	Microwave Engineering	2.87	2.8	1.87	1.3	1.25	1.3	1	1.16	1	1.3	1.9	2	2	1.62
57037	Computer Networks	1.8	1	2.4									1.2		1
57041	Digital Image Processing	1	2	2.5	1.8	2.8	1	0.8					2	3	3
57043	Embedded Systems	3	3	2.75	1	1				3	1		1	3	2
57607	e-CAD and VLSI lab	3	3	2.75	1	1				3	1		1	3	2
57608	Microwave Engineering and Digital Communications lab	3	2							2			1	3	2
58024	Cellular and Mobile Communications	2.6	2.4	1.4	1.8		1.5	1.8	2				1.2	1.6	1
58028	Radar Systems	3	1.8	3	2	1.66						1	1	3	1.71
58032	Wireless communications & Networks	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8
58613	Industry Oriented Mini Project	3	2.1	2.5	3	3				3	3		1	3	2
58614	Seminar	2	2		1		1	1		2			2	2	1
58615	Project Work	3	2.1	2.5	3	3				3	3		1	3	2
58616	Comprehensive Viva	3	2	1			1			3					

2.1	1.4														1.4	0.7	2.1	
2.3	2.2	1.5	1.0	1.0	1.0	0.8	0.9	0.8	1.0	1.5	1.6	1.6	1.3	2.4				
1.5	0.9	2.0											1.0		0.9	2.6		
0.9	1.7	2.1	1.5	2.4	0.9	0.7							1.7	2.6	2.6	2.6		
2.6	2.6	2.3	0.9	0.9					2.6	0.9			0.9	2.6	1.7	2.6		
3.0	3.0	2.8	1.0	1.0					3.0	1.0			1.0	3.0	2.0	3		
3.0	2.0												2.0		1.0	3.0	2.0	3
2.2	2.0	1.2	1.5		1.3	1.5	1.7						1.0	1.4	0.9	2.6		
1.8	1.1	1.8	1.2	1.0									0.6	0.6	1.8	1.0	1.8	
0.8	2.3	1.2	0.8	2.3	0.8	1.1	1.4	0.8	0.8	2.0	2.1	2.3	2.1	2.3				
2.0	1.4	1.7	2.0	2.0					2.0	2.0			0.7	2.0	1.3	2		
2.0	2.0		1.0		1.0	1.0			2.0				2.0	2.0	1.0	3		
3.0	2.1	2.5	3.0	3.0					3.0	3.0			1.0	3.0	2.0	3		
1.0	0.7	0.3			0.3				1.0								1	

Average Correlation Strength	2.34	2.0	2.03	1.8	1.79	1.1	1.73	1.48	1.9	1.6	1.7	1.4	2.34	1.78	Empty Cells	6	10	21	30	38	45	47	49	39	47	50	20	14	26
PO Direct - Average	1.93	1.7	1.65	1.5	1.52	0.9	1.52	1.27	1.6	1.4	1.5	1.1	1.96	1.52	Average	1.9	1.7	1.6	1.5	1.5	0.9	1.5	1.3	1.6	1.4	1.5	1.1	2.0	1.5

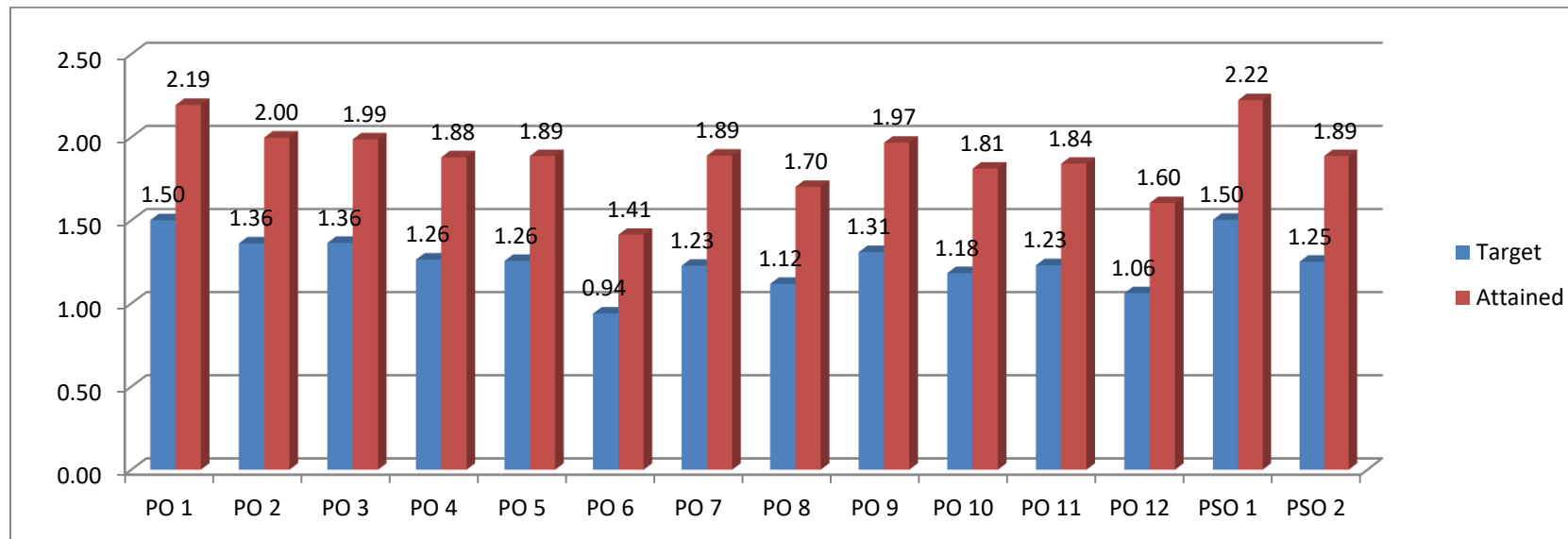
X=0.75*Average correlation strength+0.25*3	2.50	2.8	2.27	2.1	2.09	1.6	2.05	1.86	2.2	2	2.1	1.8	2.51	2.09	PO Direct - Average	1.9	1.7	1.6	1.5	1.5	0.9	1.5	1.3	1.6	1.4	1.5	1.1	2.0	1.5
PO Indirect - Exit Survey (15%)	91	91	90	92	91	93	91	89	92	92	92	91	92	92															
PO Indirect Level - Exit Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3															
PO Indirect - Alumni Survey (10%)	90	91	93	91	92	93	94	95	92	94	91	93	94	94															
PO Indirect Level - Alumni Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3															
PO Indirect attainment level	3	3	3	3	3	3	3	3	3	3	3	3	3	3															
Y=PO Overall attainment level	2.19	2.0	1.99	1.9	1.89	1.4	1.89	1.70	2.0	1.8	1.8	1.6	2.22	1.89															
Y/X*100	87.7	88	87.4	89	90.1	90	92.4	91.3	90	92	90	91	88.7	90.5															
Target (60%)	1.50	1.4	1.36	1.3	1.26	0.9	1.23	1.12	1.3	1.2	1.2	1.1	1.50	1.25															

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Consolidated Report(2011-2015)

	PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
2011-2015	Target 60%	1.50	1.36	1.36	1.26	1.26	0.94	1.23	1.12	1.31	1.18	1.23	1.06	1.50	1.25
	Attained	2.19	2.00	1.99	1.88	1.89	1.41	1.89	1.70	1.97	1.81	1.84	1.60	2.22	1.89



2012-2016

I YEAR

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
English	3	2	2.4	3	3	3	2.55
Computer Programming and Data Structures	3	3	3	3	3	3	3
Engineering Chemistry	3	1	1.8	3	3	3	2.1
Engineering Drawing	3	2	2.4	3	3	3	2.55
IT Workshop / Engineering Workshop	3	2	2.4	3	3	3	2.55
Mathematical Methods	3	2	2.4	3	3	3	2.55
Mathematics-I	3	2	2.4	3	3	3	2.55
Engineering Physics	3	2	2.4	3	3	3	2.55
Computer Programming lab	3	2	2.4	3	3	3	2.55
Engineering Physics/ Engineering Chemistry lab	3	3	3	3	3	3	3
English Language Communication Skills lab	3	3	3	3	3	3	3

II-I

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Mathematics III	2	2	2	3	3	3	2.3
Probability Theory and Stochastic Process	3	2	2.4	3	3	3	2.6
Environmental Science	2	2	2	3	3	3	2.3
Electrical Circuits	2	1	1.4	3	3	3	1.8
Electronic Devices and Circuits	3	2	2.4	2	3	2.4	2.4
Signals and Systems	2	2	2	2	3	2.4	2.1
Electronic Devices and Circuits Lab	3	2	2.4	3	3	3	2.6
Basic Simulation Lab	3	2	2.4	3	3	3	2.6

II-II

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Principles of Electrical Engineering	3	1	1.8	2	3	2.4	2.0
Electronic Circuit Analysis	3	2	2.4	2	3	2.4	2.4
Pulse and Digital Circuits	2	2	2	3	3	3	2.3
Switching Theory and Logic Design	1	2	1.6	3	3	3	2.0
Electro-magnetic theory and Transmission lines	3	2	2.4	3	3	3	2.6
Electrical Engineering Lab	3	3	3	3	3	3	3
Electronic Circuit Analysis Lab	3	3	3	3	3	3	3
Pulse and Digital Circuits Lab	3	3	3	3	3	3	3

III-I

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Control Systems Engineering	2	2	2	3	3	3	2.3
Computer Organization	0	2	1.2	3	3	3	1.7
Antennas and Wave Propagation	3	3	3	3	3	3	3
Electronic Measurements and Instrumentation	0	2	1.2	3	3	3	1.7
Analog Communications	3	2	2.4	3	3	3	2.6
IC Applications	2	1	1.4	2	3	2.4	1.7
Analog Communications Lab	3	3	3	3	3	3	3
IC Applications Lab	3	3	3	3	3	3	3

III-II

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Managerial Economics and Financial Analysis	3	1	1.8	3	3	3	2.1
Operating Systems	2	2	2	3	3	3	2.3
Object Oriented programming	2	3	2.6	3	3	3	2.7
Digital Communications	1	2	1.6	2	3	2.4	1.8

Microprocessors and Microcontrollers	2	2	2	3	3	3	2.3
Digital Signal Processing	3	2	2.4	3	3	3	2.6
Microprocessors and Microcontrollers lab	3	2	2.4	3	3	3	2.6
Digital signal processing Lab	3	3	3	3	3	3	3
Advanced English Communication Skills Lab	3	3	3	3	3	3	3

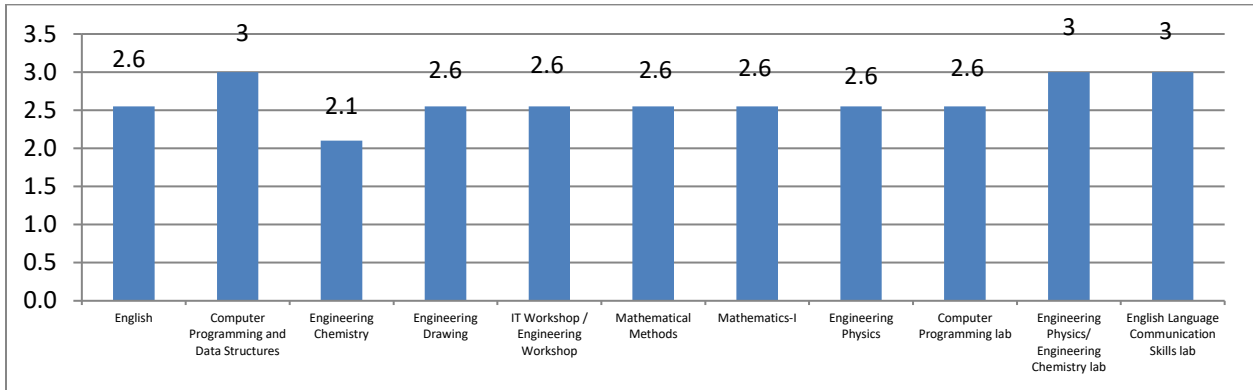
IV-I

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Management Science	3	2	2.4	3	2	2.6	2.5
VLSI Design	2	2	2	3	3	3	2.3
Microwave Engineering	0	2	1.2	3	2	2.6	1.6
Computer Networks	3	2	2.4	3	3	3	2.6
Digital Image Processing	0	1	0.6	3	3	3	1.2
Embedded Systems	3	2	2.4	3	3	3	2.6
E-CAD and VLSI lab	3	3	3	3	3	3	3
Microwave Engineering and Digital Communications lab	3	3	3	3	3	3	3

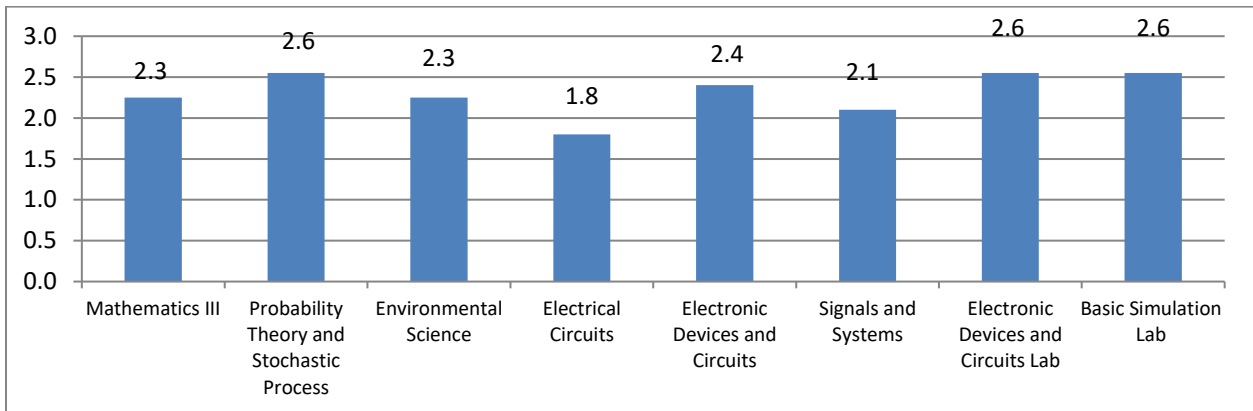
IV-II

Course	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Cellular and Mobile Communications	3	2	2.4	3	3	3	2.55
Wireless communications & Networks	2	2	2	3	3	3	2.25
Digital Design through Verilog HDL	3	1	1.8	3	3	3	2.1
Network Security	3	3	3	3	3	3	3
Radar Systems	3	2	2.4	3	2	2.6	2.45
Satellite Communications	3	2	2.4	3	3	3	2.55
Comprehensive Viva Voce	-	2	2	3	3	3	2.25
Seminar	3	-	3	3	3	3	3
Mini Project	-	3	3	3	3	3	3
Major Project	3	2	2.4	3	3	3	2.55

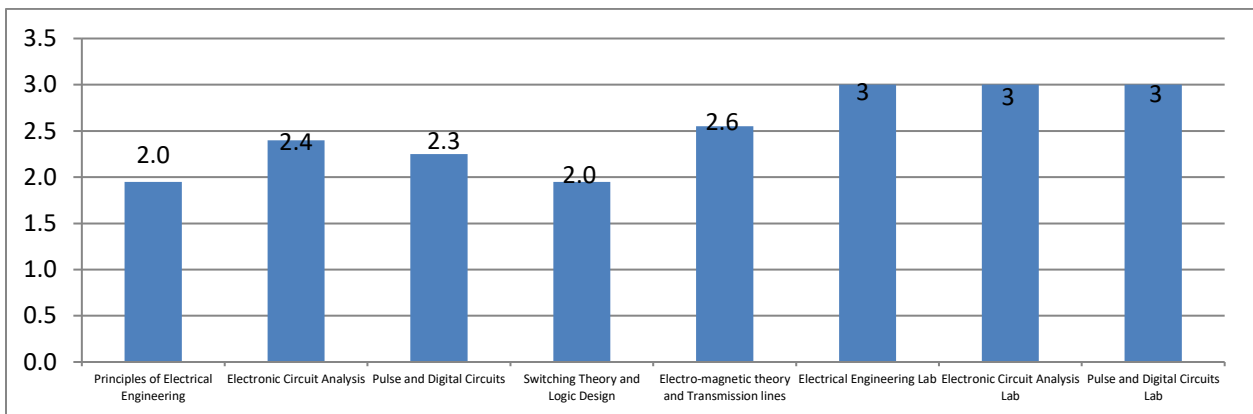
I Year



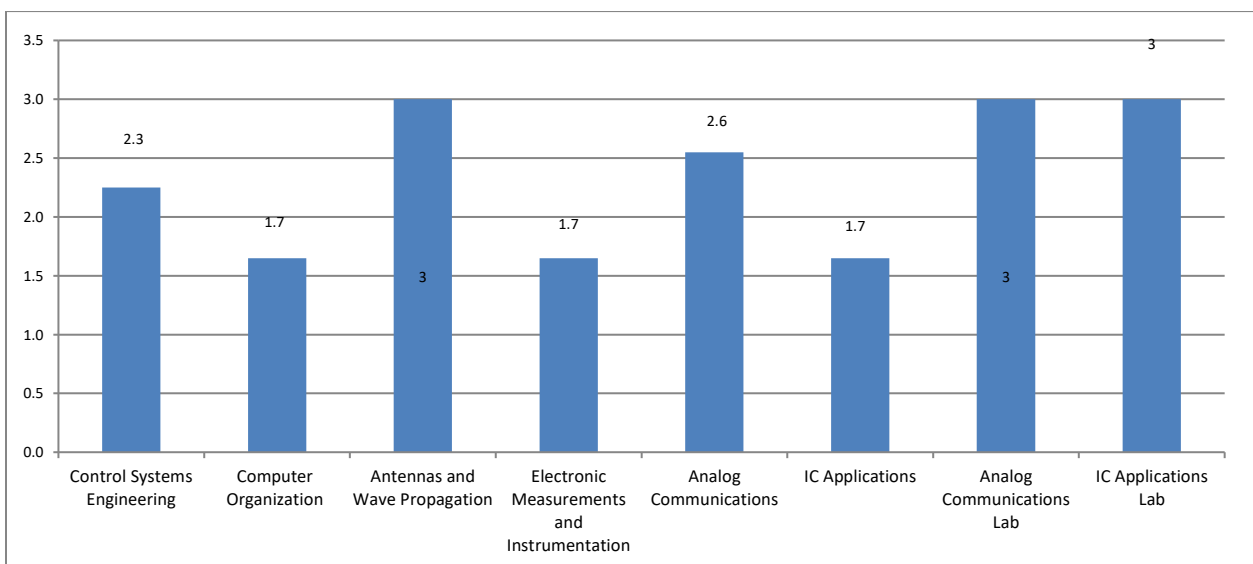
II-I



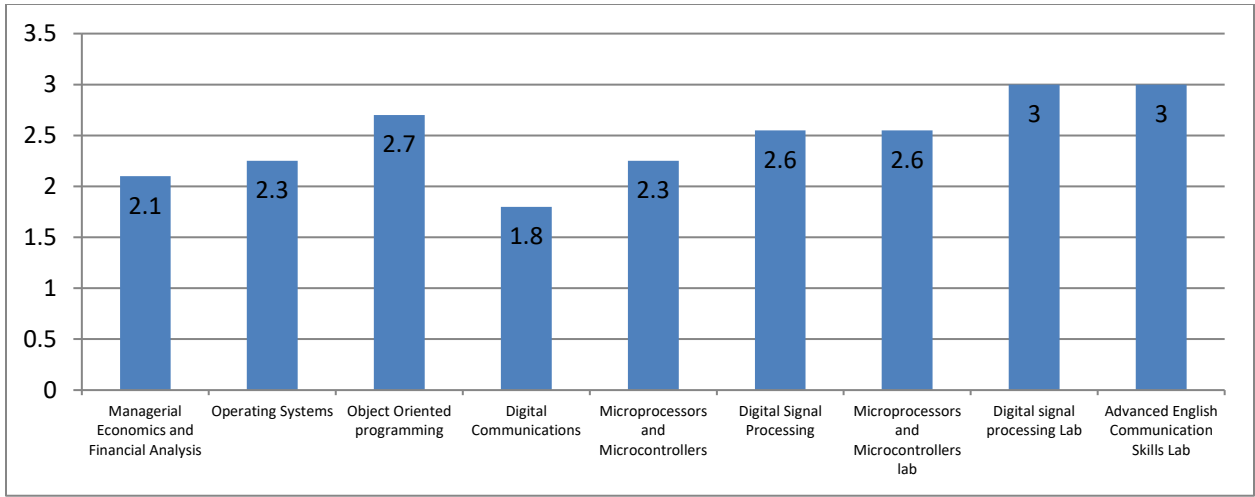
II-II



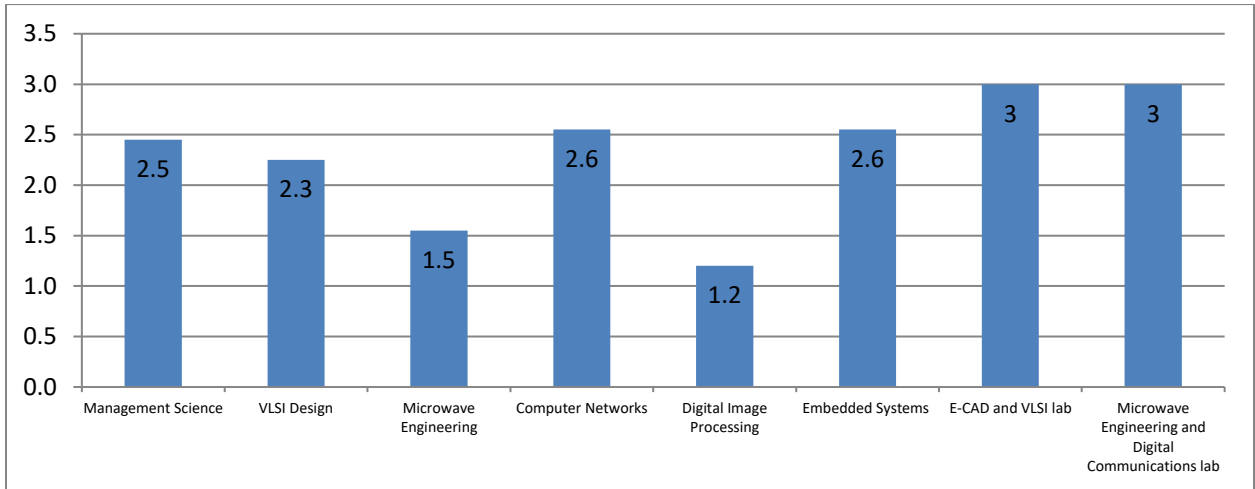
III-I



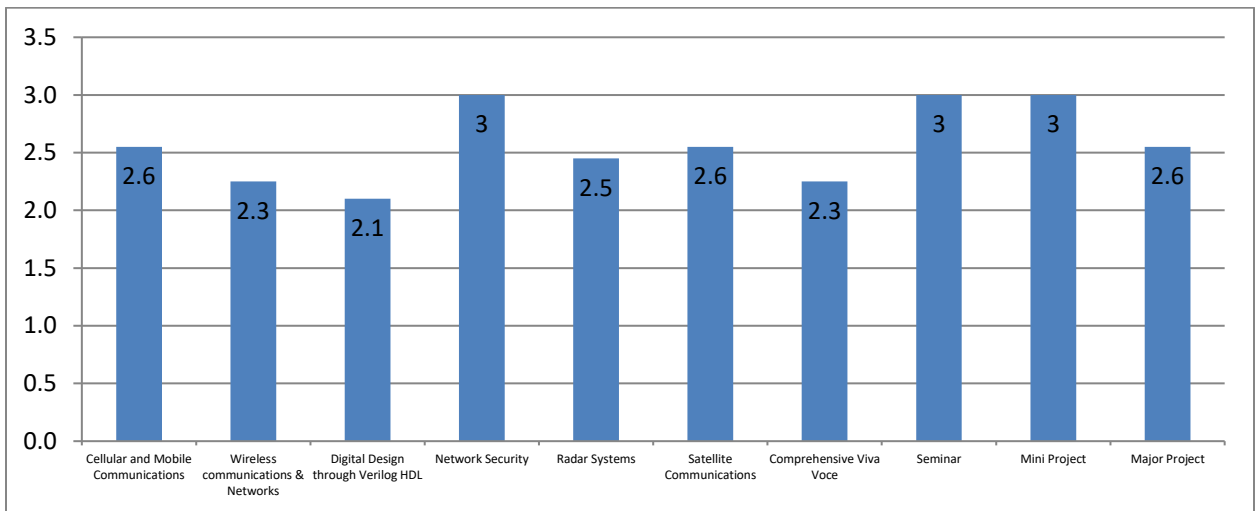
III-II



IV-I



IV-II



GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

R09 (JNTUH) - POs and PSOs attainment for 2012-16 Batch

2012-2016

Code	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	CO
51001	English				2.7		1	3	1	2.7	2.7		1							2.3		0.9	2.6	0.9	2.3	2.3		0.9			2.6
51002	Mathematics-I	3	2	1.4			1						2	1			2.6	1.7	1.2			0.9						1.7	0.9		2.6
51003	Mathematical Methods	3	2	1.4			1						2	1			2.6	1.7	1.2			0.9						1.7	0.9		2.6
51004	Engineering Physics	2	2							1			1	1			1.7	1.7							0.9		0.9	0.9		2.6	
51005	Engineering Chemistry	2	1	1						1				1	1		1.4	0.7	0.7					0.7				0.7	0.7	2.1	
51006	Computer Programming and Data Structures	2.3	2	1									1	1.3	1		2.3	2.0	1.0									1.0	1.3	1.0	3.0
51007	Engineering Drawing	2	1	1									1				1.7	0.9	0.9									0.9			2.6
51616	Computer Programming lab	2											2				1.7											1.7			2.6
51617	Engineering Physics/ Engineering Chemistry lab	2	2	1						1							1.7	1.7	0.9					0.9							2.6
51618	English Language Communication Skills lab				1						2									0.9				1.7							2.6

54011	Electro-magnetic theory and Transmission lines	2.1	2.1	2.1	1.8	1.7							1	3	1.6			1.8	1.8	1.8	1.6	1.5								0.9	2.6	1.4	2.6		
54606	Electrical Engineering Lab	2	3	3	1								1					2	3	3								1.0			2.0	3.0	3.0	3.0	
54607	Electronic Circuit Analysis Lab	2.4											1					2										1.0				2.0		3.0	
54608	Pulse and Digital Circuits Lab	2.4											1					2										1.0				2.0		3.0	
55012	Control Systems Engineering	2.4	2																1.8	1.5														2.3	
55021	Computer Organization	2.5	2																1.4	1.1														1.7	
55022	Antennas and Wave Propagation	2.5	2.5	2.5	2	1.5								1	3	1.5			2.5	2.5	2.5	2.0	1.5									1.0	3.0	1.5	3.0
55023	Electronic Measurements and Instrumentation	2.8	1																1.6	0.6														1.7	
55024	Analog Communications	2.6	1.9	2.3	1.9	1.1								1.9	2.8	1.9			2.2	1.6	1.9	1.6	1.0									1.6	2.3	1.6	2.6
55009	IC Applications	2	2.6	3		1								1	3	1.4			1.1	1.5	1.7		0.6									0.6	1.7	0.8	1.7
55606	Analog Communications Lab	1.8	1	1	2	2			2	1	2	2	1	2	2	1			1.8	1.0	1.0	2.0	2.0			2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	3.0	

55607	IC Applications Lab		2	1	1.8	1.5	1	2	2	1	1	1	1.8	2.5	2.3			2.0	1.0	1.8	1.5	1.0	2.0	2.0	1.0	1.0	1.0	1.8	2.5	2.3	3.0		
55023	Managerial Economics and Financial Analysis	2	1.5	2.2	2.5	1	1.4	1	2.4	1.6	1	2.4	2				1.4	1.1	1.5	1.8	0.7	1.0	0.7	1.7	1.1	0.7	1.7	1.4		2.1			
56024	Operating Systems	2	2	2	3								1	3	3		1.5	1.5	1.5	2.3								0.8	2.3	2.3	2.3		
56025	Object Oriented Programming	2	2	2	3								1	3	3		1.8	1.8	1.8	2.7								0.9	2.7	2.7	2.7		
56026	Digital Communications	1.3	1.3	1.5	1.5								1	1.8	1		0.8	0.8	0.9	0.9								0.6	1.1	0.6	1.8		
56012	Microprocessors and Microcontrollers	2	2	2	3								1	3	3		1.5	1.5	1.5	2.3								0.8	2.3	2.3	2.3		
56027	Digital Signal Processing	2.5	2.3											2	1		2.1	2.0										1.7	0.9	2.6			
56606	Microprocessors and Microcontrollers lab	3	3	2.8	1	1							3	1			2.6	2.6	2.4	0.9	0.9						2.6	0.9		0.9	2.6	1.7	2.6
56607	Digital signal processing Lab	2	1											1			2.0	1.0										1.0		3.0			
56608	Advanced English Communication Skills Lab					2	1							2							2.0	1.0							2.0		3.0		
57034	Management Science											3		1													2.5		0.8		2.5		
57035	VLSI Design	3	2											2	1		2.3	1.5											1.5	0.8	2.3		

57036	Microwave Engineering	2.9	2.8	1.9	1.3	1.3	1.3	1.0	1.2	1.0	1.3	1.9	2.0	2.0	1.6		1.5	1.5	1.0	0.7	0.7	0.7	0.5	0.6	0.5	0.7	1.0	1.1	1.1	0.9	1.6
57037	Computer Networks	1.8	1	2.4									1.2		1		1.6	0.9	2.1									1.0		0.9	2.6
57041	Digital Image Processing	1	2	2.5	1.8	2.8	1	0.8					2	3	3		0.4	0.8	1.0	0.7	1.1	0.4	0.3					0.8	1.2	1.2	1.2
57043	Embedded Systems	3	3	2.8	1	1				3	1		1	3	2		2.6	2.6	2.4	0.9	0.9				2.6	0.9		0.9	2.6	1.7	2.6
57607	e-CAD and VLSI lab	3	3	2.8	1	1				3	1		1	3	2		3.0	3.0	2.8	1.0	1.0				3.0	1.0		1.0	3.0	2.0	3.0
57608	Microwave Engineering and Digital Communications lab	3	2							2			1	3	2		3.0	2.0							2.0			1.0	3.0	2.0	3.0
58024	Cellular and Mobile Communications	2.6	2.4	1.4	1.8		1.5	1.8	2				1.2	1.6	1		2.3	2.1	1.2	1.6		1.3	1.6	1.7				1.0	1.4	0.9	2.6
58028	Radar Systems	3	1.8	3	2	1.7						1	1	3	1.7		2.3	1.4	2.3	1.5	1.3						0.8	0.8	2.3	1.3	2.3
58032	Wireless communications & Networks	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8		0.8	2.3	1.2	0.8	2.3	0.8	1.1	1.4	0.8	0.8	2.0	2.1	2.3	2.1	2.3
58033	Digital Design through verilog HDL	2	2														1.4	1.4													2.1
58034	Network Security	3		3										1			3.0		3.0									1.0		3.0	
58035	Satellite Communication	3		2										1			2.6		1.7									0.9		2.6	

58613	Industry Oriented Mini Project	3	2.1	2.5	3	3				3	3		1	3	2		3.0	2.1	2.5	3.0	3.0				3.0	3.0		1.0	3.0	2.0	3.0
58614	Seminar	2	2		1		1	1		2			2	2	1		2.0	2.0		1.0		1.0	1.0		2.0			2.0	2.0	1.0	3.0
58615	Project Work	3	2.1	2.5	3	3				3	3		1	3	2		2.6	1.8	2.1	2.6	2.6				2.6	2.6		0.9	2.6	1.7	2.6
58616	Comprehensive Viva	3	2	1			1			3							2.3	1.5	0.8			0.8			2.3					2.3	

Average Correlation Strength	2.35	2.03	2.06	1.86	1.79	1.09	1.73	1.48	1.91	1.63	1.73	1.35	2.30	1.82	Empty Cells	6	12	22	33	42	49	51	53	43	51	54	23	15	29	
PO Direct - Average	2.07	1.78	1.86	1.76	1.83	1.22	2.24	2.16	2.16	2.24	2.63	1.24	2.08	1.71	Average	2.1	1.8	1.9	1.8	1.8	1.2	2.2	2.2	2.2	2.2	2.2	2.6	1.2	2.1	1.7
$X=0.75 \times \text{Average correlation strength} + 0.25 \times 3$	2.51	2.27	2.29	2.14	2.10	1.57	2.05	1.86	2.18	1.97	2.05	1.76	2.47	2.12	PO Direct - Average	1.9	1.6	1.7	1.5	1.5	0.8	1.4	1.2	1.7	1.4	1.3	1.1	1.9	1.5	
PO Indirect - Exit Survey (15%)	89.7	87.4	90.3	86.3	88.9	88.8	88.8	88.6	85.7	89.4	87.4	87.7	90.3	88.9																
PO Indirect Level - Exit Survey	2	2	3	2	2	2	2	2	2	2	2	2	3	2																
PO Indirect - Alumni Survey (10%)	89.3	87.1	90.7	87.1	90	90.7	90.7	90	86.4	90	90	92.9	90.7	90																
PO Indirect Level - Alumni Survey	2	2	3	2	3	3	3	3	3	2	3	3	3	3																
PO Indirect attainment	2	2	3	2	2.4	2.4	2.4	2.4	2	2.4	2.4	2.4	2.4	3	2.4															

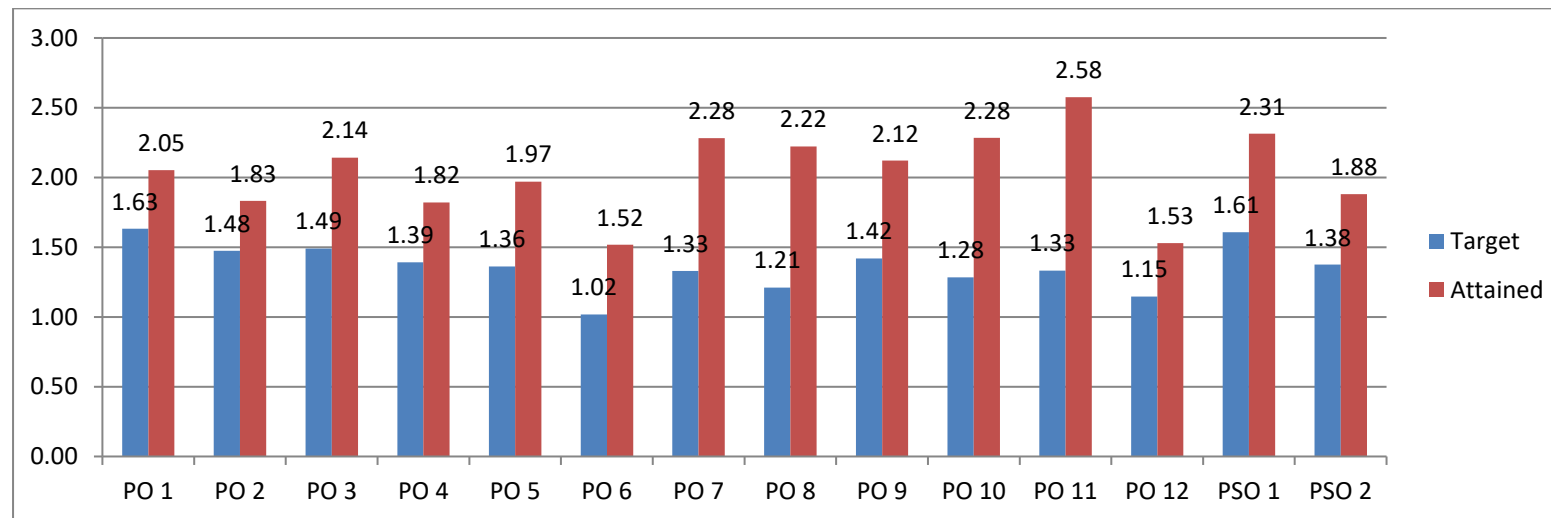
level														
Y=PO Overall attainment level	2.05	1.83	2.14	1.82	1.97	1.52	2.28	2.22	2.12	2.28	2.58	1.53	2.31	1.88
Y/X*100	81.8	80.7	93.4	85.0	94.1	96.9	96	94.0	97.2	92.0	88.0	86.7	93.6	88.9
Target (65%)	1.63	1.48	1.49	1.39	1.36	1.02	1.33	1.21	1.42	1.28	1.33	1.15	1.61	1.38

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Consolidated Report(2012-2016)

Batch	Target	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
2012-16	Target 65%	1.63	1.48	1.49	1.39	1.36	1.02	1.33	1.21	1.42	1.28	1.33	1.15	1.61	1.38
	Attained	2.05	1.83	2.14	1.82	1.97	1.52	2.28	2.22	2.12	2.28	2.58	1.53	2.31	1.88

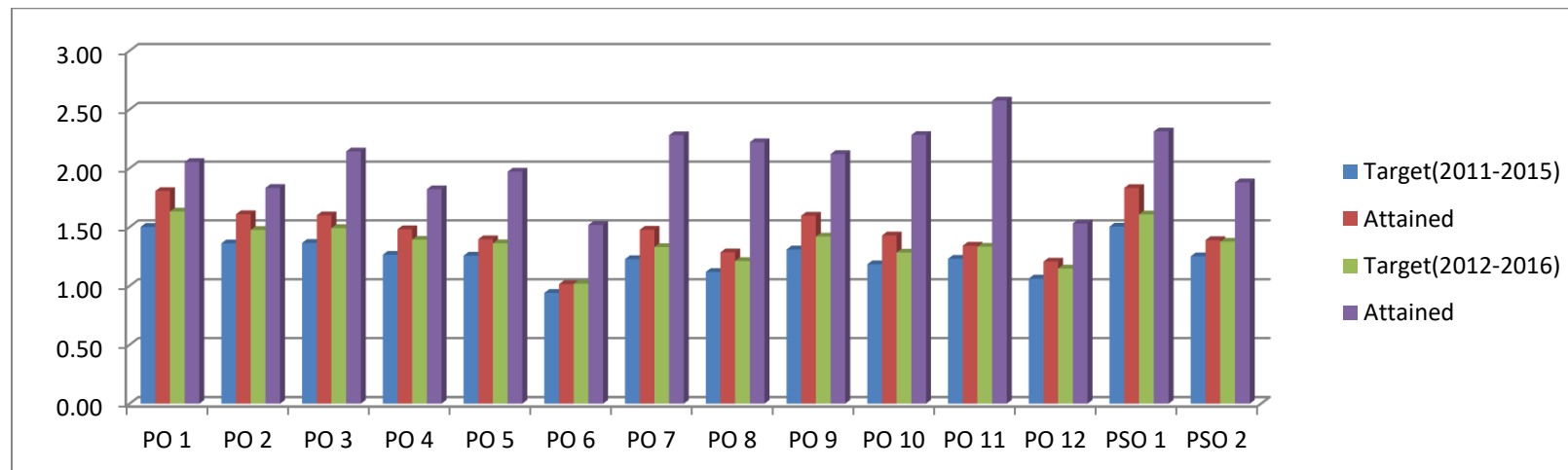


GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Consolidated Report

Batch	Target	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
2011-15	Target 60%	1.50	1.36	1.36	1.26	1.26	0.94	1.23	1.12	1.31	1.18	1.23	1.06	1.50	1.25
	Attained	1.81	1.61	1.60	1.48	1.40	1.01	1.48	1.28	1.60	1.43	1.34	1.21	1.83	1.39
2012-16	Target 65%	1.63	1.48	1.49	1.39	1.36	1.02	1.33	1.21	1.42	1.28	1.33	1.15	1.61	1.38
	Attained	2.05	1.83	2.14	1.82	1.97	1.52	2.28	2.22	2.12	2.28	2.58	1.53	2.31	1.88



**Course wise attainments and POs and PSOs attainments of 2013-17, 2014-18
and 2015-19 Batches under JNTUH**

R13/R15 Course structure

The R13/R15 Course structure and syllabus of Electronics and Communication Engineering branch under JNTUH is given below:

B.Tech. I Year				
Code	Subject	L	T/P/D	C
A10001	English	2		4
A10002	Mathematics-I	3	1	6
A10003	Mathematical Methods	3		6
A10004	Engineering Physics	3		6
A10005	Engineering Chemistry	3		6
A10501	Computer Programming	3		6
A10301	Engineering Drawing	2	3	6
A10581	Computer Programming lab		3	4
A10081	Engineering Physics/ Engineering Chemistry lab		3	4
A10083	English Language Communication Skills lab		3	4
A10082	IT Workshop / Engineering Workshop		3	4
B.Tech. II Year - I Semester				
Code	Subject	L	T/P/D	C
A30007	Mathematics-III	4		4
A30405	Probability Theory and Stochastic Processes	4		4
A30407	Switching Theory and Logic Design	4		4
A30204	Electrical circuits	4		4
A30404	Electronic Devices and Circuits	4		4
A30406	Signals and Systems	4		4
A30482	Electronic Devices and Circuits Lab		3	2
A30481	Basic Simulation lab		3	2
B.Tech. II Year - II Semester				
Code	Subject	L	T/P/D	C
A40215	Principles of Electrical Engineering	4		4
A40412	Electronic Circuit Analysis	4		4
A40415	Pulse and Digital Circuits	4		4
A40009	Environmental Studies	4		4
A40411	Electro-magnetic theory and Transmission lines	4		4
A40410	Digital Design using Verilog HDL	4		4
A40288	Electrical Technology Lab		3	2
A40484	Electronic Circuits and Pulse Circuits Lab		3	2
B.Tech. III Year - I Semester				
Code	Subject	L	T/P/D	C

A50217	Control Systems Engineering	4		4
A50516	Computer Organization and Operating Systems	4		4
A50418	Antennas and Wave Propagation	4		4
A50422	Electronic Measurements and Instrumentation	4		4
A50408	Analog Communications	4		4
A50425	Linear and Digital IC Applications	4		4
A50482	Analog Communications Lab		3	2
A50488	IC Applications and HDL Simulation Lab		3	2
B.Tech. III Year - II Semester				
Code	Subject	L	T/P/D	C
A60010	Managerial Economics and Financial Analysis	4		4
Open Elective		4		4
A60018	Human Values and Professional Ethics			
A60117	Disaster Management			
A60017	Intellectual Property Rights			
A60420	Digital Communications	4		4
A60432	VLSI Design	4		4
A60430	Microprocessors and Microcontrollers	4		4
A60421	Digital Signal Processing	4		4
A60494	Microprocessors and Microcontrollers lab		3	2
A60493	Digital signal processing Lab		3	2
B.Tech. IV Year - I Semester				
Code	Subject	L	T/P/D	C
A70014	Management Science	4		4
A70442	Microwave Engineering	4		4
A70515	Computer Networks	4		4
A70434	Cellular and Mobile Communications	4		4
Elective – I		4		4
A70436	Digital Image Processing			
A70443	Multimedia and Signal Coding			
A70505	Object Oriented Programming through Java			
Elective – II		4		4
A70447	Television Engineering			
A70444	Optical Communications			
A70440	Embedded Systems Design			
A70086	Advanced Communication Skills lab		3	2
A70499	Microwave Engineering and Digital Communications lab		3	2
B.Tech. IV Year - II Semester				
Code	Subject	L	T/P/D	C
Elective – III		4		4

A80452	Satellite Communications			
A81102	Biomedical Instrumentation			
A80527	Artificial Neural Networks			
Elective – IV		4		4
A80431	Telecommunication Switching Systems and Networks			
A80450	Radar Systems			
A80449	Network Security			
Elective – V		4		4
A80454	Wireless communications & Networks			
A80437	Digital Signal Processors and Architectures			
A80451	RF Circuit Design			
A80087	Industry Oriented Mini Project			2
A80089	Seminar		6	2
A80088	Major Project		15	10
A80090	Comprehensive Viva			2

The college being affiliated to JNTUH, Hyderabad, the curriculum is designed by the affiliating University and the college follows the same. Content of the curriculum pertaining to Undergraduate Engineering program of Electronics and Communication Engineering branch, designed by the university JNTUH (R13/R15 Regulations), is broadly classified into Basic Sciences, Engineering Sciences, Humanities and Social Sciences, Professional Core and Electives as represented below to verify its congruence with the curriculum content suggested by AICTE.

Table Course Component Distribution (R13/R15 JNTUH)

Course Component	Curriculum Content		
	Total number of credits	Percentage of total number of credits as per JNTUH	Percentage of total number of credits suggested by AICTE
Mathematics and Basic Sciences	32	14.54	15 – 20
Engineering Sciences	44	20.00	15 – 20
Humanities and Social Sciences	22	10.00	5-10
Professional core	98	44.54	40 – 55
Electives	24	10.91	15 – 25

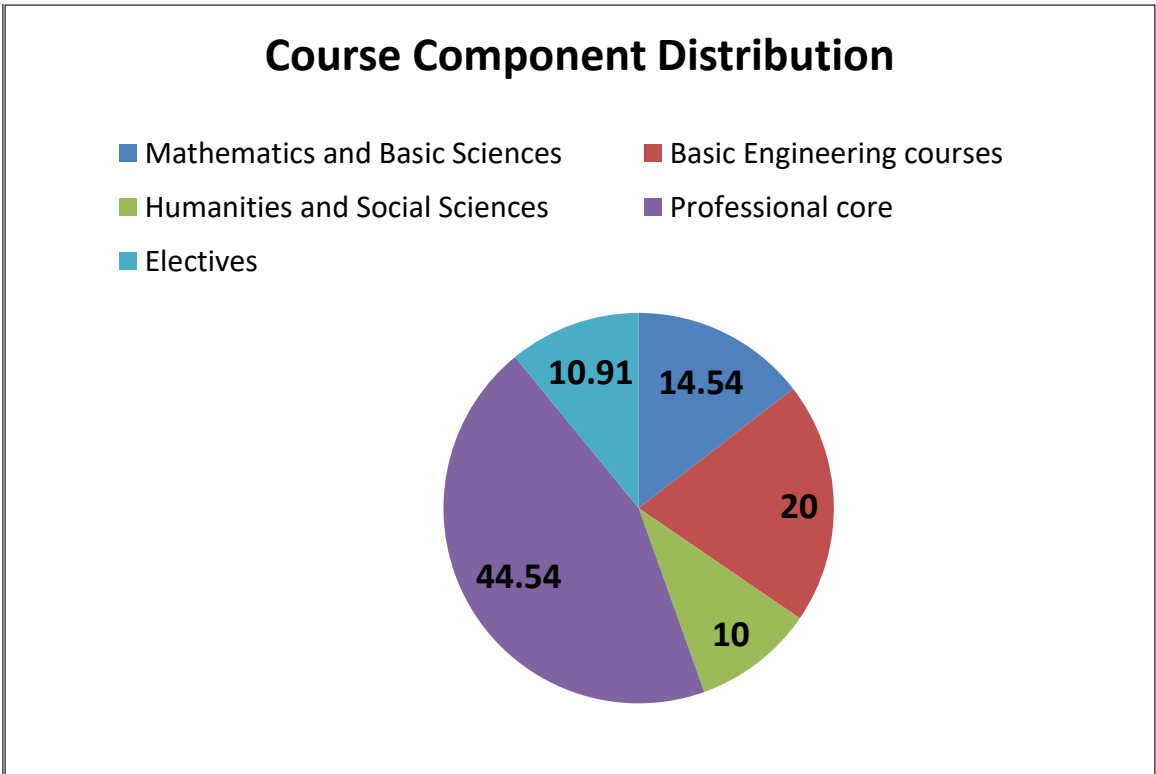


Fig. Course Component Distribution

Curriculum is one of the main tools to prepare students in achieving the Program Outcomes (POs) and Program Specific Outcomes (PSOs). Therefore, the relevance of the courses in the curriculum to POs and PSOs needs to be quantified in order to establish their relevance and level of support to POs and PSOs. To identify and quantify the extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes, the procedure adopted is described below and the same is represented schematically in Fig.

Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
English	CO1: Usage of English Language, written and spoken				3		1	3		3	3		1			
	CO2:Enrichment of comprehension and fluency				2		1	3		2	2		1			
	CO3:Gaining confidence in using language in verbal situations.				3		1	3	1	3	3		1			
	Average Correlation				2.67		1	3	1	2.67	2.67		1			
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Mathematics-I	CO1:Write the matrix representation of a set of linear equations and to analyze solutions of systems of equations	3	2	1			1						2			
	CO2:Understand the methods of differential calculus to optimize single and multivariable functions	3	2	1			1						2			
	CO3:Evaluate the multiple integrals and can apply the concepts to find the areas, volumes, Moment of inertia etc, of regions on a plane or in space	3	2	1			1							2		
	CO4: Identify the types of differential equations and uses the right method to solve the differential equations. Able to apply the theory of differential equations to the real world problems	3	2	2			1							2	1	
	CO5: Solve certain differential equations using Laplace Transform and be able to transform functions on time domain to frequency domain using Laplace transforms	3	2	2			1							2	1	
	Average Correlation	3	2	1.4			1							2	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Mathematical Methods	CO1:Find a root of a given equation and will be able to find a numerical solution for a given differential equation	3	2	1			1						2			
	CO2:Describe a system by an ODE, and	3	2	1			1						2			

	find the solution as a first approximation														
	CO3: Find the expansion of given function by Fourier Series and Fourier Transform	3	2	1			1						2		
	CO4: Carry out phase transformation, phase change and attenuation coefficients in acoustics	3	2	2			1						2	1	
	CO5: Find a corresponding partial differential equation for an unknown function with many independent variables and their solution	3	2	2			1						2	1	
	Average Correlation	3	2	1.4			1						2	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Engineering Physics	CO1: Learn the fundamental concepts on behavior of crystalline solids	2	2							1			1		
	CO2: Learn the fundamentals of Quantum Mechanics and apply to various systems like communications Solar Cells, Photo Cells and so on	2	2							1			1	1	
	CO3: Design and study of properties of materials	2	2							1			1	1	
	CO4: Learn non-destructive testing methods	2	2							1			1	1	
	CO5: Develop problem solving skills and analytical skills	2	2							1			1	1	
	Average Correlation	2	2							1			1	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Engineering Chemistry	CO1: Apply the methods of inquiry in a discipline of their choosing	2	1	1					1						
	CO2: Interpret information, respond and adapt to changing situations, make complex decisions, solve problems and evaluate actions	2	1	1					1						
	CO3: Learn the skills necessary to live and work in a diverse engineering world	2	1	1					1					1	1
	Average Correlation	2	1	1					1					1	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

Computer Programming	CO1: Demonstrate the basic knowledge of computer hardware and software	2											1	1	
	CO2: Ability to apply solving and logical skills to programming in C language and in other languages	2											1	1	
	Average Correlation	2											1	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Engineering Drawing	CO1: Demonstrate the curves used in engineering.	2	1	1											1
	CO2: Explain the theory of projection.	2	1	1											1
	CO3: Familiar and use the conventions and the methods of engineering drawing.	2	1	1											1
	CO 4: Improve their visualization skills so that they can apply these skills in developing new products.	2	1	1											1
	CO5:Prepare simple layout of factory buildings.	2	1	1											1
	CO6:Prepare sectional views prism, cylinder, pyramid and cones.	2	1	1											1
	CO7: Distinguish planes of different solid materials	2	1	1											1
	Average Correlation	2	1	1											1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Computer Programming Lab	CO1:Do Programs using if statement, while, do-while, for, switch statements	2											2		
	CO2:Do Programs using goto,break and continue statement	2											2		
	CO3:Do Programs using one dimensional and two dimensional arrays	2											2		
	CO4:Do Programs using functions, pointers and strings	2											2		
	CO5:Do Programs using stacks, queues and linked list	2											2		
	Average Correlation	2											2		
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Engineering Physics/	CO1:Do experiments on RC and LCR	2	1	1					1						

Engineering Chemistry lab	circuits and calculate resonant frequency, bandwidth, quality factor and time constant.														
	CO2: Do experiments to differentiate the refractive, interference and diffraction powers for light signals from LASER, LED and mercury/sodium vapour lamps	2	1	1					1						
	CO3: Calculate the frequency of electrical vibrating material and rigidity modulus of torsional pendulum.	2	1	1					1						
	CO4: Calculate the Numerical aperture, attenuation, bending losses and coupling losses of optical fibers.	2	1	1					1						
	CO5: Calculate the energy gap of a semi conductor material to identify the material.	2	1	1					1						
	CO6: Estimate the hardness of water and estimate calcium in limestone	2	1	1					1						
	CO7: Determine percentage of copper in brass	2	1	1					1						
	CO8: Determine the viscosity of sample oil	2	1	1					1						
	CO9: Determine surface tension of lubricants	2	1	1					1						
	Average Correlation	2	2	1					1						
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
English Language communication skills lab	CO1: Communicate effectively in different situations														
	CO2: Develop their vocabulary and prepares them to use appropriate words and make use of idioms and phrases wherever necessary.				1			2							
	CO3: Develop good team spirit to reach a common objective				1			2							
	CO4: Learn necessary interview skills and face the interviews confidently.				1			2							
	CO5: Learn to prepare effective and updated resumes				1			2							

	CO6: Learn to read and comprehend the given text and be able to answer the ensuing questions correctly.				1			2							
	CO7: Gain knowledge on different aspects of a technical report and will be able to prepare an effective technical report.				1			2							
	Average Correlation				1			2							
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
IT workshop / Engineering workshop	CO1: Identify different peripherals of a computer and demonstrate how Assemble and Disassemble PC	2								1					
	CO2: Attain basic knowledge on hardware (I/O devices, Mother board, processor, etc..)	2								1					
	CO3: Install Operating Systems like Windows XP, Linux in PC.	2								1					
	CO4: Identify and fix Hardware/software trouble shooting.	2								1					
	CO5: Attain basic knowledge on Web Browsers, LAN and TCP/IP setting.	2								1					
	CO6: Design personal web page using HTML.	2								1					
	CO7: Get awareness of viruses, worms, cyber hygiene and cyber attacks.	2								1					
	CO8: Apply MS Office tools (Microsoft word, Excel, power point) to prepare power point presentation and document preparation	2									1				
	CO9: Prepare a given model in carpentry using wood material.	2									1				
	CO10: Prepare a given model in fitting using iron material.	2									1				
	Average Correlation	2								1					
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Mathematics-III	CO1: Apply Beta, Gamma functions to evaluate integrals which cannot be	3	3												

	expressed in terms of elementary functions.														
	CO2: Apply analytic functions and harmonic functions to problems in engineering	3	2												
	CO3: Integrate complex functions.	3	2												
	CO4: Use contour integrals where the closed contour contains several singularities inside.	3	2												
	CO5: Use conformal mapping by transforming a complicated region to a simpler standard regions.	3	1												
	CO6: Apply graph theory in electrical, electronic engineering and in computer science engineering.	3	2												
	CO7: Apply Bessel's, Legendre polynomials to solve problems in Engineering	3	1												
	CO8: Use Taylor's and Laurent's series expansions in the given regions.	3	1												
	Average Correlation	3	1.8												
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Probability Theory and Stochastic Processes	CO1: Simple probabilities using an appropriate sample space.	2	3										1	3	
	CO2: Simple probabilities and expectations from probability density functions (pdfs).	2	3	3									1	3	
	CO3: Likelihood ratio tests from pdfs for statistical engineering problems.	2	3	3									1	3	
	CO4: Least -square & maximum likelihood estimators for engineering problems.	2	3	3									1	3	
	CO5: Mean and covariance functions for simple random processes.	2	3	3									1	3	
	Average Correlation	2	3	2.4										1	3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Switching Theory and logic Design	CO1: Convert numeric information in different forms, e.g. different bases, signed	3	3	1	2								1	3	

	integers, various codes such as ASCII, Gray, and BCD.														
	CO2: Simplify Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.	2	3	1	2								1	3	
	CO3: Design and analyze combinational circuits and to use standard combinational blocks to build more complex circuits.	3	3	3	2								1	3	
	CO4: Design and analyze sequential circuits and devices and to use sequential functions/building blocks to build more complex circuits.	2	3	3	2								1	3	
	Average Correlation	2.5	3	2	2								1	3	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Electrical Circuits	CO1: Analyze R, L, C parameters with the applied ac sinusoidal voltage.	3	3	3	3							1		3	1
	CO2: Explain the concept of unity power factor	3	3	1	2							1		3	1
	CO3: Apply the concept of dot convention	3	2	1	1							1		3	1
	CO4: Apply the concept of duality and dual networks	2	2	1								1		3	1
	CO5: Analyze and apply various network theorems for DC and AC excitations	3	2	2	1	1	1					1		3	1
	Average Correlation	2.8	2.4	1.6	1.4	1	1					1		3	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Electronic Devices and Circuits	CO1: Analyze characteristics of PN junction diode , Zener diode and different special function diodes like tunnel diode , SCR ,varactor, photo diode.	3	2	2	1								1	2	
	CO2: Analyze the applications of the diode as rec:tifiers and regulators	2	2	2	2								1	2	
	CO3: Analyze operation of BJT ,UJT and FET from their V-I characteristics	3	3		2									1	
	CO4: Design BJT biasing circuits for specified operation.	2	2	3	2									3	1

	CO5:Analyze operation of BJT using h-parameters.	2	2	2										2	
	CO6:Analyze small signal low frequency FET models.	2	2	2										2	
	Average Correlation	2.3	2.2	2.1	1.2								1	2	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Signals and Systems	CO1:Analyze different types of signals and systems and describe their properties on continuous time and discrete time domains	3	1	2									2	3	
	CO2:Formulate & Solve problems using Fourier Series and Inverse Fourier Series.	3	1	3									2	3	
	CO3:Formulate & Solve problems using Fourier Transform and Inverse Fourier transform	3	1	3									2	3	
	CO4:Derive the input-output relationship of linear, time-invariant systems using time- domain techniques and transform methods.	2	1	3									2	3	
	CO5:Obtain the similarities between two signals in frequency domain.	2	1	3									2	3	
	CO6:Convert Analog signal to digital signal using Sampling Theorem and reconstruction of signal from samples.	3	1	3									2	3	
	CO7:Formulate & Solve problems of Analog signals using Laplace and Inverse Laplace Transform	3	1	3									2	3	
	CO8:Formulate & Solve problems of Discrete signals using Z -Transform and Inverse Z -Transform	3	1	3									1	3	
	Average Correlation	2.75	1	2.87									1.87	3	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Electronic Devices and Circuits Lab	CO1: Analyze the characteristics of PN diode and Zener diode and calculate the dynamic and static resistance in forward bias and reverse bias	3												2	2
	CO2: Calculate the ripple factor and	1												2	2

	efficiency of Half Wave and Full wave rectifiers with and without filter.														
	CO3: Analyze the characteristics of BJT in Common Emitter and Common Collector configurations.	1												2	2
	CO4: Analyze the characteristics of FET in Common Source configuration	2												2	2
	CO5: Calculate the Bandwidth of BJT Common Emitter and Common Collector Amplifiers from the frequency response.	2												2	2
	CO6: Calculate the Bandwidth of FET Common Source Amplifier from the frequency response	2												2	2
	CO7: Obtain the characteristics of UJT and SCR and calculate the frequency of oscillations for UJT relaxation oscillator.	2												2	2
	Average Correlation	1.87												2	2
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Basic Simulation Lab	CO1: Genrate different types of signals and sequences using MATLAB/SCILAB	3	2	2	2	3	3						1	3	3
	CO2: Perform different operations on signals and sequences Using MATLAB.	1	2	2	3	3	3						1	3	3
	CO3: Find the fourier transform of a given signal and to plot its spectrums using MATLAB.	1	2	2	2	3	3						1	3	3
	CO4: Verify Gibbs phenomenon and sampling theorem using MATLAB	2	2	3	2	3	3						1	3	3
	CO5: To remove noise by Autocorrelation or Cross correlation using MATLAB.	2	3	2	2	3	3						1	3	3
	CO6: To demonstrate intricacies of sampling theorem using MATLAB	2	2	2	3	3	3						1	3	3
	CO7: Able to plot the response of discrete Zlinear time invariant system in Z-plane using MATLAB	2	2	2	3	3	3						1	3	3
	CO8: Able to Analyze system stability based on BIBO criteria using MATLAB.	2	2	3	2	3	3						1	3	3

	Average Correlation	1.87	2	2.25	2.37	3	3						1	3	3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Principles of Electrical Engineering	CO1:Analyze methods used in networks and working principle of electrical machines.	2	1											1	
	CO2:Write the differential equations for a given RLC network and solve them analytically for the transient and steady state responses to a step input.	2	1											1	
	CO3:Predict qualitatively and quantitatively and compute the steady state AC responses of basic circuits using the phasor method.	2	1											1	
	CO4:Explain the principles of electric filters.	2	1											1	
	CO5:Explain the characteristics of various types of motors.	2	1											1	
	CO6:Explain how the speed of a DC shunt motor can be controlled	2	1											1	
	CO7:Calculate efficiency and regulation of a transformer	2	1											1	
	CO8:Explain the characteristics of stepper motors, servo motors and synchronous motors	2	1											1	
	Average Correlation	2	1												1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Electronic Circuit Analysis	CO1:Distinguish classification of amplifiers and analyze the CE, CB, CC amplifiers using small signal hybrid model and derive the voltage gain, current gain, input impedance and output impedance.	2	3										1	3	
	CO2: Design and analyze the cascaded RC coupled BJT amplifier and different types of the coupled amplifiers.	2	3	3									1	3	
	CO3: Design and analyze single stage amplifiers and their frequency response, its	2	3	3									1	3	

	gain band width product and effect of coupling and bypass capacitors in amplifiers.														
	CO4: .Design and analyze the different types of feedback amplifiers.	2	3	3									1	3	
	CO5: Design and analyze different types of the MOS amplifiers and their frequency response by using the small signal model	2	3	3									1	3	
	CO6: Explain the condition for oscillations in oscillators and design and analyze different types of oscillators.	2	3	3									1	3	
	CO7: Design and analyze different types of power amplifiers and compare them in terms of efficiency.	2	3	3									1	3	
	CO8: Design and analyze the effects of cascading on single, double tuned amplifiers on bandwidth and explain their stability.	2	3	3									1	3	
	Average Correlation	2	3	2.62									1	3	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Pulse and Digital Circuits	CO1: Design non-linear wave shaping circuits.		2	3	3	3							1	3	2
	CO2: Use diodes and transistors as switches.		2	3	1	3							1	3	1
	CO 3: Design and analyze multivibrators.		2	3	2	3							1	3	3
	CO4: Design time base generators for different frequencies.		2	3	1	2							1	3	2
	CO5: Work with synchronization and frequency division circuits.		1	3	1	2							1	3	2
	CO 6: Work with various sampling gates		1	3	2	1							1	3	3
	CO7: Design logic gates using diodes and transistors		1	3	1	2							1	3	3
	Average Correlation		1.6	3	1.75	2.3							1	3	2.25
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Environmental studies	CO1: Explain ecosystem and its functions namely	3						3							

	CO2: Acquire knowledge about different types of natural resources such as land, water, minerals, non-renewable energy and their excessive usage leading to detrimental effects on environment.	1						3							
	CO3: Comprehend ecosystem diversity, its values and importance of hot spots to preserve the same	2						3							
	CO4: Explain different types of pollution, its control and impact on global environment.	3						3							
	CO5: Recognize various environmental impacts and the importance of various acts and policies towards environmental sustainability.	3						3							
	Average Correlation	2.4						3							
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Electro-magnetic theory and Transmission lines	CO1: Study time varying Maxwell's equations and their applications in electromagnetic problems.	3	3	3	1	1							1	3	1
	CO2: Determine the relation between time varying electric and magnetic field and electromotive force	1	1	1	1	1							1	3	2
	CO3: Analyze basic transmission line parameters in phasor domain	2	2	2	2	2							1	3	2
	CO4: Use Maxwell's equations to describe the propagation of electromagnetic waves in free space	3	3	3	3	2							1	3	1
	CO5: Show how waves propagate in dielectrics and lossy media	3	3	3	3	3							1	3	2
	CO6: Demonstrate the reflection and refraction at boundaries	2	2	2	2	2							1	3	2
	CO7: Explain the basic waveguide operation and parameters	1	1	1	1	1							1	3	1
	Average Correlation	2.14	2.14	2.14	1.84	1.71							1	3	1.57
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

Digital Design using Verilog HDL	CO1: Write Verilog Hardware Descriptive Language (HDL) programs using HDL Constructs	2	3	3						1			2	3	3	
	CO2: Design, Implement and Verify Digital Circuits by developing HDL code	2	3	3						1			2	3	3	
	CO3: Synthesize, Implement and Verify Behavioural and Register Transfer Level (RTL) models for Digital Circuits using Verilog HDL.	2	3	3	2					1			2	3	3	
	CO4: Synthesize, implement and verify Gate Level Models using Verilog HDL	2	3	3	2					1			2	3	3	
	Average Correlation	2	3	3	1					1			2	3	3	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Electrical Technology lab	CO1: Learn how to use a digital multi meter (DMM) to measure DC current, DC voltage and Verify KVL & KCL for DC circuits incorporating series and parallel resistances.	3								1				2		
	CO2: Solve problems related to RLC circuits	3								1				2		
	CO3: Plot the AC steady-state response of a series <i>RL</i> and RC circuits.	2								1				2		
	CO4: Explain the significance of Z, Y, ABCD and h-parameters, derive their relationships and solve Simple problems on Two-port networks.	3									1				2	
	CO5: Verify Network Theorems by comparing Theoretical and experimental values.	3									1				2	
	CO6: Calculate the critical resistance and critical speed form the characteristics and how to run the generator used prime mover.	2									1				2	
	CO7: Calculate the efficiency of dc shunt motor as well as dc shunt generator and how to vary the speed of the machine	2									1				2	

	corresponding load.														
	CO8: Identify the winding on the transformers and can perform load test on single phase transformers	2								1				2	
	Average Correlation	2.5								1				2	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Electronic circuits and Pulse circuits Lab	CO1: Measure the overall frequency response of a common-emitter amplifier circuit, a voltage amplifier using N-channel JFET device in common source configuration__two-stage RC coupled common emitter amplifier with coupling capacitors.	3								1				2	
	CO2: Plot the frequency response of a Single Tuned voltage amplifier and find the resonant frequency.	3								1				2	
	CO3: Determine the frequency of oscillations - Hartley oscillator and Colpitts oscillator RC phase shift oscillator and Wein Bridge Oscillator.	2									1			2	
	CO4: Plot the frequency response of MOS amplifier.	3									1			2	
	CO5: Calculate the bandwidth of Class A power amplifier.	3									1			2	
	CO6: Implement digital circuits using flip-flops.	2									1			2	
	CO7: Design sampling gates.	2									1			2	
	CO8: Design and analyze astable multivibrator.	2									1			2	
	CO9: Design and analyze mono multivibrator.	3									1			2	
	CO10: Design and analyze bi-stable multivibrator.	2									1			2	
	CO11: Design and analyze Schmitt trigger.	2									1			2	
	CO12: Able to design UJT relaxation oscillator.	2									1			2	

	CO13: Design Bootstrap sweep generator.	2								1				2	
	Average Correlation	2.38								1				2	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Control Systems Engineering	CO1: Explain the fundamentals of (feedback) control systems.	1	2												
	CO2: Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.	2	2												
	CO3: Express and solve system equations in state-variable form (state variable models).	3	2												
	CO4: Determine the time and frequency-domain responses of first and second-order systems to step and sinusoidal (and to some extent, ramp) inputs.	3	2												
	CO5: Determine the (absolute) stability of a closed-loop control system	2	2												
	CO6: Use root-locus technique to analyze and design control systems.	3	2												
	CO7: Determine parameters for the compensators to meet specified requirements on phase margin, SSE and speed of response.	3	2												
	Average Correlation	2.42	2												
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Computer Organization and Operating Systems	CO1: Explain the basic operation of the computer systems.	3	2												
	CO2: Explain the operations of ALU and control unit in computers.	1	2												
	CO3: Explain various methods of improving the computer performance like pipelining, MIMD systems, and cache memory utilization.	2	2												
	CO4: Have the knowledge of computer memory and various peripheral systems	3	2												

	and their interface with the processor.														
	CO5: Know algorithms for implementing different arithmetic operations in the computer system.	3	2												
	CO6: Identify different interconnection methods for multi-processor and multi-computer systems.	3	2												
	CO7: Compare the specifications given by the various computer suppliers for the products available in the computer market, at present and able to compare & select a good computer system		2												
	Average Correlation	2.5	2												
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Antennas and Wave Propagation	CO1: Define antenna parameters such as antenna efficiency, beam efficiency, radiation resistance etc. and explain the mechanism of radiation of an antenna.	3	3	3	1	1							1	3	1
	CO2: Analyze electric and magnetic fields of various antennas for far field and near field conditions.	1	1	1	1	1							1	3	2
	CO3: Design the various types of arrays of different antennas and explain the mechanism involved	2	2	2	2	2							1	3	1
	CO4: Analyze design parameters of fundamental antennas like Yagi-Uda, Horn antennas and helical structure and also explain their operation principle.	3	3	3	3	2							1	3	1
	CO5: Design a lens antenna and also explain the methods of measurement of antenna parameters such as gain, directivity etc.	3	3	3	3	2							1	3	2
	CO6: Exhibit knowledge about the means of propagation of Electromagnetic wave i.e. free space propagation and also about frequency dependent layer selection, its	3	3	3	2	1							1	3	2

	respective issues for an effective transmission of information in the form of EM wave to a remote location and related issues.														
	Average Correlation	2.5	2.5	2.5	2	1.5							1	3	1.5
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Electronic Measurements and Instrumentation	CO1: Describe the parameters of electronic measurement.	2	1												
	CO2: Identify different types of electronic instruments.	3	1												
	CO3: Analyze the real applications of electronic measurement.	3	1												
	CO4: Derive the expressions for unknown parameters from known parameters.	3	1												
	CO5: Analyze the features of basic types of CROs.	3	1												
	CO6: Analyze the modern types like Digital Storage CROs.	3	1												
	CO7: Design the parameters of Transducers.		1												
	CO8: Calculate the Physical parameters like water flow, temperature, pressure.		1												
	Average Correlation	2.8	1												
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Analog Communications	CO1: Analyze the basic units of an analog communication system along with the knowledge of the need for modulation.	1	1	1	1	1							1	1	1
	CO2: Learn and implement the basic analog modulation techniques like AM & DSB-SC. Also solve problems based on modulation index and power relations.	2	2	3	2	1							2	3	2
	CO3: Illustrate and differentiate the analog modulation techniques like AM, DSB-SC, SSB & VSB and analyze the same in frequency and time domains.	3	2	3	2	1							2	3	2
	CO4: Relate and demonstrate the	3	2	3	2	1							2	3	2

	Frequency Modulation and Phase Modulation –their various techniques. Also can compute numerical on deviation, Band width and spectrum parameters.														
	CO5: Compare the FM wave generation methods and to demonstrate PLL.	3	2	2	2	1							2	3	2
	CO6: Identify the effect of noise during signal transmission in different analog modulation schemes.	3	2	2	2	2							2	3	2
	CO7: Explore the various blocks in Transmitters and Receivers for AM and FM techniques and also the parameters related to the circuitry of the system.	3	2	2	2	1							2	3	2
	CO8: Implement the different analog pulse modulation techniques as part of introduction to Digital Communication system.	3	2	2	2	1							2	3	2
	Average Correlation	2.6	1.9	2.3	1.9	1.1							1.9	2.8	1.9
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Linear and Digital IC Applications	CO1: Explain the concepts of Operational Amplifier and its features and apply the concepts of Op-Amps in the design of Summing Amplifier, Subtractors, Comparators, Differentiators, Integrators and Voltage Regulators.	2	2	3		1							1	3	1
	CO2: Analyze and design Op-Amp based circuits namely Active Filters, Waveform generators; Design and apply Astable and Mono stable multi vibrator modes using 555 Timer IC; Conceptualize Phase Locked Loop using 565 IC and explain its applications.	2	3	3		1							1	3	1
	CO3: Analyze and design DACs and ADCs using various methods of implementation.	2	3	3		1							1	3	1
	CO4: Compare different families of digital integrated circuits namely TTL and CMOS	2	3	3		1							1	3	2

	and their characteristics; Design various combinational circuits using digital ICs.														
	CO5: Design Sequential Circuits and memories using digital ICs.	2	2	3		1							1	3	2
	Average Correlation	2	2.6	3		1							1	3	1.4
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Analog Communications lab	CO1: Identify, compare and discriminate the various AM modulation and demodulation techniques using hardware and can develop the code required to verify the same using simulation software.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO2: Apply pre-emphasis and de-emphasis circuits in frequency modulation and can interpret the effect of noise on frequency modulated signal, as well can develop the code to analyze the same using MATLAB software.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO3: Calculate the deviation and modulation index of FM through calibration using hardware and conclude whether the modulated signal is a Narrow band or Wide band FM signal and also can verify the same by developing the code in MATLAB.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO4: Calculate the capture range and lock range of PLL circuit through hardware implementation and can write the program required for simulation.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO5: Reconstruct the original signal by illustrating the Sampling Theorem through hardware circuit and can prove the same using MATLAB program.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO6: Generate frequency and time division multiplexed signal and recover back the demultiplexed signals without interference using hardware. Verify the same using	3	1	1	2	2		2	1	2	2	1	2	2	1

	simulation software by developing appropriate code.														
	CO7: Implement a super heterodyne receiver using hardware and examine the AGC characteristics by relating the input and output voltages of AM signal. Prove the same using MATLAB program.	3	1	1	2	2		2	1	2	2	1	2	2	1
	CO8: Compare, discriminate and implement the different analog pulse modulation techniques (PAM, PWM, and PPM) on hardware and also can verify through simulation software.	3	1	1	2	2		2	1	2	2	1	2	2	1
	Average Correlation	1.8	1	1	2	2		2	1	2	2	1	2	2	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
IC Applications and HDL Simulation lab	CO1: Understand the basics of Op-Amp, design and implement the linear applications using IC 741 such as, Adder, Subtractor, Differentiator, Integrator, active filters, multivibrators, waveform generators, Schmitt trigger.		2	1	2	1	1	2	2	1	1	1	2	3	2
	CO 2: Understand the functionality of Phase locked loops (PLL) and its applications		2	1	2	1	1	2	2	1	1	1	2	3	2
	CO 3: Understand the functionality and determine the load and line regulations of various voltage regulators such as IC 723, IC 7805, IC 7809 and IC 7912		2	1	2	1	1	2	2	1	1	1	2	3	2
	CO 4: Design and simulate the logic gates, combinational circuits and sequential circuits using verilog HDL on Xilinx software package		2	1	1	3	1	2	2	1	1	1	1	1	3
	Average Correlation		2	1	1.8	1.5	1	2	2	1	1	1	1.8	2.5	2.3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Managerial Economics and Financial Analysis	CO1: Apply the managerial economics principles in various decisional areas of business organization and Estimate demand	2		2			2		3	1	-	2			

	for the product by using the tools of other disciplines like operation research, psychology, anthropology etc.														
	CO2: Determine producer's equilibrium for optimum productivity and Determine optimum size of the firm.	2	2	3	2		2		3	1	1	3	2		
	CO3: Identify the suitable market and suitable firm for the product and fixing price for the product by using different pricing strategies.		2	2	3	1	1		2	2	1	3	2		
	CO4: Evaluate the investment by using capital budgeting techniques.		1	2	3	1	1		2	2	1	2	2		
	CO5: Understand, prepare and analyze financial statements.		1	2	2	1	1	1	2	2	1	2	2		
	Average Correlation	2	1.5	2.2	2.5	1	1.4	1	2.4	1.6	1	2.4	2		
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Human Values and Professional Ethics	CO1: It ensures students sustained happiness through identifying the essentials of human values and skills.							2	2	2	2		2	2	
	CO2: It facilitates a correct understanding between profession and happiness						1	2	2	2	2		2	2	
	CO3: It helps students understand practically the importance of trust, mutually satisfying human behavior and enriching interaction with nature.								2	2	2	2		2	2
	CO4: Ability to develop appropriate technologies and management patterns to create harmony in professional and personal life							1	2	2	2	2	1	2	2
	Average Correlation						1	2	2	2	2	1	2	2	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Disaster Management	CO1: Explain about the environmental hazards and Disasters and their types	1					3							1	1
	CO2: Explain about the Cyclonic hazards,	1					3							1	1

	Cumulative atmospheric hazards															
	CO3: Explain about the Chemical hazards and disasters	1					3							1	1	
	CO4: Explain about Endogenous hazards	1					3							1	1	
	Average Correlation	1					3							1	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Intellectual Property Rights	CO1: Explain the types of intellectual properties rights and Purpose and function of Trade marks	1												1	1	
	CO2: Explain the law of copy rights	1												1	1	
	CO3: Explain Trade secrets	1												1	1	
	CO4: Explain New developments of intellectual property	1												1	1	
	Average Correlation	1												1	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Digital Communications	CO1: Explain the basic elements of Digital communication Systems, SNR trade off with channel bandwidth, sampling theorem and pulse code modulation, its advanced versions	1	1	2	2								1	2	1	
	CO2: Compare different pass band digital modulation techniques like ASK, PSK etc and compute the Probability of error in each scheme and explain optimum receiver concept	2	2	2	2									1	2	1
	CO3: Calculate different parameters like power spectrum density, probability of error etc of Base Band transmission and optimum reception and analyze the eye diagrams for ASK, FSK and PSK	2	2	2	2									1	2	1
	CO4: Analyze the concepts of Information theory, Huffman coding, Shannon Fano coding etc to increase average information per bit.	1	1											1	2	1
	CO5: Generate and retrieve data using block codes, Convolutional codes and	1	1	2	2									1	2	1

	solve numerical problems on error detection and correction capabilities.															
	CO6: Describe the different criteria in spread spectrum modulation scheme and its applications.	1	1	1	1								1	1	1	
	Average Correlation	1.3	1.3	1.5	1.5								1	1.8	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
VLSI Design	CO 1: Demonstrate the Fabrication of IC	3	2													
	CO 2: Calculate the electrical properties of MOS Transistor	3	2											2	1	
	CO3: Draw the Stick Diagram and Layout of Logic Circuit.	3	2											2	1	
	CO4: Design a Logic Circuit with MOS Transistors	3	2											2	1	
	CO5: Implement Subsystems with CMOS Technology.	3	2											2	1	
	CO6: Design various forms of memories.	3	2											2	1	
	CO7: Design PAL, PLA, CPLD and FPGA	3	2											2	1	
	CO8: Distinguish the various Testing Techniques of CMOS	3	2											2	1	
	Average Correlation	3	2											2	1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Microprocessors and Microcontrollers	CO1: Explain the architecture and modes of operation of 8086 Microprocessor	2	2	2	3								1	3	3	
	CO2: Write Assembly language program (ALPs) for 8086 Microprocessor	2	2	2	3								1	3	3	
	CO3: Design 8251, 8255 interfaces for 8086 Microprocessor.	2	2	2	3									1	3	3
	CO4: Explain the Architecture and features of 8051	2	2	2	3									1	3	2
	CO5: Design and develop ALP code for 8051 Microcontroller	2	2	2	3									1	3	3
	CO6: Explain the operation of the interrupts, timers / counters and serial communication interface for 8051 Microprocessor.	2	2	2	3									1	3	3

	Average Correlation	2	2	2	3								1	3	3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Digital Signal Processing	CO1: Represent Analog and Discrete time signals in frequency domain.	3												2	1
	CO2: Calculate discrete time domain and frequency domain of signals using discrete Fourier Series and Fourier transform.	2												2	1
	CO3: Develop Fast Fourier Transform (FFT) algorithms for faster realization of signals and systems.	3												2	1
	CO4: Calculate Z-transforms for discrete time signals and system functions.	3												2	1
	CO5: Design Digital IIR filters.	2	2											2	1
	CO6: Design Digital FIR filters.	2	2											2	1
	CO7: Design different kinds of interpolator and decimator.	2	3											2	1
	CO8: Demonstrate the impacts of finite word length effects in filter design.	3	2											2	1
	Average Correlation	2.5	2.3												2
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Microprocessors and microcontrollers lab	CO1: Design and develop ALP programs for 8086 Microprocessor for executing various requirements.	3	3	2	1					1			1	3	2
	CO2: Develop interfaces with external peripherals and I/O devices and design necessary programs for communication with them.	3	3	2	1					1			1	3	2
	CO3: Design methods to communicate data serially.	3	3	2		1				1	1			3	1
	CO4: Write Interrupt Service Routines (ISRs) to handle different types of interrupts generated in 8086 and 8051.	3	3	2	1						1			3	2
	CO5: Develop ALP programs for 8051 Microcontrollers.	3	3	3	1						1		1	3	3
	Average Correlation	3	3	2.8	1	1					1	1			3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

Digital signal processing lab	CO1: Generate different types of Signals using MATLAB and DSP Processor.	2	1											1	
	CO2: Plot DFT, FFT, and phase and Magnitude spectrums of various signals.	2	1											1	
	CO3: Implement low pass and high pass FIR and IIR Filters	2	1											1	
	CO4: Generate DTMF Signals	2	1											1	
	CO5: Explain the working of TMS320C67xx kit.	2	1											1	
	Average Correlation	2	1												1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Management Science	CO1: Apply the concepts & principles of management in real life industry.											3		1	
	CO2: Design & develop organization chart & structure for an enterprise.											3		1	
	CO3: Apply PPC techniques, Quality control in industry											3		1	
	CO4: Identify Marketing Mix Strategies for an enterprise.											3		1	
	CO5: Apply the concepts of HRM in Recruitment, Selection, and Training & Development.											3		1	
	CO6: Develop PERT/CPM Charts for projects of an enterprise and estimate time & cost of project.											3		1	
	CO7: Develop Mission, Objectives, Goals & strategies for an enterprise in dynamic environment.											3		1	
	CO 8: Apply modern management techniques MIS, ERP, MRP, TQM, CMM, SCM, BPO, BPR, Bench Marking and Balance Score Card wherever possible.											3		1	
Average Correlation											3		1		
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Microwave Engineering	CO 1: Ability to design of microwave wave guides and its mode characteristics at	3	3	2	2	1	2	1	1		1	1	2	2	2

	various frequency bands to design communication systems.														
	CO2: Ability to design rectangular cavity resonators, filters and solve the problems . students are having knowledge of microstriplines.	3	3	2	2	2	1	1	2	1	2	2	2	2	1
	CO3: Explain microwave coupling mechanisms, waveguide discontinuities, attenuators and phase shifters. (b)A knowledge about microwave T-Junctions, Directional coupler properties and Applications.	3	3	2	1	1	1		1	1	1	2	2	2	1
	CO4: A knowledge of ferrite materials in designing microwave components and apply s-matrix properties to analyze the characteristics of microwave components.	3	3	2	1	1	1	1		1	1	2	2	2	1
	CO5: Analyze and interpretation of microwave oscillators (Reflex Klystron), amplifiers(Two cavity klystron) operation, bunching process, output power and efficiency.	3	3	2	1	1	1	1	1	1	1	2	2	2	2
	CO6: Analyze and interpretation of microwave slow wave structures use in designing efficient microwave oscillator(M-Type) and Amplifiers(O-Type).	3	3	2	1	1	1		1	1	1	2	2	2	2
	CO7: Explain microwave solid state devices operation, characteristics and types of devices	3	3	2	1	1	1	1	1		1	2	2	2	2
	CO8: Carry out measurement and testing of microwave physical parameters like impedance, power, VSWR, efficiency and attenuation using microwave test bench setup.	2	1	1	1	2	2	1		1	2	2	2	2	2
	Average Correlation	2.9	2.8	1.9	1.3	1.3	1.3	1	1.2	1	1.3	2	2	2	1.6
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

Computer Networks	CO1:Identify the different types of network topologies, protocols and enumerate the layers of the OSI and TCP/IP references model.	1	1	2									1		1
	CO2:Identify the different types of network devices and their functions within a network.	2	1	2									1		1
	CO3:Develop the skills of Subnetting and routing algorithms.	2	1	2									1		1
	CO4:Demonstrate the principal communication protocol and internetworking which establishes the internet.	1	1	3									1		1
	CO5:Understand the working functions of UDP and TCP Protocols in internet.	3	1	3									2		1
	Average Correlation	1.8	1	2.4									1.2		1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Cellular and Mobile Communications	CO1: Explain the basic cellular mobile telephone systems (limitations, elements and evolution) and the techniques to improve the capacity of the system.	2	2	1	2		1	3	2				2	2	
	CO2: Solve for the propagation attenuation in the mobile environment and explain the causes of long-term and short term fading, and various diversity techniques to overcome different fading effects at the mobile and cellsite.	3	2	2	1			1					1	1	
	CO3: Distinguish between the co-channel and non-cochannel interferences. Determine the desired C/I, methods/techniques/analytic solutions, antenna parameters/patterns, antenna configurations and type of antennas (at mobile and cellsite) to reduce their effects.	3	3	2	3			1	2				1	2	1
	CO4: Derive the expression to obtain the path loss from propagation models for	3	3	1	2			2					1	1	1

	mobile signals in different conditions.														
	CO5: Demonstrate the concept of frequency management and explain the channel assignment schemes and different Handoff strategies to overcome the situations of interference and call drops in the system.	2	2	1	1		2	2	2				1	2	
	Average Correlation	2.6	2.4	1.4	1.8		1.5	1.8	2				1.2	1.6	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Digital Image Processing	CO1: Explain the concepts of Image fundamentals and different types of Image Transforms Sampling and Quantization, relationship between pixels	1	2		1	2							2	3	3
	CO2: Explain the Image enhancement in spatial domain and Histogram manipulation.	1	2	3	2	3	1	1					2	3	3
	CO3: Explain Image enhancement in frequency domain.	1	2	3	2	3	1	1					2	3	3
	CO4: Explain Image restoration techniques.	1	2	3	2	3	1	1					2	3	3
	CO5: Explain image segmentation techniques.	1	2	3	2	3	1	1					2	3	3
	CO6: Explain Morphological image processing	1	2	3	2	3	1	1					2	3	3
	CO7: Explain image compression techniques.	1	2	3	2	3	1	1					2	3	3
	Average Correlation	1	2	2.5	1.8	2.8	1	1					2	3	3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Multimedia and Signal Coding	CO1: Explain the concepts of multimedia signal processing and multimedia compression	3	2											2	
	CO2: Explain the existing multimedia compression and communication standards.	3	2											2	
	CO3: Apply knowledge to solve specific multimedia problems.	3	2											2	
	Average Correlation	3	2											2	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

Object Oriented Programming	CO1: Explain OOP concepts and Basic JAVA Programming	3	2											2	
	CO2: Apply knowledge of OOP and JAVA to solve real world problems.	3	2											2	
	Average Correlation	3	2											2	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Television Engineering	CO1: Explain the basic function of picture tube and TV standards	2	1											1	
	CO2: Distinguish between monochrome and colour Television transmitters and Receivers	2	1											1	
	CO3: Analyze and evaluate the NTSC and PAL colour systems	2	1											1	
	Average Correlation	2	1											1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Optical Communications	CO1: Explain the basic concepts and advantages of fiber optics communication.	2	1											1	
	CO2: Make theoretical calculations for coupling light efficiently into optical fibers using lens coupling.	2	1											1	
	CO3: Calculate pulse spread in optical fiber and use it to calculate the bandwidth and data rate of an optical fiber link.	2	1											1	
	CO4: Solve the wave equation and apply it in the analysis of symmetric slab waveguide.	2	1											1	
	CO5: Analyze the concept of source to fiber power launching	2	1											1	
	CO6: Explain Fiber Splicing and Splicing techniques	2	1											1	
	CO7: Explain the concept and conditions for light guidance.	2	1											1	

	CO8: Calculate the number of guided modes, the condition for single and multimode operation of optical waveguides, etc.	2	1											1	
	Average Correlation	2	1											1	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Embedded System Design	CO1: Design a basic Embedded System.	1	1	3	2			2							
	CO2: Comprehend basics of OS and RTOS.	1	1	3											
	CO3: Analyze the different types of memories and interfacing to external world in relation to Embedded Systems.	1	1	3	2			2							
	CO4: Design Embedded firmware based on various approaches.	1	1	3	2			2							
	Average Correlation	1	1	3	2			2							
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Advanced Communication Skills Lab	CO1: Explain the importance of sound vocabulary and its proper use contextually					2	1			2		1		2	
	CO2: Write effective English					2	1			2		1		2	
	CO3: Speak effectively					2	1			2		1		2	
	Average Correlation					2	1			2		1		2	
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Microwave Engineering and Digital Communication Lab	CO1: Measure and Plot the characteristics of Klystron and Gunn oscillators	3	2							2			1	3	2
	CO2: Measure various parameters pertaining to Rectangular waveguide	3	2							2			1	3	2
	CO3: Setup Microwave bench and carryout various measurements	3	2							2			1	3	2
	CO4: Perform experiments of various types of digital modulation techniques	3	2							2			1	3	2
	Average Correlation	3	2							2			1	3	2
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Satellite Communications	CO1: Explain the basic concepts and frequency allocations for satellite communications	1	2	3	1	1							1	2	1

	CO2:Explain orbital mechanics, launch vehicles and launchers	1	2	3	1	1							1	2	2
	CO3:Design satellite links for specified C/N with system design examples	2	3	3	2	2							1	3	1
	CO4:Explain satellite sub-systems like telemetry, tracking, command and monitoring power systems	2	3	3	1	1							1	2	1
	CO5:Explain various multiple access systems	3	3	3	1	3							1	3	2
	Average Correlation	1.8	2.6	3	1.2	1.6							1	2.4	1.4
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Biomedical Instrumentation	CO1:Explain the basic concepts of Bio-medical instrumentation	2	2		2	2				2			1	3	1
	CO2: Explain bio-electrodes and activities of heart	2	2		2	1				1			1	2	1
	CO3:Analyze ECG,EEG and EMG recordings for disorder identification	2	2		2	3				3			1	3	2
	Average Correlation	2	2		2	2				2			1	2.6	1.3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Artificial Neural Networks	CO1:Explain the function of artificial neural networks of the Back-prop, Hopfield and SOM type	3	2										1	2	1
	CO2:Explain the difference between supervised and unsupervised learning	3	2										1	2	1
	CO3:Derive the ANN algorithms dealt with the course	3	2										1	2	1
	CO4:Implement ANN algorithms to achieve signal processing, optimization, classification and process modeling	3	2										1	2	1
	Average Correlation	3	2										1	2	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Telecommunication Switching System and Networks	CO1:Explain the main concepts of telecommunication network design	3	2										1	2	1
	CO2:Analyze and evaluate fundamental telecommunication traffic models	3	2										1	2	1
	CO3:Explain the basic modem signaling	3	2										1	2	1

	system														
	CO4:Solve traditional interconnection switching system design problems and packet switching	3	2										1	2	1
	Average Correlation	3	2										1	2	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Radar Systems	CO1:Demonstrate the basic principle of RADAR System.	3	3	3	2	2						1	1	3	1
	CO2:Solve the RADAR Equation and to calculate Transmitter power.	3	3	3	2	1						1	1	3	2
	CO3:Analyze the working principle of CW and Frequency Modulated Radar.	3	3		2	2						1	1	3	2
	CO4:Draw the block diagram of FM-CW Radar and also calculate Measurement errors.	3	1		2	1						1	1		
	CO5:Analyze the principle of each and every block of MTI and Pulse Doppler Radar.	3	1		2	2						1	1	3	2
	CO6:Analyze Tracking Radar principle.	3	1		2	2						1	1	3	2
	CO7:Demonstrate the basic principle of Receiver and also extraction of signal in Noise.	3	1		2							1	1	3	1
	CO8:Calculate Noise Figure and Noise Temperature in Radar Receivers and can describe antennas used for Radars.	3	1	3	2							1	1	3	2
	Average Correlation	3	1.8	3	2	1.7						1	1	3	1.7
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Network Security	CO1:Explain network security and its changing character	3	2										1	2	1
	CO2:Illustrate conventional encryption and cryptography techniques	3	2										1	2	1
	CO3:Analyze issues related to network IP security	3	2										1	2	1
	CO4:Investigate and explain web security requirements	3	2										1	2	1
	Average Correlation	3	2										1	2	1

Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Wireless Communications and Networks	CO1:To analyze the performance of different cellular network generations and to understand the basic cellular system, frequency reuse, channel assignment strategies, handoff strategies and interference.	1	3	3	1	3	1	1	3	1	1	3	3	3	2
	CO2:To analyze the Indoor and outdoor mobile radio channel models and estimate the large scale path loss during mobile radio propagation.	1	3	1	1	3	1	2	1	1	1	1	2	3	2
	CO3:To analyze small scale fading effects and multipath effect during mobile radio propagation.	1	3	1	1	3	1	1	2	1	1	3	3	3	2
	CO4:To understand the fundamentals of Equalization and Diversity techniques.	1	3	1	1	3	1	2	1	1	1	3	3	3	2
	CO5:To understand the evolution of the wan industry, wireless home networking IEEE 802.11,the Physical layer.	1	3	2	1	3	1	1	2	1	1	3	3	3	2
	Average Correlation	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Digital Signal Processors and Architectures	CO1:Distinguish between DSP Processors and General Purpose Processors.	2	2	3									1	3	1
	CO2:Explain various architectures of TMS320C54xx, ADSP 2100 and Blackfin Processors.	2	2	3									1	3	1
	CO3:Design and interfacing techniques for memory to programmable DSP devices.	2	2	3									1	3	1
	CO4:Interface I/O peripherals for programmable DSP devices	2	2	3									1	3	1
	Average Correlation	2	2	3									1	3	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
RF Circuit Design	CO1:Explore fundamental RF Circuit and System Design Skills	3	2											2	1
	CO2:Explain the basic transmission line theory, Single and Multiport networks, RF	3	2											2	1

	Component modeling														
	CO3:Design matching and biasing networks and RF transistor amplifiers	3	2											2	1
	Average Correlation	3	2											2	1
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Industry Oriented Mini Project	CO1: Identify the literature survey	3											1	3	2
	CO2:Do the formulation of problem/project	3	3	3		3							1	3	2
	CO3:Do Mathematical modeling	3	3	3		3							1	3	2
	CO4:Do Programs in MATLAB/ PSPICE/ VHDL/	3	3	3		3							1	3	2
	CO5:Do compilation / simulation & synthesize	3	2	2	3	3							1	3	2
	CO6:Do the fabrication/assemble/load	3	3	3		3					3		1	3	2
	CO7:Do testing	3	3	3		3						3	1	3	2
	CO8 :Write thesis	3		3								3	1	3	2
	Average Correlation	3	2.1	2.5	3	3					3	3		1	3
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Seminar	CO1:Identify the field on which they have to present.	2	2		1		1	1		2			2	2	1
	CO2: Do the survey on the latest developments in that field.	2	2		1		1	1		2			2	2	1
	CO3:Gather the data related to the topic selected.	2	2		1		1	1		2			2	2	1
	CO4:Sort the data on what to present.	2	2		1		1	1		2			2	2	1
	CO5:List out the books referred.	2	2		1		1	1		2			2	2	1
	CO6:List out the websites referred.	2	2		1		1	1		2			2	2	1
	CO7:Prepare the power point presentation on the topic selected.	2	2		1		1	1		2			2	2	1
	CO8:Prepare the report of the technical seminar on the topic selected.	2	2		1		1	1		2			2	2	1
	Average correlation	2	2		1		1	1		2			2	2	2
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Major Project	CO1: Apply fundamental concepts of engineering	3								3			1	3	2

	CO2: Identify and formulate of the problem	3	3	3		3				3			1	3	2
	CO3: Design as per the requirements	3	3	3		3				3			1	3	2
	CO4: Simulate by using MATLAB/ PSPICE/ VHDL/VERILOG/ EMBEDDED C	3	3	3		3				3			1	3	2
	CO5: Fabricate ,assemble , compile and synthesize	3	2	2	3	3				3			1	3	2
	CO6: Work individual and with team	3	3	3		3				3			1	3	2
	CO7: Test and demonstrate	3	3	3		3				3	3		1	3	2
	CO8: Write thesis	3		3						3	3		1	3	2
	Average Correlation	3	2.1	2.5	3	3				3	3		1	3	2
Title of the Course	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Comprehensive Viva	CO1: Analyze the concepts in the core areas of Communication Systems, analog & digital Electronics, Microprocessors and Signal Processing	3	2	1			1			3					
	Average Correlation	3	2	1			1			3					

Course - PO matrix of all courses for 2013-17 Batch (R13/ R15 JNTUH)

Course Code	Course	PO											PSO		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	English	-	-	-	2.67	-	1.00	3.00	1.00	2.67	2.67	-	1.00	-	-
C102	Mathematics-I	3.00	2.00	1.40	-	-	1.00	-	-	-	-	-	2.00	1.00	
C103	Mathematical Methods	3.00	2.00	1.40	-	-	1.00	-	-	-	-	-	2.00	1.00	
C104	Engineering Physics	2.00	2.00	-	-	-	-	-	-	1.00	-	-	1.00	1.00	
C105	Engineering Chemistry	2.00	1.00	1.00	-	-	-	-	1.00	-	-	-		1.00	1.00
C106	Computer Programming	2.00	-	-	-	-	-	-	-	-	-	-	1.00	1.00	
C107	Engineering Drawing	2.00	1.00	1.00	-	-	-	-	-	-	-	-	1.00		
C108	Computer Programming lab	2.00	-	-	-	-	-	-	-	-	-	-	2.00		
C109	Engineering Physics/ Engineering Chemistry lab	2.00	2.00	1.00	-	-	-	-	1.00	-	-	-	-		
C110	English Language Communication Skills lab	-	-	-	1.00	-	-	2.00	-	-	-	-	-		
C111	IT Workshop / Engineering Workshop	2.00	-	-	-	-	-	-	-	1.00	-	-	-		
C201	Mathematics-III	3.00	1.75	-	-	-	-	-	-	-	-	-	-		
C202	Probability Theory and Stochastic Processes	2.00	3.00	2.40	-	-	-	-	-	-	-	-	1.00	3.00	-
C203	Switching Theory and Logic Design	2.50	3.00	2.00	2.00	-	-	-	-	-	-	-	1.00	3.00	-
C204	Electrical circuits	2.80	2.40	1.60	1.40	1.00	1.00	-	-	-	-	1.00	-	3.00	1.00
C205	Electronic Devices and Circuits	2.33	2.17	2.06	1.16	-	-	-	-	-	-	-	1.00	2.00	1.00
C206	Signals and Systems	2.75	1.00	2.87	-	-	-	-	-	-	-	-	1.87	3.00	
C207	Electronic Devices and Circuits Lab	1.87	-	-	-	-	-	-	-	-	-	-	-	2.00	2.00
C208	Basic Simulation lab	1.87	2.00	2.25	2.37	3.00	-	-	-	-	-	-	1.00	3.00	3.00
C209	Principles of Electrical Engineering	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	
C210	Electronic Circuit Analysis	2.00	3.00	2.62	-	-	-	-	-	-	-	-	1.00	3.00	
C211	Pulse and Digital Circuits		1.60	3.00	1.75	2.30	-	-	-	-	-	-	1.00	3.00	2.25
C212	Environmental Studies	2.40	-	-	-	-	-	3.00	-	-	-	-	1.00		
C213	Electro-magnetic theory and Transmission lines	2.14	2.14	2.14	1.84	1.71	-	-	-	-	-	-	1.00	3.00	1.57
C214	Digital Design through Verilog HDL	2	3	3	1	-	-	-	-	1			2	3.00	3.00
C215	Electrical Engineering Lab	2.00	3.00	3.00	1.00	-	-	-	-	1.00	-	-	2.00	2.00	
C216	Electronic Circuits and Pulse Circuits Lab	2.38	-	-	-	-	-	-	-	1.00	-	-	-	2.00	
C301	Control Systems Engineering	2.42	2.00	-	-	-	-	-	-	-	-	-	-		
C302	Computer Organization and Operating Systems	2.50	2.00	-	-	-	-	-	-	-	-	-	-		
C303	Antennas and Wave Propagation	2.50	2.50	2.50	2.00	1.50	-	-	-	-	-	-	1.00	3.00	1.50

C304	Electronic Measurements and Instrumentation	2.83	1.00	-	-	-	-	-	-	-	-	-	-	-	-
C305	Analog Communications	2.62	1.87	2.25	1.87	1.12	-	-	-	-	-	-	1.87	2.75	1.87
C306	Linear and Digital IC Applications	2.00	2.60	3.00	-	1.00	-	-	-	-	-	-	1.00	3.00	1.40
C307	Analog Communications Lab	1.75	1.00	1.00	2.00	2.00	-	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
C308	IC Applications and HDL Simulation Lab	-	2.00	1.00	1.75	1.50	1.00	2.00	2.00	1.00	1.00	1.00	1.75	2.50	2.25
C309	Managerial Economics and Financial Analysis	2.00	1.50	2.20	2.50	1.00	1.40	1.00	2.40	1.60	1.00	2.40	2.00	-	-
C310	Human Values and Professional Ethics	-	-	-	-	-	1.00	2.00	2.00	2.00	2.00	1.00	2.00	-	-
C311	Disaster Management	1.00	-	-	-	-	3.00	-	-	-	-	-	-	1.00	1.00
C312	Intellectual Property Rights	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00
C313	Digital Communications	1.33	1.33	1.50	1.50	-	-	-	--	-	-	-	1.00	1.83	1.00
C314	VLSI Design	3.00	2.00	-	-	-	--	-	-	-	-	-	-	2.00	1.00
C315	Microprocessors and Microcontrollers	2.00	2.00	2.00	3.00	-	-	-	--	-	-	-	1.00	3.00	3.00
C316	Digital Signal Processing	2.50	2.25	-	-	-	-	-	-	-	-	-	-	2.00	1.00
C317	Microprocessors and Microcontrollers lab	3.00	3.00	2.75	1.00	1.00	-	-	-	4.00	1.00	-	1.00	3.00	2.00
C318	Digital signal processing Lab	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	
C401	Management Science	-	-	-	-	-	-	-	-	-	-	3.00	-	1.00	
C402	Microwave Engineering	2.87	2.75	1.87	1.25	1.25	1.25	1.00	1.16	1.00	1.25	1.87	2.00	2.00	1.62
C403	Computer Networks	1.80	1.00	2.40	-	-	-	-	-	-	-	-	1.20	-	1.00
C404	Cellular and Mobile Communications	2.60	2.40	1.40	1.80	--	1.50	1.80	2.00	--	--	--	1.20	1.60	1.00
C405	Digital Image Processing	1.00	2.00	2.50	1.80	2.80	1.00	0.80	-	-	-	-	2.00	3.00	3.00
C406	Multimedia and Signal Coding	3.00	2.00	-	-	-	-	-	-	-	-	-	-	2.00	
C407	Object Oriented Programming through Java	3.00	2.00	-	-	-	-	-	-	-	-	-	-	2.00	
C408	Television Engineering	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	
C409	Optical Communications	2.00	1.00	-	-	-	-	-	-	-	-	-	-	1.00	
C410	Embedded Systems Design	1.00	1.00	3.00	2.00	-	-	-	-	-	-	-	-	3.00	-
C411	Advanced Communication Skills lab	-	-	-	-	2.00	1.00	-	-	-	-	-	-	2.00	
C412	Microwave Engineering and Digital Communications lab	3.00	2.00	-	-	-	-	-	-	2.00	-	-	1.00	3.00	2.00
C413	Satellite Communications	1.80	2.60	3.00	1.20	1.60	-	-	-	-	-	-	1.00	2.40	1.40
C414	Biomedical Instrumentation	2.00	2.00	-	2.00	2.00	-	-	-	-	-	-	1.00	2.60	1.33
C415	Artificial Neural Networks	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C416	Telecommunication Switching Systems and Networks	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00
C417	Radar Systems	3.00	1.75	3.00	2.00	1.66	-	-	-	-	-	1.00	1.00	3.00	1.71
C418	Network Security	3.00	2.00	-	-	-	-	-	-	-	-	-	1.00	2.00	1.00

C419	Wireless communications & Networks	1.00	3.00	1.60	1.00	3.00	1.00	1.40	1.80	1.00	1.00	2.60	2.80	3.00	2.80
C420	Digital Signal Processors and Architectures	2.00	2.00	3.00	-	-	-	-	-	-	-	-	1.00	3.00	1.00
C421	RF Circuit Design	3.00	2.00	-	-	-	-	-	-	-	-	-	-	2.00	1.00
C422	Industry Oriented Mini Project	3.00	2.10	2.50	3.00	3.00	-	-	-	3.00	3.00	-	1.00	3.00	2.00
C423	Seminar	2.00	2.00	-	1.00	-	1.00	1.00	-	2.00	-	-	2.00	2.00	1.00
C424	Project Work	3.00	2.10	2.50	3.00	3.00	-	-	-	3.00	3.00	-	1.00	3.00	2.00
C425	Comprehensive Viva	3.00	2.00	1.00	-	-	1.00	-	-	3.00	-	-	-	-	-
	Average correlation strength (out of 3) - PO and PSO wise	2.29	1.94	2.10	1.82	1.87	1.21	1.75	1.54	1.85	1.79	1.65	1.35	2.19	1.59
	Average correlation strength (in terms of Percentage) - PO and PSO wise	76.22	64.77	70.10	60.55	62.40	40.33	58.33	51.20	61.61	59.73	55.07	44.99	73.14	52.88
	Level of contribution of the curriculum - PO and PSO wise	H	M	H	M	M	L	M	M	M	M	M	L	H	M

Note: Contribution of Course component of 70% or more is taken as **HIGH LEVEL** and 50% to 69% contribution is taken as **MODERATE LEVEL** while less than 50% of contribution is construed as **LOW LEVEL**

S.No	Curriculum Component Level	POs	PSOs	Remarks
1	HIGH LEVEL	1,3	1	No specific action is required
2	MODERATE LEVEL	2, 4,5,7,8,9,10,11	2	Suitable measures have been taken by way of conducting guest lectures, workshops, training sessions, value added courses/events and others to fill the curricular gaps.
3	LOW LEVEL	6, 12		

Percentage Contribution of the Curriculum - POs and PSOs

Percentage Contribution of the Curriculum - POs and PSOs wise	Pos												PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
	76.2	64.77	70.10	60.55	62.40	40.3	58.33	51.20	61.61	59.73	55.07	44.99	73.14	52.88

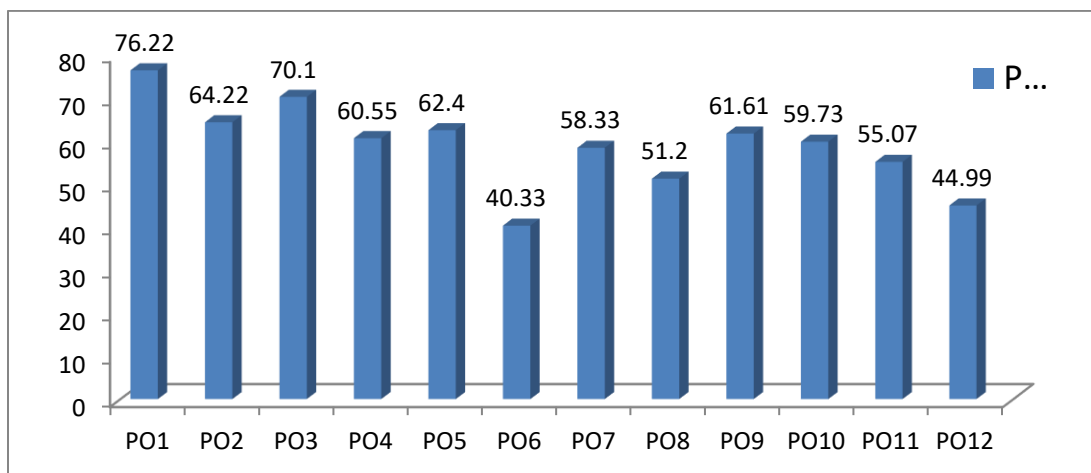


Fig: Percentage Contribution of Curriculum - PO wise

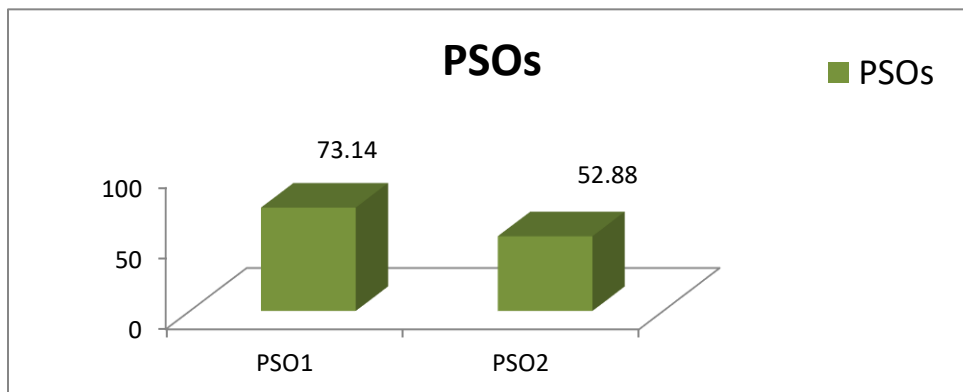


Fig: Percentage Contribution of Curriculum - PSO wise

Identification of Curriculum gaps

Program outcomes and Program Specific Outcomes are derived from Graduate Attributes.

- Course outcomes (COs) with Pos and PSOs are provided by JNTUH as part of Curriculum/ syllabus for each of the specified course.
- Correlation strength of COs with POs and PSOs is determined as stated above.
- Percentage contribution of curriculum to POs & PSOs is calculated..
- If the percentage contribution is less than 70%, then there is a gap in curriculum to meet POs & PSOs attainment.

Program Assessment Committee meeting is conducted under the chairmanship of the HoD to identify such curriculum gaps and suitable actions to be initiated to fill those gaps by way of adding content beyond syllabus, conducting guest lectures, introducing foreign languages, industrial visits, providing training to enhance communication skills and other employable skills.

PROCEDURE FOR MEASURING THE COs ATTAINMENT (JNTUH-R15)

For measuring the attainments of COs of a theory course, the targets for the attainment are to be fixed as indicated below:

- **Mid Paper Subjective:** 60% of maximum marks (15 marks out of 25)
- **Assignments and Tutorials** (if any): 60% of maximum marks (3 marks out of 5)
- **Mid Paper Objective :** Average Marks obtained
- **Semester End Examination:** Average Marks obtained subject to a minimum of 26 marks

The attainment levels are to be fixed using the above targets as follows:

Semester End Exam & Objective	
Target is the Average Marks Obtained	
Level 1	If 40% to 49% of Students attain the Average Marks
Level 2	If 50% to 59% of Students attain the Average Marks
Level 3	If more than 59% of Students attain the Average Marks

Mid-term Exams – Subjective and Assignments	
Target is 60% of Max Marks	
Level 1	If 60% to 69% of students attain the target
Level 2	If 70% to 79% of students attain the target
Level 3	If more than 80% of students attain the target

5. In measuring the overall course attainment,

- 75% of weightage should be given for the Direct measurement that includes attainments in mid-term examinations (both subjective and objective), semester end examinations, assignments, tutorials
- 25% of weightage for Indirect measurement that includes Students' online feedback on TLP (15% weightage) and Course End Survey (10% weightage).

6. For determining the Direct measurement

- 60% weightage should be given for the Semester End Examination and
- 40% weightage for the internal marks that includes
 - Mid-term examinations subjective (20%),
 - mid-term examinations objective (10%),
 - Assignments (5%) and
 - Tutorials (5%).
 - In the absence of tutorials, 10% of weightage should be given to Assignments.

7. Both mid -1 and mid -2 should be considered together in measuring the attainment levels.

Direct Attainment of CO = 0.2* Mid-term Subjective + 0.1* Mid-term Objective + 0.05* Assignment +

0.05* Tutorial + 0.6* End Sem. Exam

Indirect Attainment of CO = 0.4* Course End Survey + 0.6* Feedback on TLP

Overall CO Attainment = 0.75* Direct Attainment Level + 0.25* Indirect Attainment Level

8. In case of labs, 60% of Internal marks and average of External marks are considered for attainment.

Direct Attainment of CO = 0.4* Mid-term Exam + 0.6* End Sem Exam

Indirect Attainment of CO = 0.4* Course End Survey + 0.6* Feedback on TLP

Overall CO Attainment = 0.75* Direct Attainment Level + 0.25* Indirect Attainment Level

Calculation of POs Attainment

5. In measuring the attainment level of each PO,
 - 75% of weightage should be given for the Direct attainment of that PO obtained in terms of Levels 1,2 and 3 of all the courses related to that PO and
 - 25% of weightage for Indirect measurement that includes
 - Exit feedback on POs (15% weightage) and
 - Alumni Survey on POs (10% weightage).
6. For calculating the indirect attainment levels of POs, graduate exit feedback on POs (15% weightage) and Alumni feedback on POs (10% weightage), the following criteria is adopted:

Attainment Levels for Measuring Indirect attainment of PO

Level 1 If attainment is 70% to 79%

Level 2 If attainment is 80% to 89%

Level 3 If attainment is more than 90%

7. In measuring the attainment level of each PEO,
 - 75% of weightage should be given for the Direct attainment of that PEO obtained in terms of Levels 1,2 and 3 of all the POs related to that PEO and
 - 25% of weightage for Indirect measurement that includes
 - Alumni feedback on PEOs (10% weightage),
 - Employers feedback on PEOs (10% weightage) and
 - Parents feedback on PEOs (5% weightage).
8. For calculating the indirect attainment levels of PEOs, Alumni feedback on PEOs (10% weightage), Employers feedback on PEOs (10% weightage) and Parents feedback on PEOs (5% weightage), the following criteria is adopted:

Attainment Levels for Measuring Indirect attainment of PO

Level 1 If attainment is 70% to 79%

Level 2 If attainment is 80% to 89%

Level 3 If attainment is more than 90%

2013-2017

I Year

Course Name	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
English	3	2	2.4	3	3	3	2.6
Mathematics-I	3	2	2.4	3	3	3	2.6
Mathematical Methods	3	1	1.8	3	3	3	2.1
Engineering Physics	3	1	1.8	3	3	3	2.1
Engineering Chemistry	3	2	2.4	3	3	3	2.6
Computer Programming	3	2	2.4	3	3	3	2.6
Engineering Drawing	3	2	2.4	3	3	3	2.6
Computer Programming lab	3	2	2.4	3	3	3	2.6
Engineering Physics/Engineering Chemistry Lab	3	3	3	3	3	3	3
English language Communication Skills Lab	3	3	3	3	3	3	3
IT Workshop/Engineering workshop	3	3	3	3	3	3	3

II-I

Course Name	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Mathematics-III	3	2	2.4	3	2	2.6	2.5
Probability Theory and Stochastic Process	3	1	1.8	3	3	3	2.1
Switching theory and logic Design	3	1	1.8	3	3	3	2.1
Electrical Circuits	3	3	3	3	3	3	3
Electronic Devices and Circuits	2	1	1.4	3	3	3	1.8
Signals and Systems	3	2	2.4	3	3	3	2.6
Electronic Devices and Circuits Lab	3	2	2.4	3	3	3	2.6
Basic Simulation Lab	3	2	2.4	3	3	3	2.6

II-II

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Principles of Electrical Engineering	2	2	2	3	3	3	2.3
Electronic Circuit Analysis	3	1	1.8	3	3	3	2.1
Pulse and Digital Circuits	3	2	2.4	3	3	3	2.6
Environmental Science	3	1	1.8	3	3	3	2.1
Electromagnetic Theory and Transmission Lines	2	1	1.4	2	3	2.4	1.7
Digital Design through verilog HDL	1	2	1.6	3	3	3	2

Electrical Technology lab	3	3	3	3	3	3	3
Electronic Circuits and Pulse Circuits Lab	3	3	3	3	3	3	3

III-I

Course Name	Internal	External	Direct Attainment	TLP	Course End Survey	Indirect Attainment	Overall Attainment
Control Systems Engineering	3	2	2.4	3	2	2.6	2.5
Computer Organization and Operating Systems	3	2	2.4	3	2	2.6	2.5
Antennas and Wave Propagation	3	2	2.4	3	3	3	2.6
Electronic Measurements and Instrumentation	3	2	2.4	3	3	3	2.6
Analog Communications	3	2	2.4	3	2	2.6	2.5
Linear and Digital IC Applications	2	2	2	3	3	3	2.3
Analog Communications Lab	3	3	3	3	3	3	3
IC Applications and HDL Simulation lab	3	3	3	3	3	3	3

III-II

Course Name	Internal	External	Direct Attainment	TLP	Course End Survey	Indirect Attainment	Overall Attainment
Managerial Economics and financial analysis	3	2	2.4	3	3	3	2.6
Human values and professional ethics	3	2	2.4	3	3	3	2.6
Digital Communications	3	2	2.4	3	2	2.6	2.5
VLSI Design	3	2	2.4	3	3	3	2.6
Microprocessors and Microcontrollers	1	2	1.6	3	3	3	2.0
Digital Signal Processing	3	2	2.4	3	3	3	2.6
Microprocessors and Microcontrollers Lab	3	3	3	3	3	3	3
Digital Signal Processing Lab	3	3	3	3	3	3	3

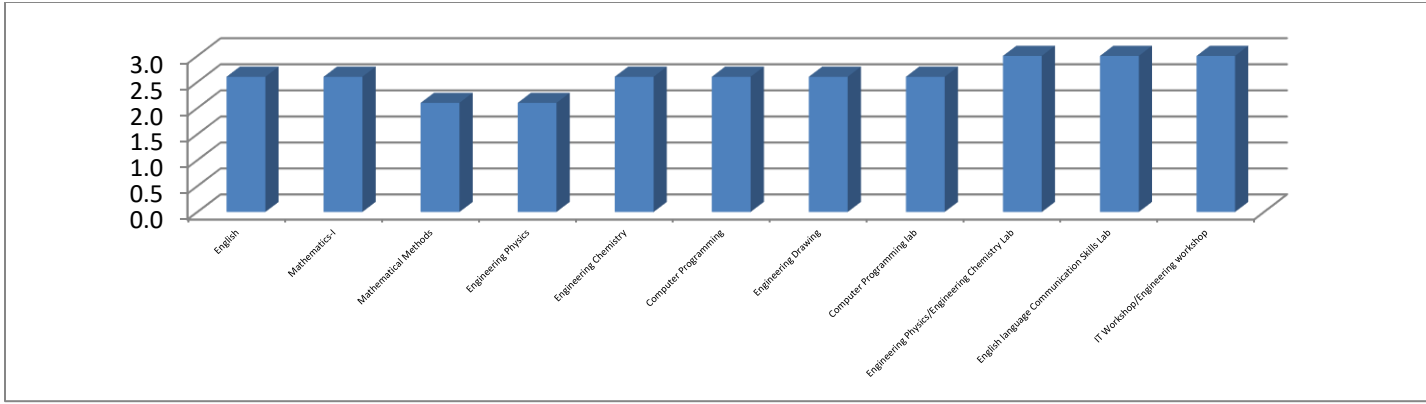
IV-I

Subjects	Internal	External	Direct Attainment	TLP	Course End Survey	Indirect Attainment	Overall Attainment
Management Science	2.6	2	2.2	3	3	3	2.4
Microwave Engineering	1.4	1	1.2	3	3	3	1.6
Computer Networks	1.7	3	2.5	3	3	3	2.6
Cellular and Mobile Communications	2	2	2	3	3	3	2.3
Digital Image Processing	1.8	1	1.3	3	3	3	1.7
Object Oriented Programming through Java	2.7	1	1.7	3	3	3	2.0
Embedded System Design	2.4	2	2.2	3	3	3	2.4
Advanced Communication Skills lab	3	3	3	3	3	3	3
Microwave Engineering and Digital Communications Lab	3	3	3	3	3	3	3

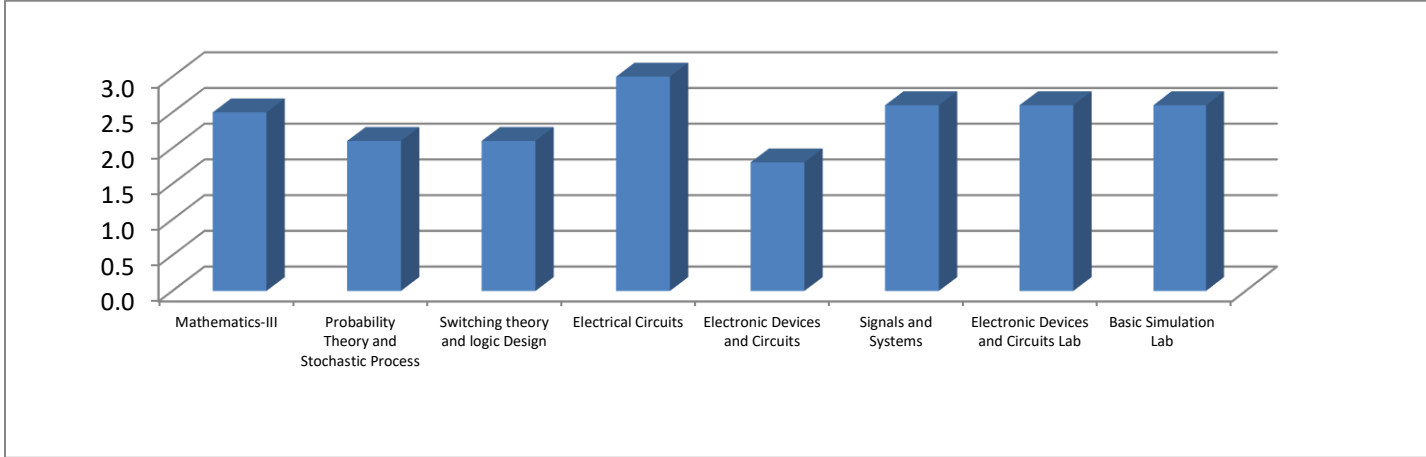
IV-II

Course Name	Internal	External	Direct Attainment	TLP	Course End Survey	Indirect Attainment	Overall Attainment
Satellite Communications	2.3	2	2.1	3	3	3	2.3
Radar Systems	2.5	2	2.2	3	3	3	2.4
Wireless Communications and Networks	2.2	2	2.1	3	3	3	2.3
Digital Signal Processors and architectures	2.5	3	2.8	3	3	3	2.9
Industry Oriented Mini Project	-	3	3	-	-	-	3
Seminar	3	-	3	-	-	-	3
Major Project Work	3	2	2.4	-	-	-	2.4
Comprehensive Viva	-	2	2	-	-	-	2

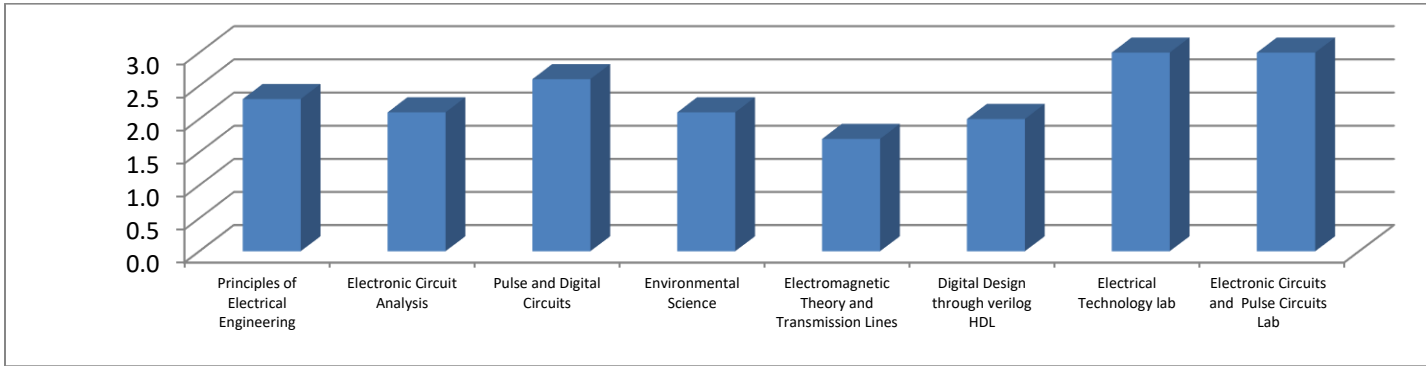
I Year



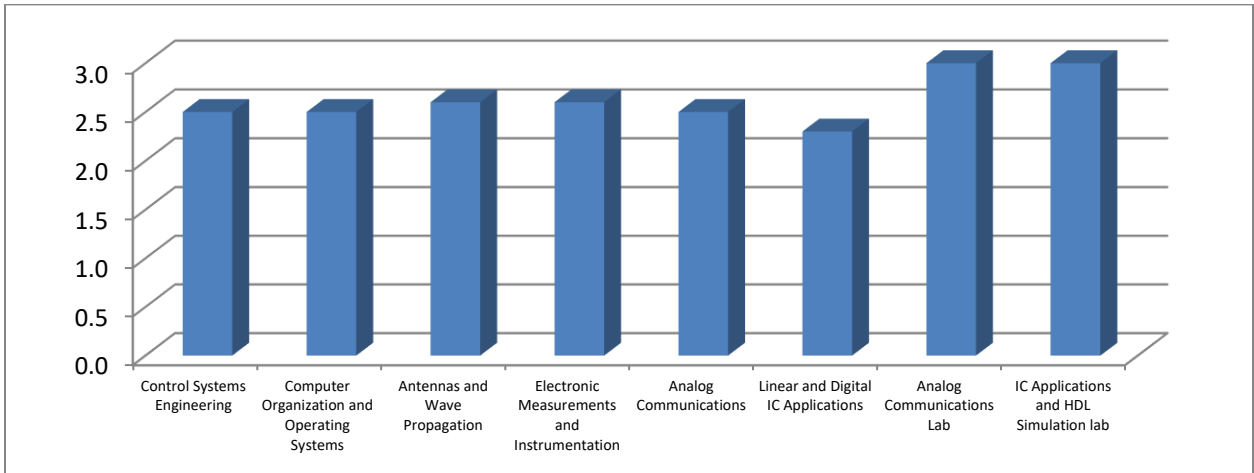
II-I



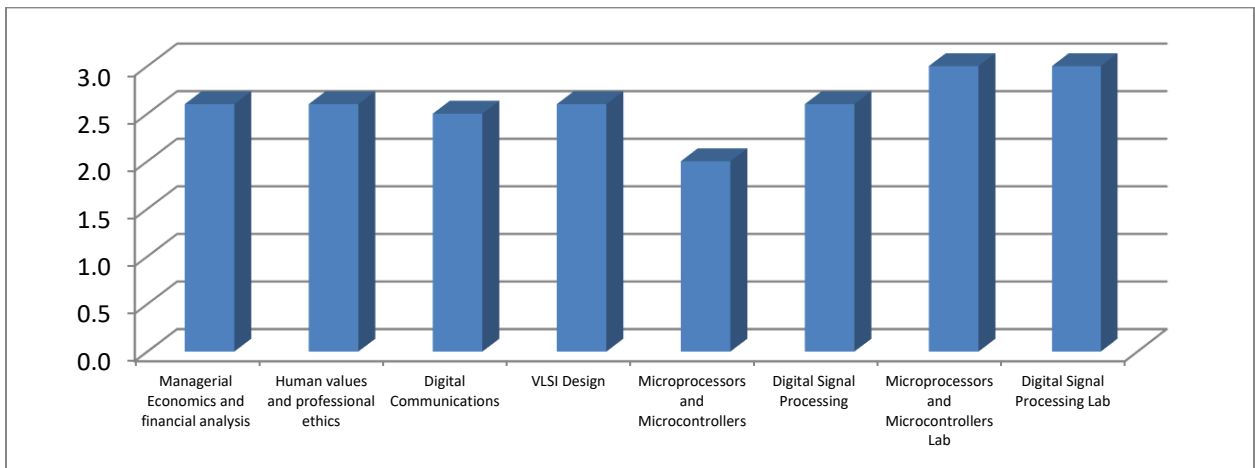
II-II



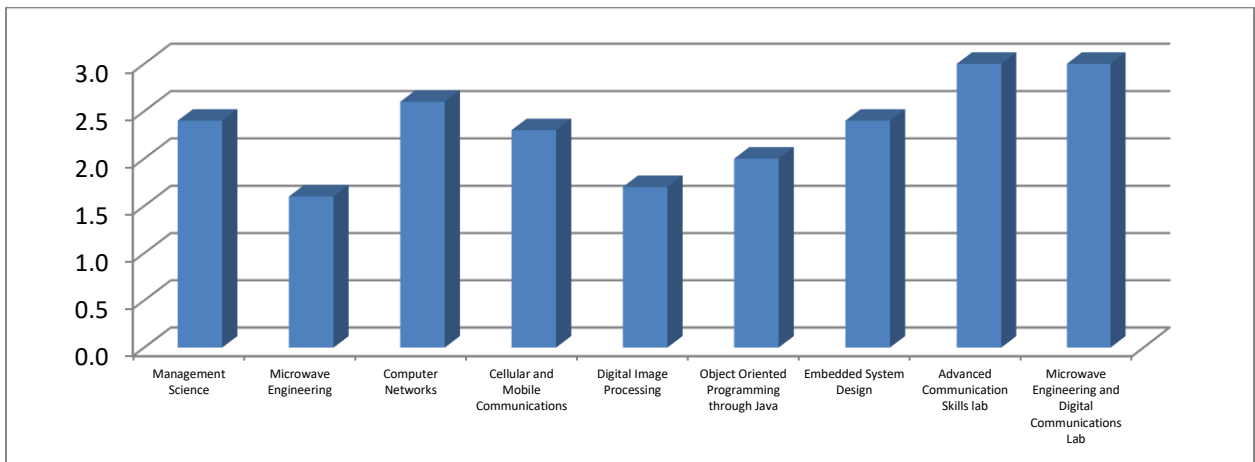
III-I



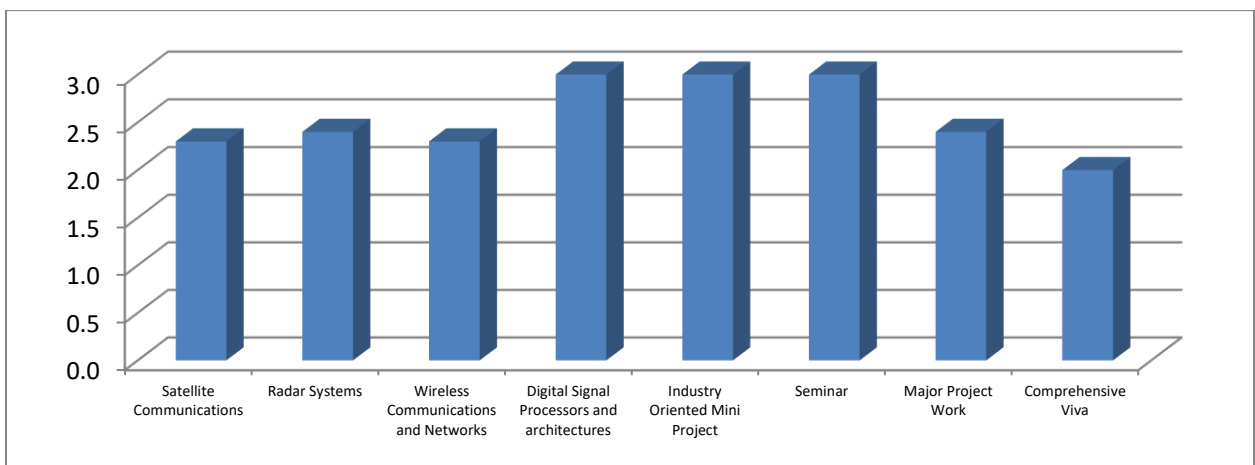
III-II



IV-I



IV-II



GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2013-2017

Year & Sem: IV-I

CourseName:Management Science

Course Code: A70014

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	71	2	62	3	100	3	2.5	53	2	2.2	82	3	82	3	3	2.4
CO2	100	3	62	3	100	3	3.0	53	2	2.4	82	3	85	3	3	2.6
CO3	60	1	62	3	100	3	2.0	53	2	2	82	3	85	3	3	2.3
CO4	82	3	62	3	100	3	3.0	53	2	2.4	82	3	85	3	3	2.6
CO5	83	3	62	3	100	3	3.0	53	2	2.4	82	3	83	3	3	2.6
CO6	75	2	62	3	100	3	2.5	53	2	2.2	82	3	83	3	3	2.4
CO7	71	2	62	3	100	3	2.5	53	2	2.2	82	3	82	3	3	2.4
CO8	73	2	62	3	100	3	2.5	53	2	2.2	82	3	84	3	3	2.4
AVG	77	2.3	62	3	100	3	2.6	53	2	2.3	82	3	84	3	3	2.4

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1											3		1		2.4
CO2											3		1		2.6
CO3											3		1		2.3
CO4											3		1		2.6
CO5											3		1		2.6
CO6											3		1		2.4
CO7											3		1		2.4
CO8											3		1		2.4
AVG											3		1		2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1											2.4		0.8	
CO2											2.6		0.9	
CO3											2.3		0.8	
CO4											2.6		0.9	
CO5											2.6		0.9	
CO6											2.4		0.8	
CO7											2.4		0.8	
CO8											2.4		0.8	
AVG											2.5		0.8	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem:IV -I

Course Name: Microwave Engineering

Course Code: A70515

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	42	0	59	2	98	3	1.3	47	1	1.1	90	3	95	3	3	1.6
CO2	41	0	59	2	98	3	1.3	47	1	1.1	90	3	94	3	3	1.6
CO3	44	0	59	2	98	3	1.3	47	1	1.1	90	3	93	3	3	1.6
CO4	33	0	59	2	98	3	1.3	47	1	1.1	90	3	93	3	3	1.6
CO5	49	0	59	2	98	3	1.3	47	1	1.1	90	3	93	3	3	1.6
CO6	52	0	59	2	98	3	1.3	47	1	1.1	90	3	92	3	3	1.6
CO7	54	0	59	2	98	3	1.3	47	1	1.1	90	3	92	3	3	1.6
CO8	75	2	59	2	98	3	2.3	47	1	1.5	90	3	91	3	3	1.9
AVG	49	0	59	2	98	3	1.4	47	1	1.2	90	3	93	3	3	1.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	2	2	2	1	-	-	2	2	3	2	1	1	1.6
CO2	2	2	2	2	2	-	-	-	2	2	1	2	3	2	1.6
CO3	2	2	-	3	-	-	-	2	3	1	1	2	3	2	1.6
CO4	1	2	2	-	2	-	-	1	2	1	3	2	3	2	1.6
CO5	3	2	2	2	2	-	-	-	2	1	1	2	3	2	1.6
CO6	3	2	2	-	2	-	-	-	2	1	1	2	3	2	1.6
CO7	3	2	2	-	3	-	-	-	-	1	1	2	3	2	1.6
CO8	1	3	3	-	2	-	-	1	2	1	2	2	3	2	1.9
AVG	2.3	2.1	2.1	2.3	2.1	1.0	-	1.3	2.1	1.3	1.6	2.0	2.8	1.9	1.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.6	1.1	1.1	1.1	1.1	0.5	-	-	1.1	1.1	1.6	1.1	0.5	0.5
CO2	1.1	1.1	1.1	1.1	1.1	-	-	-	1.1	1.1	0.5	1.1	1.6	1.1
CO3	1.1	1.1	-	1.6	-	-	-	1.1	1.6	0.5	0.5	1.1	1.6	1.1
CO4	0.5	1.1	1.1	-	1.1	-	-	0.5	1.1	0.5	1.6	1.1	1.6	1.1
CO5	1.6	1.1	1.1	1.1	1.1	-	-	-	1.1	0.5	0.5	1.1	1.6	1.1
CO6	1.6	1.1	1.1	-	1.1	-	-	-	1.1	0.5	0.5	1.1	1.6	1.1
CO7	1.6	1.1	1.1	-	1.6	-	-	-	-	0.5	0.5	1.1	1.6	1.1
CO8	0.6	1.9	1.9	-	1.3	-	-	0.6	1.3	0.6	1.3	1.3	1.9	1.3
AVG	1.2	1.2	1.2	1.2	1.2	0.5	-	0.7	1.2	0.7	0.9	1.1	1.5	1.0

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem:IV-I

Course Name:Computer Networks

Course Code:A70515

CO Attainment(Direct and Indirect Method)

CO	Mfd Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	56	0	58	2	100	3	1.3	62	3	2.3	86	3	94	3	3	2.5
CO2	29	0	58	2	100	3	1.3	62	3	2.3	86	3	94	3	3	2.5
CO3	64	1	58	2	100	3	1.8	62	3	2.5	86	3	93	3	3	2.6
CO4	55	0	58	2	100	3	1.3	62	3	2.3	86	3	92	3	3	2.5
CO5	81	3	58	2	100	3	2.8	62	3	2.9	86	3	93	3	3	2.9
AVG	57	0.8	58	2	100	3	1.7	62	3	2.5	86	3	93	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	2									1		1	2.5
CO2	2	1	2									1		1	2.5
CO3	2	1	2									1		1	2.6
CO4	1	1	3									1		1	2.5
CO5	3	1	3									2		1	2.9
AVG	1.8	1	2.4									1.2		1	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	0.8	1.7									0.8		0.8
CO2	1.7	0.8	1.7									0.8		0.8
CO3	1.8	0.9	1.8									0.9		0.9
CO4	0.8	0.8	2.5									0.8		0.8
CO5	2.9	1.0	2.9									2.0		1.0
AVG	1.6	0.9	2.1									1.1		0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem: IV-I

Course Name: Cellular and Mobile Communications

Course Code: A70434

CO Attainment(Direct and Indirect Method)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Level in Internal	SEE	CO Level in External	CO Direct	CES	Level	TLP	Level	CO Indirect	Overall Attainment
CO1	47	0	61	3	100	3	2	52	2	2	95	3	94	3	3	2.1
CO2	75	2	61	3	100	3	3	52	2	2	88	3	94	3	3	2.4
CO3	49	0	61	3	100	3	2	52	2	2	94	3	94	3	3	2.1
CO4	65	1	61	3	100	3	2	52	2	2	93	3	94	3	3	2.3
CO5	79	2	61	3	100	3	3	52	2	2	91	3	94	3	3	2.4
AVG	63	1	61	3	100	3	2	52	2	2	92	3	94	3	3	2.3

Mapping of COs attainment in CO - PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	1	2	-	1	3	2	-	-	-	2	2	-	2.1
CO2	3	2	2	1	-	-	1	-	-	-	-	1	1	-	2.4
CO3	3	3	2	3	-	-	1	2	-	-	-	1	2	1	2.1
CO4	3	3	1	2	-	-	2	-	-	-	-	1	1	1	2.3
CO5	2	2	1	1	-	2	2	2	-	-	-	1	2	-	2.4
AVG	2.6	2.4	1.4	1.8	0	0.6	1.8	1.2	0	0	0	1.2	1.6	0.4	2.3

Attainment in CO - PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.4	1.4	0.7	1.4	-	0.7	2.1	1.4	-	-	-	1.4	1.4	-
CO2	2.4	1.6	1.6	0.8	-	-	0.8	-	-	-	-	0.8	0.8	-
CO3	2.1	2.1	1.4	2.1	-	-	0.7	1.4	-	-	-	0.7	1.4	0.7
CO4	2.3	2.3	0.8	1.5	-	-	1.5	-	-	-	-	0.8	0.8	0.8
CO5	1.6	1.6	0.8	0.8	-	1.6	1.6	1.6	-	-	-	0.8	1.6	-
AVG	2.0	1.8	1.1	1.3	0.0	1.2	1.3	1.5	-	-	-	0.9	1.2	0.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem: IV-I

Course Name: Digital Image Processing

Course Code: A70515

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	74	0	68	3	100	3	1.5	46	1	1.2	84	3	89	3	3	1.7
CO2	80	0	68	3	100	3	1.5	46	1	1.2	84	3	83	3	3	1.7
CO3	61	0	68	3	100	3	1.5	46	1	1.2	84	3	85	3	3	1.7
CO4	61	0	68	3	100	3	1.5	46	1	1.2	84	3	84	3	3	1.7
CO5	75	3	68	3	100	3	3.0	46	1	1.8	84	3	81	3	3	2.1
CO6	83	0	68	3	100	3	1.5	46	1	1.2	84	3	84	3	3	1.7
CO7	89	1	68	3	100	3	2.0	46	1	1.4	84	3	84	3	3	1.8
AVG	75	1	68	3	100	3	1.8	46	1	1	84	3	84	3	3	1.7

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	2	-	1	2	-	-	-	-	-	-	2	3	3	1.7
CO2	1	2	3	2	3	1	1	-	-	-	-	2	3	3	1.7
CO3	1	2	3	2	3	1	1	-	-	-	-	2	3	3	1.7
CO4	1	2	3	2	3	1	1	-	-	-	-	2	3	3	1.7
CO5	1	2	3	2	3	1	1	-	-	-	-	2	3	3	2.1
CO6	1	2	3	2	3	1	1	-	-	-	-	2	3	3	1.7
CO7	1	2	3	2	3	1	1	-	-	-	-	2	3	3	1.8
AVG	1.0	2.0	3.0	1.9	2.9	1.0	1.0	-	-	-	-	2.0	3.0	3.0	1.7

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.6	1.1	-	0.6	1.1	-	-	-	-	-	-	1.1	1.7	1.7
CO2	0.6	1.1	1.7	1.1	1.7	0.6	0.6	-	-	-	-	1.1	1.7	1.7
CO3	0.6	1.1	1.7	1.1	1.7	0.6	0.6	-	-	-	-	1.1	1.7	1.7
CO4	0.6	1.1	1.7	1.1	1.7	0.6	0.6	-	-	-	-	1.1	1.7	1.7
CO5	0.7	1.4	2.1	1.4	2.1	0.7	0.7	-	-	-	-	1.4	2.1	2.1
CO6	0.6	1.1	1.7	1.1	1.7	0.6	0.6	-	-	-	-	1.1	1.7	1.7
CO7	0.6	1.2	1.8	1.2	1.8	0.6	0.6	-	-	-	-	1.2	1.8	1.8
AVG	0.6	1.2	1.7	1.2	1.7	0.6	0.6	-	-	-	-	1.2	1.7	1.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem:IV -I

Course Name: Object Oriented programming through JAVA

Course Code: A70505

CO Attainment(Direct and Indirect)

CO	Mfd Subjective	Level	Mfd Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	77	2	66	3	97	3	2.5	44	1	1.6	86	3	94	3	3	2.0
CO2	85	3	66	3	97	3	3	44	1	1.8	86	3	93	3	3	2.1
CO3	77	2	66	3	97	3	2.5	44	1	1.6	86	3	91	3	3	2.0
CO4	71	2	66	3	97	3	2.5	44	1	1.6	86	3	93	3	3	2.0
CO5	71	2	66	3	97	3	2.5	44	1	1.6	86	3	93	3	3	2.0
CO6	80	3	66	3	97	3	3	44	1	1.8	86	3	93	3	3	2.1
AVG	77	2.3	66	3	97	3	2.7	44	1	1.7	86	3	93	3	3	2.0

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	1	2	2	1	-	1	1	1	2	1	2	-	-	2.0
CO2	2	2	3	3	1	-	-	-	1	1	-	1	-	-	2.1
CO3	2	3	3	3	2	-	-	1	2	1	-	1	-	-	2.0
CO4	2	1	2	1	2	-	1	-	1	1	1	2	-	-	2.0
CO5	2	3	3	3	2	1	1	1	2	2	2	2	-	1	2.1
CO6	2	3	3	3	2	1	1	1	2	1	2	2	-	1	2.1
AVG	2.0	2.2	2.7	2.5	1.7	1.0	1.0	1.0	1.5	1.3	1.5	1.7	-	1.0	2.0

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.3	0.7	1.3	1.3	0.7	-	0.7	0.7	0.7	1.3	0.7	1.3	-	-
CO2	1.4	1.4	2.1	2.1	0.7	-	-	-	0.7	0.7	-	0.7	-	-
CO3	1.3	2.0	2.0	2.0	1.3	-	-	0.7	1.3	0.7	-	0.7	-	-
CO4	1.3	0.7	1.3	0.7	1.3	-	0.7	-	0.7	0.7	0.7	1.3	-	-
CO5	1.4	2.1	2.1	2.1	1.4	0.7	0.7	0.7	1.4	1.4	1.4	1.4	-	0.7
CO6	1.4	2.1	2.1	2.1	1.4	0.7	0.7	0.7	1.4	0.7	1.4	1.4	-	0.7
AVG	1.4	1.5	1.8	1.7	1.1	0.7	0.7	0.7	1.0	0.9	1.0	1.1	-	0.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem: IV-I

Course Name: Embedded Systems

Course Code: A70440

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Level in External	CO Direct	CES	Level	TLP	Level	CO Indirect	Overall CO attainment
CO1	73	2	57	2	96	3	2.3	57	2	2	96	3	88	3	3	2.3
CO2	93	3	57	2	96	3	2.8	57	2	2	95	3	88	3	3	2.5
CO3	68	1	57	2	96	3	1.8	57	2	2	95	3	88	3	3	2.2
CO4	99	3	57	2	96	3	2.8	57	2	2	94	3	88	3	3	2.5
AVG	83	2	57	2	96	3	2.4	57	2	2.2	95	3	88	3	3	2.4

Mapping of CO in CO - PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.3
CO2	1	1	3	-	-	-	-	-	-	-	-	-	3	-	2.5
CO3	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.2
CO4	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.5
AVG	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	0.8	2.3	1.6	-	-	-	-	-	-	-	-	2.3	-
CO2	0.8	0.8	2.5	-	-	-	-	-	-	-	-	-	2.5	-
CO3	0.7	0.7	2.2	1.5	-	-	-	-	-	-	-	-	2.2	-
CO4	0.8	0.8	2.5	1.7	-	-	-	-	-	-	-	-	2.5	-
AVG	0.8	0.8	2.4	1.6	-	-	-	-	-	-	-	-	2.4	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem: IV-I

Course Name: Microwave Engineering & Digital Communications Lab Course Code: A70499

CO Attainment(Direct and Indirect)

CO	Lab Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	98	3	65	3	3	82	3	97	3	3	3
CO2	98	3	65	3	3	82	3	96	3	3	3
CO3	98	3	65	3	3	82	3	97	3	3	3
CO4	98	3	65	3	3	82	3	96	3	3	3
CO5	98	3	65	3	3	82	3	96	3	3	3
CO6	98	3	65	3	3	82	3	96	3	3	3
CO7	98	3	65	3	3	82	3	97	3	3	3
AVG	98	3	65	3	3	82	3	97	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2			1			1	3		2	2	3	2	3
CO2	3	1	1		1	2	2	1	3		2	2	3	2	3
CO3	2				1			1			2	2	3	2	3
CO4	2				1			1			2	2	2	3	3
CO5	2	1	1		1			1	2		2	2	3	3	3
CO6	3		1		1			1	2		2	2	2	3	3
CO7	3				1			1	2		2	2	2	3	3
AVG	2.6	1.3	1	0	1	2	2	1	2.4	0	2	2	2.6	2.6	3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	0	-	1	-	-	1	3	-	2	2	3	2
CO2	3	1	1	-	1	2	2	1	3	-	2	2	3	2
CO3	2	0	0	-	1	-	-	1	-	-	2	2	3	2
CO4	2	0	0	-	1	-	-	1	-	-	2	2	2	3
CO5	2	1	1	-	1	-	-	1	2	-	2	2	3	3
CO6	3	0	1	-	1	-	-	1	2	-	2	2	2	3
CO7	3	0	0	-	1	-	-	1	2	-	2	2	2	3
AVG	2.6	0.6	0.4	-	1	2	2	1	2.4	-	2	2	3	3

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013 -2017

Year & Sem: IV -I

Course Name:Advanced English Communication Skills Lab

Course Code: A70086

CO Attainment(Direct and Indirect)

CO	Mid	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	99	3	63	3	3	81	3	92	3	3	3
CO2	99	3	63	3	3	81	3	92	3	3	3
CO3	99	3	63	3	3	81	3	92	3	3	3
CO4	99	3	63	3	3	81	3	94	3	3	3
AVG	99	3	63	3	3	81	3	92	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	-	-	-	-	-	2	-	3	3	3	-	3	-	1	3
CO2	-	-	-	-	-	2	-	3	3	3	-	3	-	1	3
CO3	-	-	-	-	-	-	-	2	3	3	-	3	-	1	3
CO4	-	-	-	-	-	2	-	2	3	3	-	3	-	1	3
AVG	0	0	0	0	0	2	0	2.5	3	3	0	3	-	1	3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	2	-	3	3	3	-	3	-	1
CO2	-	-	-	-	-	2	-	3	3	3	-	3	-	1
CO3	-	-	-	-	-	-	-	2	3	3	-	3	-	1
CO4	-	-	-	-	-	2	-	2	3	3	-	3	-	1
AVG	0	0	0	0	0	2	-	3	3	3	-	3	-	1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2013-2017

Year & Sem: IV-II

Course Name: Wireless Communication and Networks

Course Code: A80454

CO Attainment (Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	61	1	68	3	100	3	2.0	51	2	2	86	3	97	3	3	2.3
CO2	57	0	68	3	100	3	1.5	51	2	1.8	86	3	95	3	3	2.1
CO3	65	1	68	3	100	3	2.0	51	2	2	86	3	95	3	3	2.3
CO4	78	2	68	3	100	3	2.5	51	2	2.2	86	3	95	3	3	2.4
CO5	93	3	68	3	100	3	3.0	51	2	2.4	86	3	95	3	3	2.55
AVG	71	1.4	68	3	100	3	2.2	51	2	2.08	86	3	95	3	3	2.3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	3	3	1	3	1	1	3	1	1	3	3	3	2	2.3
CO2	1	3	1	1	3	1	2	1	1	1	1	2	3	2	2.1
CO3	1	3	1	1	3	1	1	2	1	1	3	3	3	2	2.3
CO4	1	3	1	1	3	1	2	1	1	1	3	3	3	2	2.4
CO5	1	3	2	1	3	1	1	2	1	1	3	3	3	2	2.55
AVG	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8	2.3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	2.3	2.3	0.8	2.3	0.8	0.8	2.3	0.8	0.8	2.3	2.3	2.3	1.5
CO2	0.7	2.1	0.7	0.7	2.1	0.7	1.4	0.7	0.7	0.7	0.7	1.4	2.1	1.4
CO3	0.8	2.3	0.8	0.8	2.3	0.8	0.8	1.5	0.8	0.8	2.3	2.3	2.3	1.5
CO4	0.8	2.4	0.8	0.8	2.4	0.8	1.6	0.8	0.8	0.8	2.4	2.4	2.4	1.6
CO5	0.9	2.6	1.7	0.9	2.6	0.9	0.9	1.7	0.9	0.9	2.6	2.6	2.6	1.7
AVG	0.8	2.3	1.2	0.8	2.3	0.8	1.1	1.4	0.8	0.8	2.0	2.2	2.3	1.5

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem: IV-II

Course Name: Digital Signal Processors and architectures

Course Code: A80437

CO Attainment(Direct and Indirect Method)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	74	3	61	3	100	3	3	63	3	3	81	3	92	3	3	3
CO2	75	1	61	3	100	3	2	63	3	2.6	81	3	89	3	3	2.7
CO3	73	2	61	3	100	3	2.5	63	3	2.8	81	3	90	3	3	2.85
CO4	65	2	61	3	100	3	2.5	63	3	2.8	81	3	89	3	3	2.85
AVG	72	2	61	3	100	3	2.5	63	3	2.8	81	3	90	3	3	2.85

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
A80437.1	2	2	3	-	-	-	-	-	-	-	1	3	1	3
A80437.2	2	2	3	-	-	-	-	-	-	-	1	3	1	2.7
A80437.3	2	2	3	-	-	-	-	-	-	-	1	3	1	2.85
A80437.4	2	2	3	-	-	-	-	-	-	-	1	3	1	2.85
AVG	2	2	3	-	-	-	-	-	-	-	1	3	1	2.9

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO9	PO10	PO11	PO12	PSO1	PSO2
A80437.1	2.0	2.0	3.0	-	-	-	-	-	-	-	1.0	3.0	1.0
A80437.2	1.8	1.8	2.7	-	-	-	-	-	-	-	0.9	2.7	0.9
A80437.3	1.9	1.9	2.9	-	-	-	-	-	-	-	1.0	2.9	1.0
A80437.4	1.9	1.9	2.9	-	-	-	-	-	-	-	1.0	2.9	1.0
AVG	1.9	1.9	2.9	-	-	-	-	-	-	-	1.0	2.9	1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2013-2017

Year & Sem: IV-II

Course Name: Radar Systems

Course Code: A80450

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	75	2	61	3	100	3	2.5	54	2	2.3	82	3	98	3	3	2.5
CO2	75	2	61	3	100	3	2.5	54	2	2.3	82	3	97	3	3	2.5
CO3	-	0	61	3	100	3	1.5	54	2	1.7	82	3	96	3	3	2.0
CO4	83	3	61	3	100	3	3.0	54	2	2.6	82	3	97	3	3	2.7
CO5	90	3	61	3	100	3	3.0	54	2	2.6	82	3	97	3	3	2.7
CO6	79	2	61	3	100	3	2.5	54	2	2.3	82	3	96	3	3	2.5
CO7	78	2	61	3	100	3	2.5	54	2	2.3	82	3	98	3	3	2.5
CO8	77	2	61	3	100	3	2.5	54	2	2.3	82	3	97	3	3	2.5
AVG	80	2.0	61	3	100	3	2.5	54	2	2.3	82	3	97	3	3	2.5

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	3	2	2	-	-	-	-	-	1	1	3	1	2.5
CO2	3	3	3	2	1	-	-	-	-	-	1	1	3	2	2.5
CO3	3	3	-	2	2	-	-	-	-	-	1	1	3	2	2.0
CO4	3	1	-	2	1	-	-	-	-	-	1	1	-	-	2.7
CO5	3	1	-	2	2	-	-	-	-	-	1	1	3	2	2.7
CO6	3	1	-	2	2	-	-	-	-	-	1	1	3	2	2.5
CO7	3	1	-	2	-	-	-	-	-	-	1	1	3	1	2.5
CO8	3	1	3	2	-	-	-	-	-	-	1	1	3	2	2.5
AVG	3	1.8	3	2	1.7	-	-	-	-	-	1	1	3	1.7	2.5

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.5	2.5	2.5	1.7	1.7	-	-	-	-	-	0.8	0.8	2.5	0.8
CO2	2.5	2.5	2.5	1.7	0.8	-	-	-	-	-	0.8	0.8	2.5	1.7
CO3	2.0	2.0	-	1.4	1.4	-	-	-	-	-	0.7	0.7	2.0	1.4
CO4	2.7	0.9	-	1.8	0.9	-	-	-	-	-	0.9	0.9	-	-
CO5	2.7	0.9	-	1.8	1.8	-	-	-	-	-	0.9	0.9	2.7	1.8
CO6	2.5	0.8	-	1.7	1.7	-	-	-	-	-	0.8	0.8	2.5	1.7
CO7	2.5	0.8	-	1.7	-	-	-	-	-	-	0.8	0.8	2.5	0.8
CO8	2.5	0.8	2.5	1.7	-	-	-	-	-	-	0.8	0.8	2.5	1.7
AVG	2.5	1.4	2.5	1.7	1.4	-	-	-	-	-	0.8	0.8	2.4	1.4

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2013-2017

Year & Sem: IV-II

Course Name:Satellite Communications

Course Code: A80452

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	Overall CO attainment
CO1	86	3	57	2	94	3	3	56	2	2	89	3	95	3	2.6
CO2	71	2	57	2	94	3	2	56	2	2	89	3	88	3	2.4
CO3	88	3	57	2	94	3	3	56	2	2	89	3	90	3	2.6
CO4	50	0	57	2	94	3	1	56	2	2	89	3	88	3	1.9
CO5	87	3	57	2	94	3	3	56	2	2	89	3	89	3	2.6
CO6	90	3	57	2	94	3	3	56	2	2	89	3	89	3	2.6
CO7	0	0	57	2	94	3	1	56	2	2	89	3	88	3	1.9
AVG	67	2	57	2	94	3	2	56	2	2	89	3	90	3	2.4

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	2	-	-	-	2	2	-	1	-	1	2	-	2.6
CO2	2	-	1	-	-	-	1	-	-	-	-	1	1	-	2.4
CO3	2	2	2	2	-	1	2	2	-	-	-	2	2	-	2.6
CO4	2	2	2	2	-	1	2	-	-	-	-	2	2	-	1.9
CO5	2	1	1	1	-	2	1	1	-	-	-	2	2	-	2.6
CO6	2	2	2	-	-	2	1	1	-	-	-	2	2	-	2.6
CO7	2	2	1	-	-	2	1	1	-	-	-	2	2	-	1.9
AVG	2	2	2	1	0	1	1	1	0	0	0	2	2	0	2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	2.6	1.7	-	-	-	1.7	1.7	-	0.9	-	0.9	1.7	-
CO2	1.6	-	0.8	-	-	-	0.8	-	-	-	-	0.8	0.8	-
CO3	1.7	1.7	1.7	1.7	-	0.9	1.7	1.7	-	-	-	1.7	1.7	-
CO4	1.3	1.3	1.3	1.3	-	0.6	1.3	-	-	-	-	1.3	1.3	-
CO5	1.7	0.9	0.9	0.9	-	1.7	0.9	0.9	-	-	-	1.7	1.7	-
CO6	1.7	1.7	1.7	-	-	1.7	0.9	0.9	-	-	-	1.7	1.7	-
CO7	1.3	1.3	0.6	-	-	1.3	0.6	0.6	-	-	-	1.3	1.3	-
AVG	1.8	1.6	1.3	1.3		1.1	1.3	1.4		0.9		1.3	1.4	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

R13 (JNTUH) - POs and PSOs attainment for 2013-17 Batch

2013-2017

Code	Name of the Course	Pos												PSOs		POs												PSOs		Course attainment level				
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2					
A10001	English				2.67		1	3	1	2.67	2.67		1					2.3		0.9	2.6	0.9	2.3	2.3		0.9								2.6
A10002	Mathematics I	3	2	1.4			1						2	1				2.6	1.7	1.2			0.9				1.7	0.9					2.6	
A10003	Mathematical Methods	3	2	1.4			1						2	1				2.1	1.4	1.0			0.7				1.4	0.7					2.1	
A10004	Engineering Physics	2	2							1			1	1				1.4	1.4						0.7		0.7	0.7					2.1	
A10005	Engineering Chemistry	2	1	1						1				1	1			1.7	0.9	0.9				0.9							0.9	0.9	2.6	
A10501	Computer Programming	2											1	1				1.7								0.9	0.9					2.6		
A10301	Engineering Drawing	2	1	1									1					1.7	0.9	0.9						0.9						2.6		
A10581	Computer Programming lab	2											2					1.7								1.7						2.6		
A10081	Engineering Physics/Engineering Chemistry lab	2	2	1						1								2.0	2.0	1.0				1.0									3.0	
A10083	English Language Communication Skills lab				1					2											1.0		2.0										3.0	
A10082	IT Workshop / Engineering Workshop	2											1					2.0						1.0									3.0	
A30007	Mathematics III	3	1.75															2.5	1.4													2.5		
A30405	Probability Theory	2	3	2.4									1	3				1.4	2.1	1.7								0.7	2.1			2.1		

	Propagation																													
A50422	Electronic Measurements and Instrumentation	2.83	1												2.4	0.9												2.6		
A50408	Analog Communications	2.62	1.87	2.25	1.87	1.12						1.87	2.75	1.87	2.1	1.5	1.8	1.5	0.9						1.5	2.2	1.5	2.5		
A50425	Linear and Digital IC Applications	2	2.6	3		1						1	3	1.4	1.5	2.0	2.3		0.8						0.8	2.3	1.1	2.3		
A50482	Analog Communications Lab	1.75	1	1	2	2		2	1	2	2	1	2	2	1	1.8	1.0	1.0	2.0	2.0		2.0	1.0	2.0	2.0	1.0	2.0	1.0	3.0	
A50488	IC Applications and HDL Simulation Lab		2	1	1.75	1.5	1	2	2	1	1	1	1.75	2.5	2.25		1.7	0.9	1.5	1.3	0.9	1.7	1.7	0.9	0.9	0.9	1.5	2.1	1.9	2.6
A60010	Managerial Economics and Financial Analysis	2	1.5	2.2	2.5	1	1.4	1	2.4	1.6	1	2.4	2		1.7	1.3	1.9	2.1	0.9	1.2	0.9	2.0	1.4	0.9	2.0	1.7			2.6	
A60018	Human Values and Professional Ethics*						1	2	2	2	2	1	2						0.9	1.7	1.7	1.7	1.7	0.9	1.7			2.6		
A60420	Digital Communications	1.33	1.33	1.5	1.5								1	1.83	1	1.1	1.1	1.2	1.2							0.8	1.5	0.8	2.5	
A60432	VLSI Design	3	2										2	1	2.6	1.7										1.7	0.9	2.6		
A60430	Microprocessors and Microcontrollers	2	2	2	3								1	3	3	1.3	1.3	1.3	2.0						0.7	2.0	2.0	2.0		
A60421	Digital Signal Processing	2.5	2.25										2	1	2.1	1.9										1.7	0.9	2.6		
A60494	Microprocessors and Microcontrollers lab	3	3	2.75	1	1					4	1	1	3	2	3.0	3.0	2.8	1.0	1.0				4.0	1.0		1.0	3.0	2.0	3.0
A60493	Digital Signal Processing Lab	2	1										1		2.0	1.0										1.0		3.0		
A70014	Management Science											3	1												3.0		1.0		3.0	
A70442	Microwave Engineering	2.87	2.75	1.87	1.25	1.25	1.25	1	1.16	1	1.25	1.87	2	2	1.62	1.4	1.4	0.9	0.6	0.6	0.6	0.5	0.6	0.5	0.6	0.9	1.0	1.0	0.8	1.5
A70515	Computer Networks	1.8	1	2.4									1.2	1	1.8	1.0	2.4									1.2		1.0	3.0	
A70434	Cellular and Mobile Communications	2.6	2.4	1.4	1.8		1.5	1.8	2				1.2	1.6	1	2.2	2.0	1.2	1.5		1.3	1.5	1.7				1.0	1.4	0.9	2.6

A70436	Digital Image Processing*	1	2	2.5	1.8	2.8	1	0.8					2	3	3	0.7	1.4	1.8	1.3	2.0	0.7	0.6					1.4	2.1	2.1	2.1
A70444	Optical Communications*	2	1											1		1.7	0.9										0.9		2.6	
A70086	Advanced Communication Skills lab					2	1							2						2.0	1.0						2.0		3.0	
A70499	Microwave Engineering and Digital Communications lab	3	2								2			1	3	2	3.0	2.0						2.0			1.0	3.0	2.0	3.0
A80452	Satellite Communications*	1.8	2.6	3	1.2	1.6							1	2.4	1.4	1.5	2.2	2.6	1.0	1.4						0.9	2.0	1.2	2.6	
A80450	Radar Systems*	3	1.75	3	2	1.66						1	1	3	1.71	2.6	1.5	2.6	1.7	1.4						0.9	0.9	2.6	1.5	2.6
A80454	Wireless communications & Networks*	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8	0.9	2.6	1.4	0.9	2.6	0.9	1.2	1.5	0.9	0.9	2.2	2.4	2.6	2.4	2.6
A80087	Industry Oriented Mini Project	3	2.1	2.5	3	3				3	3		1	3	2	3.0	2.1	2.5	3.0	3.0				3.0	3.0		1.0	3.0	2.0	3.0
A80089	Seminar	2	2		1		1	1		2			2	2	1	2.0	2.0		1.0		1.0	1.0		2.0			2.0	2.0	1.0	3.0
A80088	Major Project	3	2.1	2.5	3	3				3	3		1	3	2	2.6	1.8	2.1	2.6	2.6				2.6	2.6		0.9	2.6	1.7	2.6
A80090	Comprehensive Viva	3	2	1			1			3						2.3	1.5	0.8			0.8			2.3						2.3

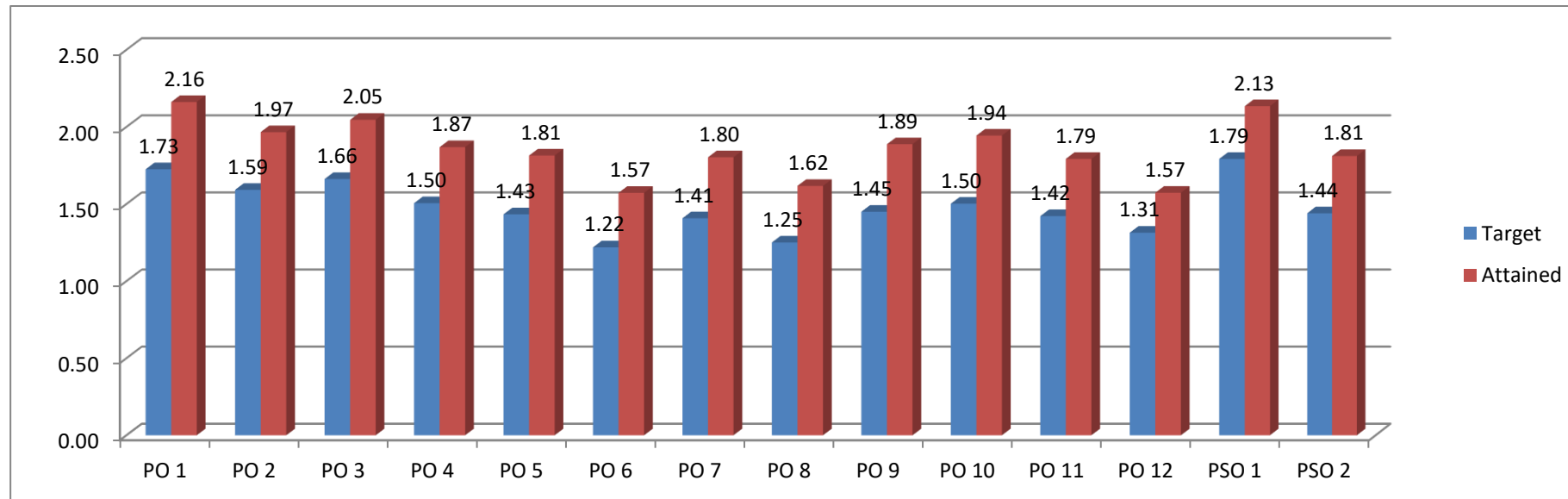
POs/ PSOs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
ACS = Average Correlation Strength	2.30	1.97	2.05	1.80	1.87	1.08	1.75	1.54	1.85	1.79	1.65	1.40	2.26	1.74
Max= 0.75* ACS + 0.25*3	2.47	2.23	2.29	2.10	2.15	1.56	2.06	1.90	2.14	2.09	1.99	1.80	2.44	2.05
PO Direct Attainment	1.90	1.59	1.64	1.48	1.57	0.89	1.45	1.30	1.65	1.57	1.42	1.13	1.86	1.42
PO Indirect Attainment - Exit Survey (15%)	93.92	91.36	91.84	90.72	92.62	92	92.16	91.36	91.52	92.16	91.84	91.36	91.04	91.84
PO Indirect Attainment Level - Exit Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
PO Indirect - Alumni Survey (10%)	91.00	91.00	92.00	92.00	92.00	95.00	94.00	93.00	94.00	94.00	90.00	89.52	87.00	91.00
PO Indirect Attainment Level - Alumni Survey	3	3	3	3	3	3	3	3	3	3	3	2	2	3
PO Overall Indirect attainment	3	3	3	3	3	3	3	3	3	3	3	2.6	2.6	3
Target (70% of Max) = 0.7*Max	1.73	1.56	1.60	1.47	1.50	1.09	1.44	1.33	1.50	1.47	1.39	1.26	1.71	1.44
PO Overall attainment level	2.18	1.95	1.98	1.86	1.93	1.42	1.84	1.72	1.99	1.93	1.81	1.50	2.05	1.82

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Consolidated Report

BATCH	TARGET	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
2013-17	Target 70%	1.73	1.59	1.66	1.50	1.43	1.22	1.41	1.25	1.45	1.50	1.42	1.31	1.79	1.44
	Attained	2.16	1.97	2.05	1.87	1.81	1.57	1.80	1.62	1.89	1.94	1.79	1.57	2.13	1.81



2014-2018

I Year

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
English	3	2	2.4	3	3	3	2.6
Computer Programming and Data Structures	2	2	2	3	3	3	2.3
Engineering Chemistry	2	1	1.4	3	3	3	1.8
Engineering Drawing	3	3	3	3	3	3	3
IT Workshop/Engineering workshop	3	2	2.4	3	3	3	2.6
Mathematical Methods	3	1	1.8	3	3	3	2.1
Mathematics-I	3	1	1.8	3	3	3	2.1
Engineering Physics	3	1	1.8	3	3	3	2.1
Computer Programming lab	3	2	2.4	3	3	3	2.6
Engineering Physics/Engineering Chemistry Lab	3	2	2.4	3	3	3	2.6
English Language and Communication Skills lab	3	3	3	3	3	3	3

II-I

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Electric Circuits	2	1	1.4	3	3	3	1.8
Electronic Devices and Circuits	0	2	1.2	3	3	3	1.7
Switching Theory and Logic Design	3	1	1.8	3	3	3	2.1
Mathematics-III	0	1	0.6	3	3	3	1.2
Probability Theory and Stochaistic Process	1	2	1.6	3	3	3	2.0
Signals and Systems	1	2	1.6	3	3	3	2.0
Basic Simulation Lab	3	3	3	3	3	3	3
Electronic Devices and Circuits lab	2	2	2	3	3	3	2.3

II-II

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Electromagnetic Theory and Transmission Lines	3	2	2.4	3	3	3	2.6
Electronic Circuit Analysis	3	2	2.4	3	3	3	2.6
Environmental Science	3	1	1.8	3	3	3	2.1
Principles of Electrical Engineering	2	2	2	3	3	3	2.3
Pulse and Digital Circuits	2	3	2.6	3	3	3	2.7

Digital Design through verilog HDL	1	2	1.6	3	3	3	2.0
Electrical Technology lab	3	2	2.4	3	3	3	2.6
Gender Sensitization	3	2	2.4	3	3	3	2.6
Electronic Circuits and Pulse Circuits Lab	3	3	3	3	3	3	3.0

III-I

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Analog Communications	1.7	1	1.3	3	3	3	1.7
Linear and Digital IC Applications	2.1	2	2.0	3	3	3	2.3
Antennas and Wave Propagation	2.2	2	2.1	3	3	3	2.3
Computer Organization and Operating Systems	1.8	2	1.9	3	3	3	2.2
Control Systems Engineering	1.8	3	2.5	3	3	3	2.6
Electronic Measurements and Instrumentation	1.9	2	1.9	3	3	3	2.2
Analog Communications Lab	3.0	2	2.4	3	3	3	2.6
IC Applications and HDL Simulation lab	3.0	2	2.4	3	3	3	2.6

III-II

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Digital Communications	1.6	2	1.8	3	3	3	2.1
Digital Signal Processing	1.6	2	1.8	3	3	3	2.1
Managerial Economics and financial analysis	2.2	2	2.1	3	3	3	2.3
Microprocessors and Microcontrollers	1.7	1	1.3	3	3	3	1.7
VLSI Design	1.6	3	2.4	2	3	2.4	2.4
Human values and professional ethics	2.9	1	1.8	3	3	3	2.1
Microprocessors and Microcontrollers Lab	3	2	2.4	3	3	3	2.6
Digital Signal Processing Lab	3	3	3	3	3	3	3.0

IV-I

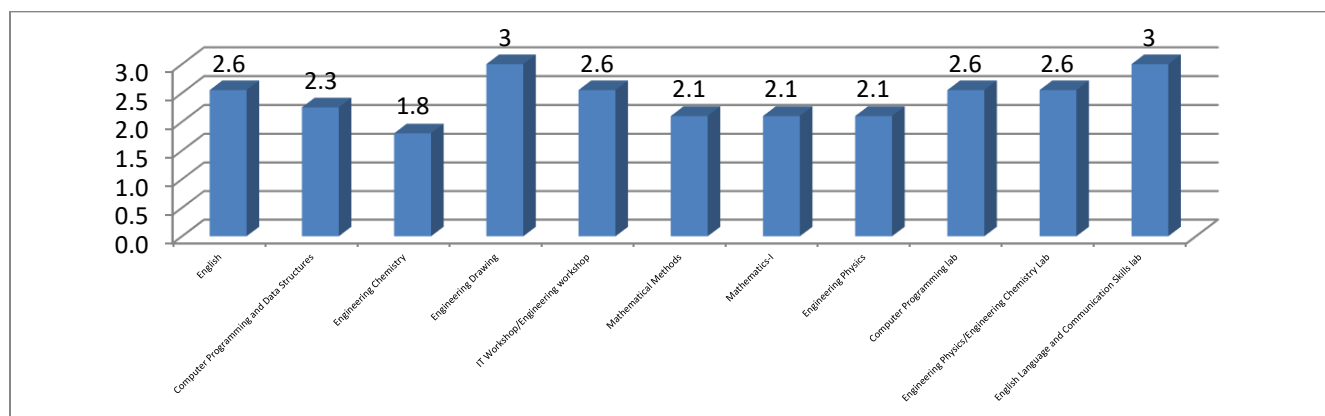
Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Computer Networks	1.7	3	2.5	3	3	3	2.6
Digital Image Processing	1.8	3	2.5	3	3	3	2.6
Embedded System Design	1.4	2	1.8	3	3	3	2.1
Management Science	3.0	3	3.0	2	3	2.4	2.9
Microwave Engineering	1.8	2	1.9	3	3	3	2.2
Multimedia Signal Coding	2.0	1	1.4	3	3	3	1.8
Optical Communications	1.9	2	2.0	3	3	3	2.2

Object Oriented Programming through Java	2.2	1	1.5	3	3	3	1.9
Cellular and Mobile Communications	1.8	2	1.9	3	3	3	2.2

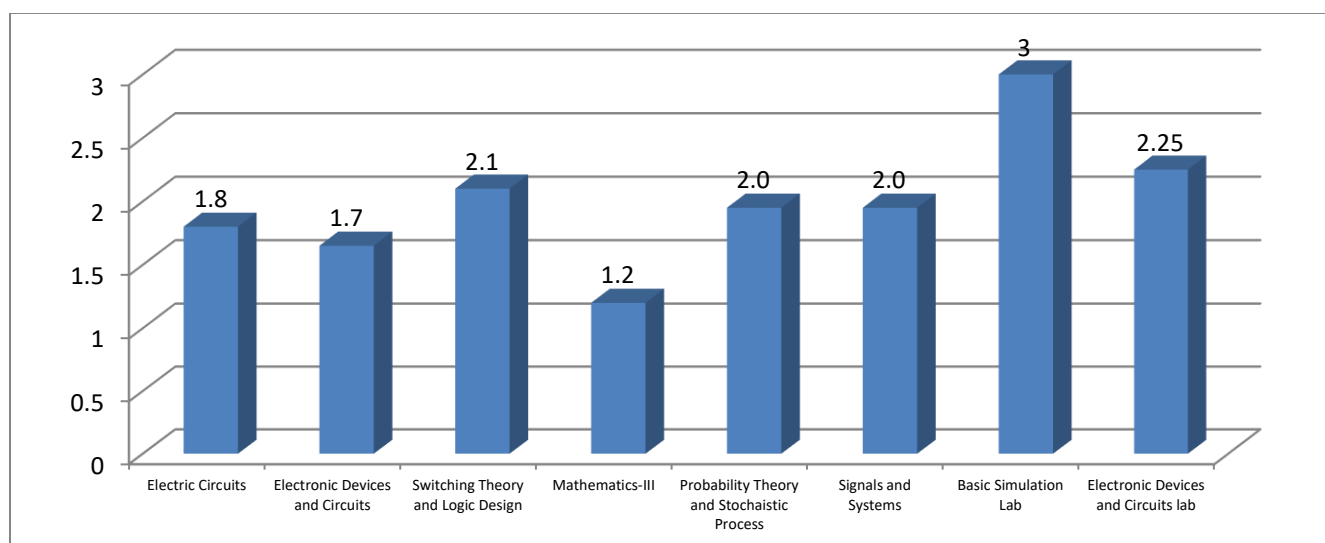
IV-II

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Wireless Communications and Networks	2.5	2	2.2	3	3	3	2.4
Radar Systems	2.7	1	1.7	3	3	3	2.0
Satellite Communications	2.1	2	2.0	3	3	3	2.3
Comprehensive Viva		2	2.0				2.0
Seminar	3.0		3.0				3.0
Mini Project		3	3.0				3.0
Major Project	3.0	2	2.4				2.4
Wireless Communications and Networks	2.5	2	2.2	3	3	3	2.4

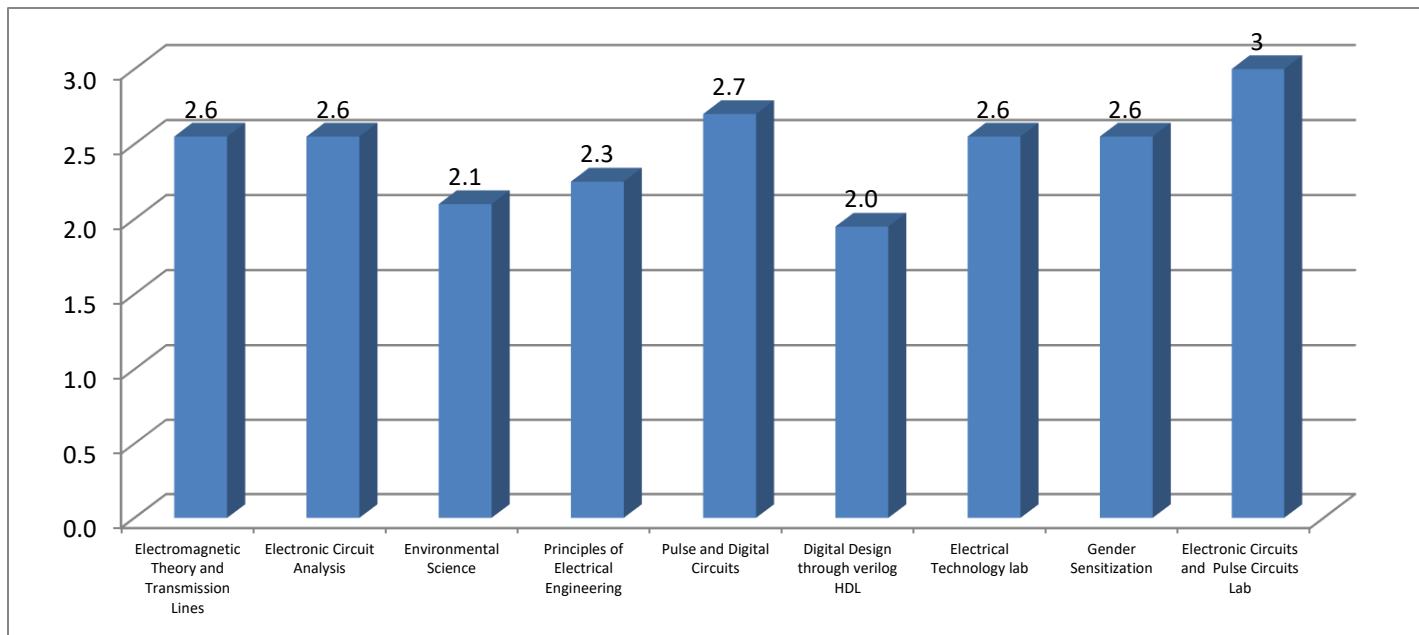
I Year



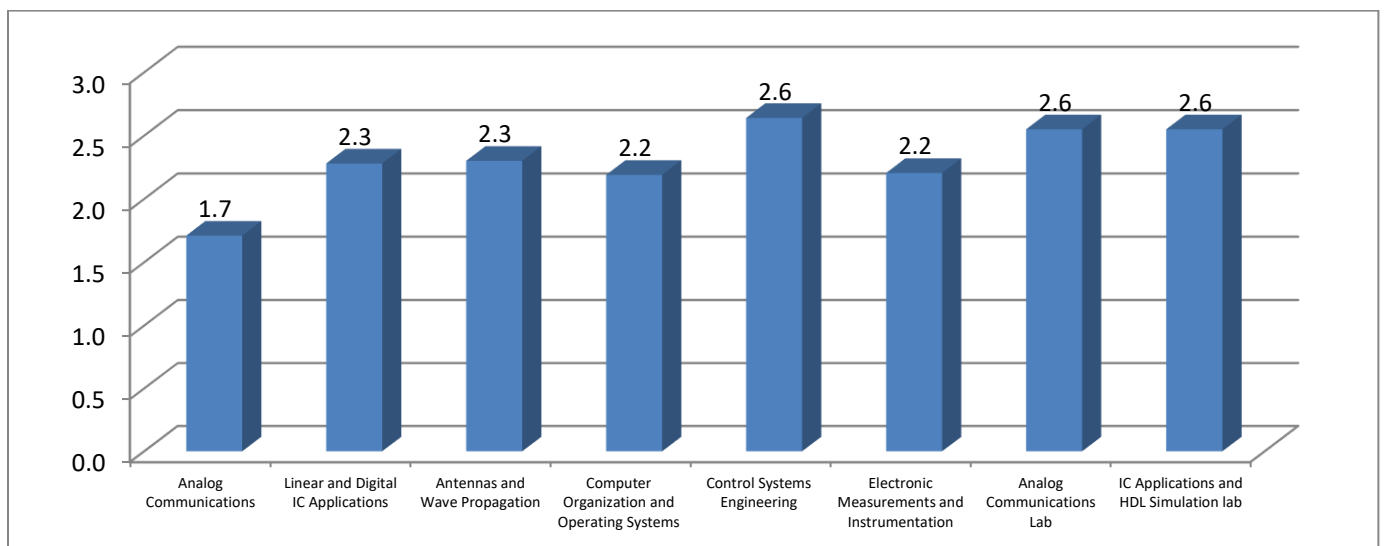
II-I



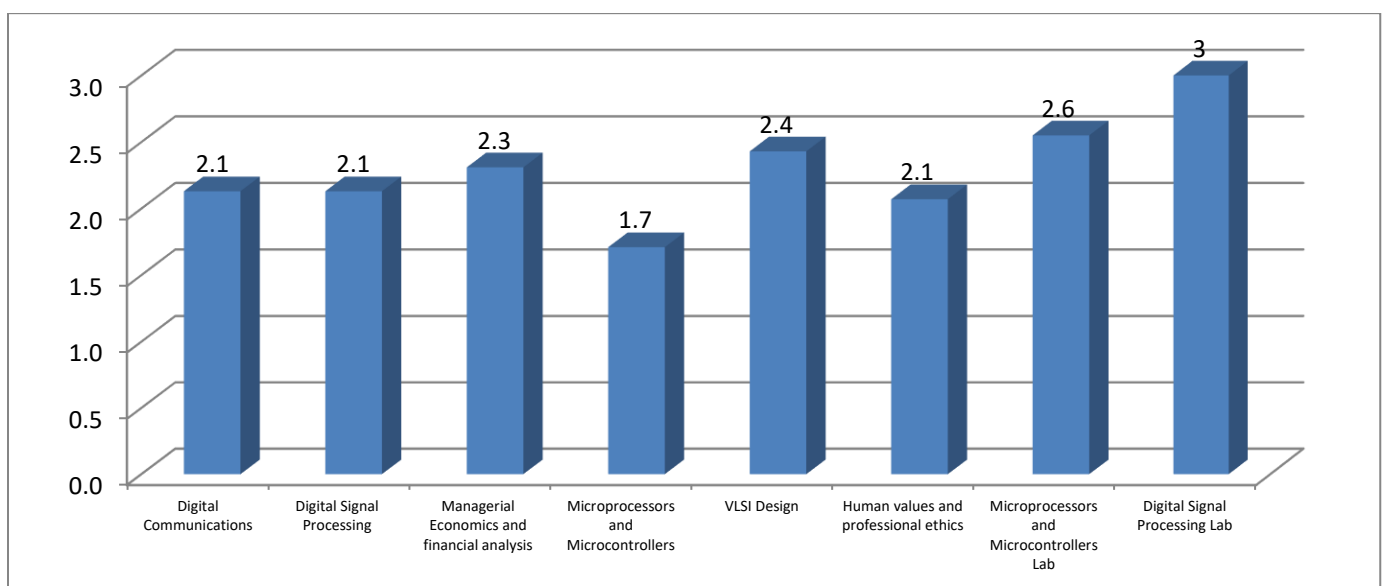
II-II



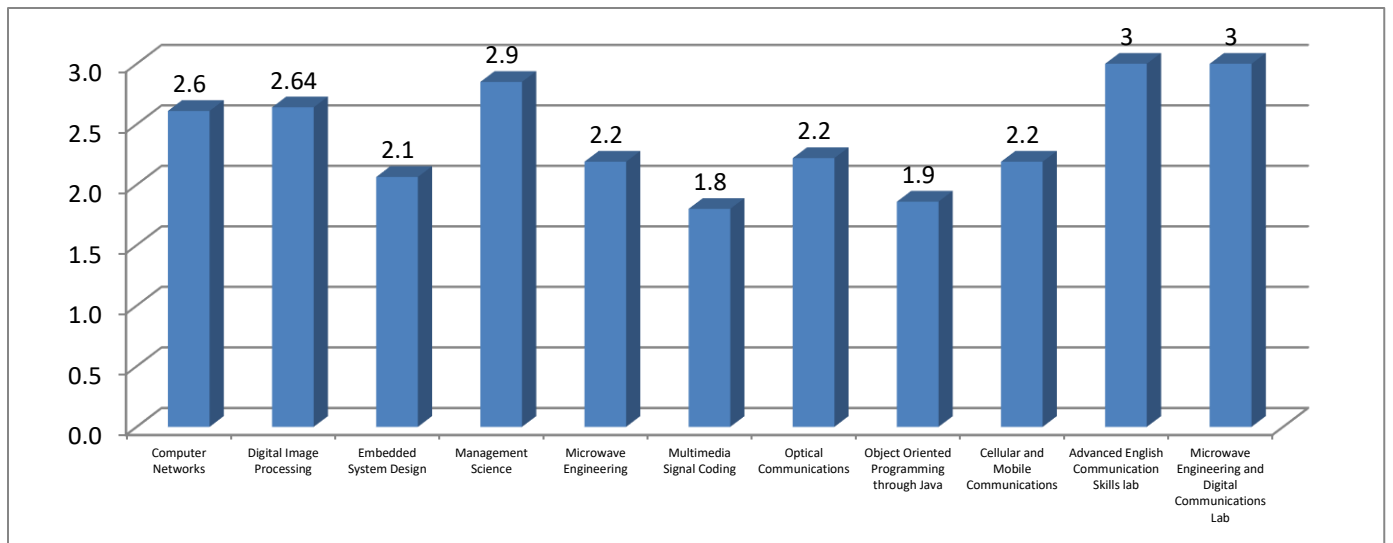
III-I



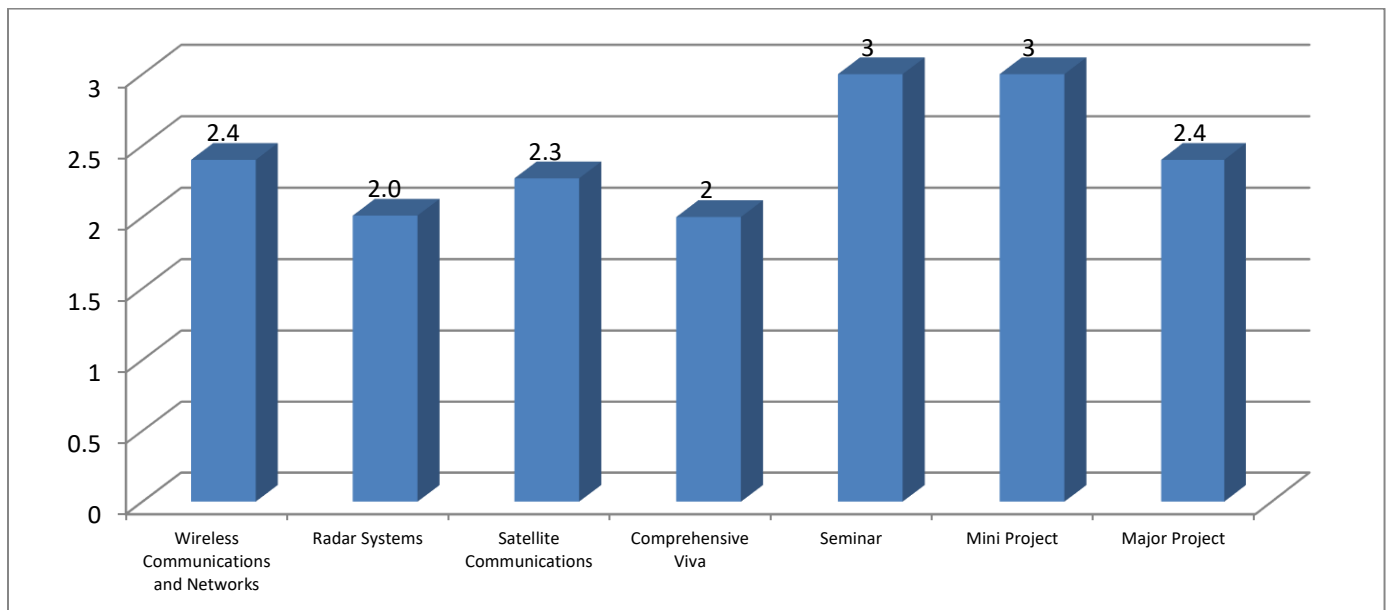
III-II



IV-I



IV-II



GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: Control Systems Engineering

Course Code: A50217

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	72	2	60	3	98	3	2.5	66	3	2.8	96	3	89	3	3	2.9
CO2	24	0	60	3	98	3	1.5	66	3	2.4	96	3	88	3	3	2.6
CO3	63	1	60	3	98	3	2.0	66	3	2.6	96	3	89	3	3	2.7
CO4	56	0	60	3	98	3	1.5	66	3	2.4	96	3	88	3	3	2.6
CO5	48	0	60	3	98	3	1.5	66	3	2.4	96	3	88	3	3	2.6
AVG	53	1	60	3	98	3	1.8	66	3	2.5	96	3	88	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	-	1	1		-	-	-	-	-	2	2	3	1	2.9
CO2	2	2	-	1		-	-	-	-	-	2	2	3	2	2.6
CO3	2	1	1	1		-	-	-	-	-	1	2	3	1	2.7
CO4	2	2	2	1	2	-	2	2	-	1	2	2	3	1	2.6
CO5	2	2	1	1	2	-	-	-	-	-	1	1	3	2	2.6
AVG	2	2	1	1	1	-	1	1	-	0.2	1.5	2	3	1.5	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	1.0	1	-	-	-	-	-	-	1.9	1.9	2.9	1.0
CO2	2	2	-	1	-	-	-	-	-	-	1.7	1.7	2.6	1.7
CO3	2	1	0.9	1.4	-	-	-	-	-	-	0.9	1.8	2.7	0.9
CO4	2	2	1.7	1.3	1.7	-	1.7	1.7	-	0.9	1.7	1.7	2.6	0.9
CO5	2	2	0.9	1.3	1.7	-	-	-	-	-	0.9	0.9	2.6	1.7
AVG	2	3	1.1	1	1.7	-	1.7	1.7	-	0.9	1.4	1.6	2.6	1.2

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: Computer Organization & Operating Systems

Course Code: A50516

CO Attainment(Direct & Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	70	2	68	2	98	3	2.3	50	2	2.1	96	3	91	3	3	2.3
CO2	68	1	68	2	98	3	1.8	50	2	1.9	96	3	88	3	3	2.2
CO3	46	0	68	2	98	3	1.3	50	2	1.7	96	3	89	3	3	2.0
CO4	43	0	68	2	98	3	1.3	50	2	1.7	96	3	88	3	3	2.0
CO5	72	1	68	2	98	3	1.8	50	2	1.9	96	3	88	3	3	2.2
CO6	72	2	68	2	98	3	2.3	50	2	2.1	96	3	88	3	3	2.3
AVG	62	1	68	2	98	3	1.8	50	2	1.9	96	3	89	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	1	1	1							1	1	1	2.3
CO2	2	2	3	2	1							2	3	2	2.2
CO3	3	2	3	2	1							2	3	2	2.0
CO4	3	2	3	2	1							2	3	2	2.0
CO5	3	2	2	2	1							2	3	2	2.2
CO6	3	2	2	2	2							2	3	2	2.3
AVG	2.5	1.8	2.3	1.8	1.2							1.8	2.7	1.8	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	0.8	0.8	0.8	0.8	-	-	-	-	-	-	0.8	0.8	0.8
CO2	1.5	1.5	2.2	1.5	0.7	-	-	-	-	-	-	1.5	2.2	1.5
CO3	2.0	1.4	2.0	1.4	0.7	-	-	-	-	-	-	1.4	2.0	1.4
CO4	2.0	1.4	2.0	1.4	0.7	-	-	-	-	-	-	1.4	2.0	1.4
CO5	2.2	1.5	1.5	1.5	0.7	-	-	-	-	-	-	1.5	2.2	1.5
CO6	2.3	1.6	1.6	1.6	1.6	-	-	-	-	-	-	1.6	2.3	1.6
AVG	1.8	1.3	1.7	1.3	0.9	-	-	-	-	-	-	1.3	1.9	1.3

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: Antennas and Wave Propagation

Course Code: A50418

CO Attainment(Direct and Indirect)

CO	Mid Subjective Level	Mid Objective Level	Assignment Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP Level	CES Level	CO Indirect	Overall CO attainment					
CO1	43	0	70	3	100	3	1.5	76	3	2.4	96	3	87	3	3	2.6
CO2	46	0	70	3	100	3	1.5	76	3	2.4	96	3	85	3	3	2.6
CO3	67	1	70	3	100	3	2.0	76	3	2.6	96	3	84	3	3	2.7
CO4	72	2	70	3	100	3	2.5	76	3	2.8	96	3	85	3	3	2.9
CO5	85	3	70	3	100	3	3.0	76	3	3.0	96	3	88	3	3	3.0
CO6	78	2	70	3	100	3	2.5	76	3	2.8	96	3	78	3	3	2.9
AVG	65	1	70	3	100	3	2.2	76	3	2.7	96	3	84	3	3	2.8

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	3	1	1	-	-	-	-	-	-	1	3	1	2.6
CO2	1	1	1	1	1	-	-	-	-	-	-	1	3	2	2.6
CO3	2	2	2	2	2	-	-	-	-	-	-	1	3	1	2.7
CO4	3	3	3	3	2	-	-	-	-	-	-	1	3	1	2.9
CO5	3	3	3	3	2	-	-	-	-	-	-	1	3	2	3.0
CO6	3	3	3	2	1	-	-	-	-	-	-	1	3	2	2.9
AVG	2.5	2.5	2.5	2	1.5	-	-	-	-	-	-	1	3	1.5	2.8

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	2.6	2.6	0.9	0.9	-	-	-	-	-	-	0.9	2.6	0.9
CO2	0.9	0.9	0.9	0.9	0.9	-	-	-	-	-	-	0.9	2.6	1.7
CO3	1.8	1.8	1.8	1.8	1.8	-	-	-	-	-	-	0.9	2.7	0.9
CO4	2.9	2.9	2.9	2.9	1.9	-	-	-	-	-	-	1.0	2.9	1.0
CO5	3.0	3.0	3.0	3.0	2.0	-	-	-	-	-	-	1.0	3.0	2.0
CO6	2.9	2.9	2.9	1.9	1.0	-	-	-	-	-	-	1.0	2.9	1.9
AVG	1.6	1.6	1.6	1.3	0.9							0.6	1.9	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: Electronic Measurements and Instrumentation

Course Code: A50422

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	40	0	56	2	100	3	1.3	51	2	1.7		3	91	3	3	2.0
CO2	49	0	56	2	100	3	1.3	51	2	1.7		3	89	3	3	2.0
CO3	85	3	56	2	100	3	2.8	51	2	2.3		3	89	3	3	2.5
CO4	53	0	56	2	100	3	1.3	51	2	1.7		3	88	3	3	2.0
CO5	82	3	56	2	100	3	2.8	51	2	2.3		3	88	3	3	2.5
AVG	62	1.2	56	2	100	3	1.9	51	2	1.9		3	89	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	1	1	1							1	1	1	2.0
CO2	2	2	3	2	1							2	3	2	2.0
CO3	3	2	3	2	1							2	3	2	2.5
CO4	3	2	3	2	1							2	3	2	2.0
CO5	3	2	2	2	1							2	3	2	2.5
AVG	2.4	1.8	2.4	1.8	1							1.8	2.6	1.8	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.7	0.7	0.7	0.7	0.7	-	-	-	-	-	-	0.7	0.7	0.7
CO2	1.4	1.4	2.0	1.4	0.7	-	-	-	-	-	-	1.4	2.0	1.4
CO3	2.5	1.7	2.5	1.7	0.8	-	-	-	-	-	-	1.7	2.5	1.7
CO4	2.0	1.4	2.0	1.4	0.7	-	-	-	-	-	-	1.4	2.0	1.4
CO5	2.5	1.7	1.7	1.7	0.8	-	-	-	-	-	-	1.7	2.5	1.7
AVG	1.8	1.3	1.8	1.3	0.7	-	-	-	-	-	-	1.3	1.9	1.3

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: Linear and Digital IC Applications

Course Code: A60430

CO Attainment(Direct and Indirect)

CO	Mid Subjective Level	Mid Objective Level	Assignment Level	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment	
CO1	41	0	61	3	97	3	1.5	51	2	1.8	92	3	89	3	2.1
CO2	52	0	61	3	97	3	1.5	51	2	1.8	92	3	89	3	2.1
CO3	85	3	61	3	97	3	3.0	51	2	2.4	92	3	88	3	2.6
CO4	55	0	61	3	97	3	1.5	51	2	1.8	92	3	88	3	2.1
CO5	80	3	61	3	97	3	3.0	51	2	2.4	92	3	88	3	2.6
AVG	62	1.2	61	3	97	3	2.1	51	2	2.0	92	3	88	3	2.3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	3	-	1	-	-	-	-	-	-	1	3	1	2.1
CO2	2	3	3	-	1	-	-	-	-	-	-	1	3	1	2.1
CO3	2	3	3	-	1	-	-	-	-	-	-	1	3	1	2.6
CO4	2	3	3	-	1	-	-	-	-	-	-	1	3	2	2.1
CO5	2	2	3	-	1	-	-	-	-	-	-	1	3	2	2.6
AVG	2	2.6	3	-	1	-	-	-	-	-	-	1	3	1.4	2.3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.4	1.4	2.1	-	0.7	-	-	-	-	-	-	0.7	2.1	0.7
CO2	1.4	2.1	2.1	-	0.7	-	-	-	-	-	-	0.7	2.1	0.7
CO3	1.7	2.6	2.6	-	0.9	-	-	-	-	-	-	0.9	2.6	0.9
CO4	1.4	2.1	2.1	-	0.7	-	-	-	-	-	-	0.7	2.1	1.4
CO5	1.7	1.7	2.6	-	0.9	-	-	-	-	-	-	0.9	2.6	1.7
AVG	1.5	2.0	2.3	0	0.8							0.8	2.3	1.1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: Analog Communications

Course Code:A50408

CO Attainment (Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	61	1	69	3	94	3	2.0	47	1	1.4	83	3	91	3	3	1.8
CO2	60	1	69	3	94	3	2.0	47	1	1.4	83	3	88	3	3	1.8
CO3	47	0	69	3	94	3	1.5	47	1	1.2	83	3	89	3	3	1.7
CO4	57	0	69	3	94	3	1.5	47	1	1.2	83	3	88	3	3	1.7
CO5	45	0	69	3	94	3	1.5	47	1	1.2	83	3	88	3	3	1.7
CO6	42	0	69	3	94	3	1.5	47	1	1.2	83	3	88	3	3	1.7
AVG	52	0	69	3	94	3	2	47	1	1	83	3	89	3	3	1.7

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	1	1	1							1	1	1	1.8
CO2	2	2	3	2	1							2	3	2	1.8
CO3	3	2	3	2	1							2	3	2	1.7
CO4	3	2	3	2	1							2	3	2	1.7
CO5	3	2	2	2	1							2	3	2	1.7
CO6	3	2	2	2	2							2	3	2	1.7
AVG	2.5	1.8	2.3	1.8	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.7	1.8	1.7

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.6	0.6	0.6	0.6	0.6	-	-	-	-	-	-	0.6	0.6	0.6
CO2	1.2	1.2	1.8	1.2	0.6	-	-	-	-	-	-	1.2	1.8	1.2
CO3	1.8	1.1	1.7	1.1	0.6	-	-	-	-	-	-	1.1	1.7	1.1
CO4	1.8	1.1	1.7	1.1	0.6	-	-	-	-	-	-	1.1	1.7	1.1
CO5	1.8	1.1	1.1	1.1	0.6	-	-	-	-	-	-	1.1	1.7	1.1
CO6	1.8	1.1	1.1	1.1	1.1	-	-	-	-	-	-	1.1	1.7	1.1
AVG	1.5	1.0	1.3	1.0	0.7	-	-	-	-	-	-	1.0	1.5	1.0

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: Analog Communications Lab

Course Code: A50487

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	85	3	50	2	2.4	96	3	89	3	3	2.6
CO2	85	3	50	2	2.4	96	3	88	3	3	2.6
CO3	85	3	50	2	2.4	96	3	87	3	3	2.6
CO4	85	3	50	2	2.4	96	3	87	3	3	2.6
CO5	85	3	50	2	2.4	96	3	89	3	3	2.6
CO6	85	3	50	2	2.4	96	3	87	3	3	2.6
CO7	85	3	50	2	2.4	96	3	89	3	3	2.6
CO8	85	3	50	2	2.4	96	3	88	3	3	2.6
AVG	85	3	50	2	2.4	96	3	88	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
CO2	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
CO3	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
CO4	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
CO5	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
CO6	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
CO7	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
CO8	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6
AVG	3	1	1	2	2	-	2	1	2	2	1	2	2	1	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
CO2	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
CO3	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
CO4	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
CO5	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
CO6	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
CO7	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
CO8	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9
AVG	2.6	0.9	0.9	1.7	1.7	-	1.7	0.9	1.7	1.7	0.9	1.7	1.7	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-I

Course Name: IC Applications & HDL Simulation Lab

Course Code: A50488

CO Attainment(Direct and Indirect)

CO	MID	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	94	3	58	2	2.4	85	3	90	3	3	2.6
CO2	94	3	58	2	2.4	85	3	89	3	3	2.6
CO3	94	3	58	2	2.4	85	3	89	3	3	2.6
CO4	94	3	58	2	2.4	85	3	90	3	3	2.6
CO5	94	3	58	2	2.4	85	3	89	3	3	2.6
CO6	94	3	58	2	2.4	85	3	90	3	3	2.6
CO7	94	3	58	2	2.4	85	3	89	3	3	2.6
CO8	94	3	58	2	2.4	85	3	89	3	3	2.6
AVG	94	3	58	2	2	85	3	89	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	-	-	1	-	-	1	3	-	2	2	3	2	2.6
CO2	3	1	1	-	1	2	2	1	3	-	2	2	3	2	2.6
CO3	2	-	-	-	1	-	-	1	-	-	2	2	3	2	2.6
CO4	2	-	-	-	1	-	-	1	-	-	2	2	2	3	2.6
CO5	2	1	1	-	1	-	-	1	2	-	2	2	3	3	2.6
CO6	3	-	1	-	1	-	-	1	2	-	2	2	2	3	2.6
CO7	3	-	-	-	1	-	-	1	2	-	2	2	2	3	2.6
CO8	3	-	-	-	1	-	-	1	2	-	2	2	2	3	2.6
AVG	2.6	1.3	1	-	1	2	2	1	2.4	-	2	2	2.6	2.6	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	1.7	-	-	0.9	-	-	0.9	2.6	-	1.7	1.7	2.6	1.7
CO2	2.6	0.9	0.9	-	0.9	1.7	1.7	0.9	2.6	-	1.7	1.7	2.6	1.7
CO3	1.7	-	-	-	0.9	-	-	0.9	-	-	1.7	1.7	2.6	1.7
CO4	1.7	-	-	-	0.9	-	-	0.9	-	-	1.7	1.7	1.7	2.6
CO5	1.7	0.9	0.9	-	0.9	-	-	0.9	1.7	-	1.7	1.7	2.6	2.6
CO6	2.6	-	0.9	-	0.9	-	-	0.9	1.7	-	1.7	1.7	1.7	2.6
CO7	2.6	-	-	-	0.9	-	-	0.9	1.7	-	1.7	1.7	1.7	2.6
CO8	2.6	-	-	-	0.9	-	-	0.9	1.7	-	1.7	1.7	1.7	2.6
AVG	2.1	1.1	0.9	-	0.9	1.7	1.7	0.9	2.1	-	1.7	1.7	2.3	2.2

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-II

Course Name: Microprocessors and Microcontrollers

Course Code: A60430

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	75	2	58	2	95	3	2.3	47	1	1.5	82	3	94	3	3	1.9
CO2	47	0	58	2	95	3	1.3	47	1	1.1	82	3	91	3	3	1.6
CO3	48	0	58	2	95	3	1.3	47	1	1.1	82	3	92	3	3	1.6
CO4	64	1	58	2	95	3	1.8	47	1	1.3	82	3	92	3	3	1.7
CO5	47	0	58	2	95	3	1.3	47	1	1.1	82	3	92	3	3	1.6
CO6	73	2	58	2	95	3	2.3	47	1	1.5	82	3	92	3	3	1.9
AVG	59	1	58	2	95	3	2	47	1	1	82	3	92	3	3	1.7

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.9
CO2	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.6
CO3	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.6
CO4	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.7
CO5	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.6
CO6	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.9
AVG	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.7

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.3	1.3	1.3	1.9	-	-	-	-	-	-	-	0.6	1.9	1.3
CO2	1.1	1.1	1.1	1.6	-	-	-	-	-	-	-	0.5	1.6	1.6
CO3	1.1	1.1	1.1	1.6	-	-	-	-	-	-	-	0.5	1.6	1.1
CO4	1.2	1.2	1.2	1.7	-	-	-	-	-	-	-	0.6	1.7	1.2
CO5	1.1	1.1	1.1	1.6	-	-	-	-	-	-	-	0.5	1.6	1.6
CO6	1.3	1.3	1.3	1.9	-	-	-	-	-	-	-	0.6	1.9	1.3
AVG	1.1	1.1	1.1	1.7	-	-	-	-	-	-	-	0.6	1.7	1.3

Batch: 2014-2018

Year & Sem: III-II

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	91	3	51	2	98	3	2.8	55	2	2.5	86	3	94	3	3	2.6
CO2	90	3	51	2	98	3	2.8	55	2	2.5	86	3	91	3	3	2.6
CO3	45	0	51	2	98	3	1.3	55	2	1.6	86	3	92	3	3	1.9
CO4	71	2	51	2	98	3	2.3	55	2	2.2	86	3	91	3	3	2.4
CO5	88	3	51	2	98	3	2.8	55	2	2.5	86	3	91	3	3	2.6
CO6	50	0	51	2	98	3	1.3	55	2	1.6	86	3	92	3	3	1.9
AVG	73	2	51	2	98	3	2.2	55	2	2.1	86	3	92	3	3	2.3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	1	1	-	-	-	-	-	-	-	1	2	1	2.6
CO2	2	2	2	2	-	-	-	-	-	-	-	1	2	1	2.6
CO3	2	2	2	2	-	-	-	-	-	-	-	1	2	1	1.9
CO4	1	1	-	-	-	-	-	-	-	-	-	1	2	1	2.4
CO5	1	1	2	2	-	-	-	-	-	-	-	1	2	1	2.6
CO6	1	1	1	1	-	-	-	-	-	-	-	1	1	1	1.9
AVG	2	2	2	3	-	-	-	-	-	-	-	1	3	3	2.3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.7	1.7	0.9	0.9	-	-	-	-	-	-	-	0.9	1.7	0.9
CO2	1.7	1.7	1.7	1.7	-	-	-	-	-	-	-	0.9	1.7	0.9
CO3	1.3	1.3	1.3	1.3	-	-	-	-	-	-	-	0.6	1.3	0.6
CO4	0.8	0.8	-	-	-	-	-	-	-	-	-	0.8	1.6	0.8
CO5	0.9	0.9	1.7	1.7	-	-	-	-	-	-	-	0.9	1.7	0.9
CO6	0.6	0.6	0.6	0.6	-	-	-	-	-	-	-	0.6	0.6	0.6
AVG	1.2	1.2	1.2	1.2	-	-	-	-	-	-	-	0.8	1.4	0.8

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	52	0	64	3	91	3	1.5	57	2	1.8	80	3	92	3	3	2.1
CO2	40	0	64	3	91	3	1.5	57	2	1.8	80	3	90	3	3	2.1
CO3	49	0	64	3	91	3	1.5	57	2	1.8	80	3	90	3	3	2.1
CO4	27	0	64	3	91	3	1.5	57	2	1.8	80	3	90	3	3	2.1
CO5	72	0	64	3	91	3	1.5	57	2	1.8	80	3	90	3	3	2.1
CO6	59	0	64	3	91	3	1.5	57	2	1.8	80	3	88	3	3	2.1
CO7	60	1	64	3	91	3	2.0	57	2	2.0	80	3	89	3	3	2.3
CO8	66	0	64	3	91	3	1.5	57	2	1.8	80	3	89	3	3	2.1
AVG	53	0.1	64	3	91	3	1.6	57	2	1.8	80	3	90	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	0	-	-	-	-	-	-	-	1	1	3	1	2.1
CO2	2	2	0	-	-	-	-	-	-	-	1	1	3	2	2.1
CO3	2	2	0	-	-	-	-	-	-	-	1	1	3	1	2.1
CO4	3	2	0	-	-	-	-	-	-	-	1	1	3	1	2.1
CO5	3	2	3	-	-	-	-	-	-	-	1	1	3	2	2.1
CO6	3	2	3	-	-	-	-	-	-	-	1	1	3	2	2.1
CO7	2	2	2	-	-	-	-	-	-	-	1	1	3	2	2.3
CO8	2	2	2	-	-	-	-	-	-	-	1	1	3	1	2.1
AVG	2.4	2	1.3	-	-	-	-	-	-	-	1	1	3	1.5	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.4	1.4	0.0	-	-	-	-	-	-	-	0.7	0.7	2.1	0.7
CO2	1.4	1.4	0.0	-	-	-	-	-	-	-	0.7	0.7	2.1	1.4
CO3	1.4	1.4	0.0	-	-	-	-	-	-	-	0.7	0.7	2.1	0.7
CO4	2.1	1.4	0.0	-	-	-	-	-	-	-	0.7	0.7	2.1	0.7
CO5	2.1	1.4	2.1	-	-	-	-	-	-	-	0.7	0.7	2.1	1.4
CO6	2.1	1.4	2.1	-	-	-	-	-	-	-	0.7	0.7	2.1	1.4
CO7	1.5	1.5	1.5	-	-	-	-	-	-	-	0.8	0.8	2.3	1.5
CO8	1.4	1.4	1.4	-	-	-	-	-	-	-	0.7	0.7	2.1	0.7
AVG	1.7	1.4	0.9	-	-	-	-	-	-	-	0.7	0.7	2.1	1.1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2014-2018

Year & Sem: III & II

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	69	1	57	2	96	3	1.8	61	3	2.5	76	2	90	3	2.4	2.5
CO2	53	0	57	2	96	3	1.3	61	3	2.3	76	2	88	3	2.4	2.3
CO3	56	0	57	2	96	3	1.3	61	3	2.3	76	2	88	3	2.4	2.3
CO4	51	0	57	2	96	3	1.3	61	3	2.3	76	2	86	3	2.4	2.3
CO5	72	2	57	2	96	3	2.3	61	3	2.7	76	2	87	3	2.4	2.6
AVG	60	0.6	57	2	96	3	1.6	61	3	2.4	76	2	88	3	2.4	2.4

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	-	-	1	-	-	-	1	2	-	2	3	3	2.5
CO2	3	3	-	-	1	-	-	-	1	2	-	2	3	3	2.3
CO3	-	3	3	2	1	-	-	-	1	2	-	2	3	3	2.3
CO4	3	-	3	2	1	-	-	-	1	2	-	2	3	3	2.3
CO5	3	-	3	2	1	-	-	-	1	2	-	2	3	3	2.6
AVG	3	3	3	2	1	0	0	0	1	2	0	2	3	3	2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.5	2.5	-	-	0.8	-	-	-	0.8	1.7	-	1.7	2.5	2.5
CO2	2.3	2.3	-	-	0.8	-	-	-	0.8	1.6	-	1.6	2.3	2.3
CO3	-	2.3	2.3	1.6	0.8	-	-	-	0.8	1.6	-	1.6	2.3	2.3
CO4	2.3	-	2.3	1.6	0.8	-	-	-	0.8	1.6	-	1.6	2.3	2.3
CO5	2.6	-	2.6	1.8	0.9	-	-	-	0.9	1.8	-	1.8	2.6	2.6
AVG	2.4	2.4	2.4	1.6	0.8	0	0	0	0.8	1.6	0.0	1.6	2.4	2.4

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-II

Course Name: Human Values and Professional Ethics

Course Code:A60018

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	Overall CO attainment
CO1	90	3	60	3	98	3	3.0	46	1	1.8	86	3	94	3	2.1
CO2	78	2	60	3	98	3	2.5	46	1	1.6	86	3	91	3	2.0
CO3	83	3	60	3	98	3	3.0	46	1	1.8	86	3	92	3	2.1
CO4	84	3	60	3	98	3	3.0	46	1	1.8	86	3	92	3	2.1
AVG	84	2.8	60	3	98	3	2.9	46	1	1.8	86	3	92	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1							2	2	2	2		2	2		2.1
CO2						1	2	2	2	2		2	2		2.0
CO3							2	2	2	2		2	2		2.1
CO4						1	2	2	2	2	1	2	2		2.1
AVG						1	2	2	2	2	1	2	2		2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1							1.4	1.4	1.4	1.4		1.4	1.4	
CO2						0.7	1.3	1.3	1.3	1.3		1.3	1.3	
CO3							1.4	1.4	1.4	1.4		1.4	1.4	
CO4						0.7	1.4	1.4	1.4	1.4	0.7	1.4	1.4	
AVG						0.7	1.4	1.4	1.4	1.4	0.7	1.4	1.4	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-II

Course Name: Digital Communications

Course Code: A60420

CO Attainment (Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	66	1	61	3	100	3	2.0	59	2	2.0	96	3	94	3	3	2.3
CO2	58	0	61	3	100	3	1.5	59	2	1.8	96	3	91	3	3	2.1
CO3	55	0	61	3	100	3	1.5	59	2	1.8	96	3	92	3	3	2.1
CO4	20	0	61	3	100	3	1.5	59	2	1.8	96	3	92	3	3	2.1
CO5	57	0	61	3	100	3	1.5	59	2	1.8	96	3	91	3	3	2.1
CO6	50	0	61	3	100	3	1.5	59	2	1.8	96	3	93	3	3	2.1
AVG	51	0	61	3	100	3	2	59	2	1.8	96	3	92	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	2	2	-	-	-	-	-	-	-	1	2	1	2.3
CO2	2	2	2	2	-	-	-	-	-	-	-	1	2	1	2.1
CO3	2	2	2	2	-	-	-	-	-	-	-	1	2	1	2.1
CO4	1	1	-	-	-	-	-	-	-	-	-	1	2	1	2.1
CO5	1	1	2	2	-	-	-	-	-	-	-	1	2	1	2.1
CO6	1	1	1	1	-	-	-	-	-	-	-	1	1	1	2.1
AVG	1.3	1.3	1.8	1.8	-	-	-	-	-	-	-	1.0	1.8	1.0	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	0.8	1.5	1.5	-	-	-	-	-	-	-	0.8	1.5	0.8
CO2	1.5	1.4	1.4	1.4	-	-	-	-	-	-	-	0.7	1.4	0.7
CO3	1.5	1.4	1.4	1.4	-	-	-	-	-	-	-	0.7	1.4	0.7
CO4	0.8	0.7	-	-	-	-	-	-	-	-	-	0.7	1.4	0.7
CO5	0.8	0.7	1.4	1.4	-	-	-	-	-	-	-	0.7	1.4	0.7
CO6	0.8	0.7	0.7	0.7	-	-	-	-	-	-	-	0.7	0.7	0.7
AVG	1.0	0.9	1.3	1.3	-	-	-	-	-	-	-	0.7	1.3	0.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-II

Course Name: Digital Signal Processing Lab

Course Code: A60493

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	94	3	62	3	3	81	3	88	3	3	3
CO2	94	3	62	3	3	81	3	88	3	3	3
CO3	94	3	62	3	3	81	3	87	3	3	3
CO4	94	3	62	3	3	81	3	87	3	3	3
CO5	94	3	62	3	3	81	3	89	3	3	3
AVG	94	3	62	3	3	81	3	88	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	1											1		3
CO2	2	1											1		3
CO3	2	1											1		3
CO4	2	1											1		3
CO5	2	1											1		3
AVG	2	1											1		3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1											1	
CO2	2	1											1	
CO3	2	1											1	
CO4	2	1											1	
CO5	2	1											1	
AVG	2	1											1	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: III-II

Course Name: Microprocessors and Microcontrollers Lab

Course Code: A60494

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	91	3	54	2	2.4	96	3	89	3	3	2.6
CO2	91	3	54	2	2.4	96	3	88	3	3	2.6
CO3	91	3	54	2	2.4	96	3	87	3	3	2.6
CO4	91	3	54	2	2.4	96	3	87	3	3	2.6
CO5	91	3	54	2	2.4	96	3	89	3	3	2.6
AVG	91	3	54	2	2.4	96	3	88	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall LCO
CO1	3	3	2	1	-	-	-	-	1	-	-	1	3	2	2.6
CO2	3	3	2	1	-	-	-	-	1	-	-	1	3	2	2.6
CO3	3	3	2	-	1	-	-	-	1	1	-	1	3	1	2.6
CO4	3	3	2	1	-	-	-	-	-	-	-	1	3	2	2.6
CO5	3	3	3	1	-	-	-	-	1	-	-	1	3	3	2.6
AVG	3	3	2.2	1	1	-	-	-	1	1	-	1	3	2	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	2.6	1.7	0.9	-	-	-	-	0.9	-	-	0.9	2.6	1.7
CO2	2.6	2.6	1.7	0.9	-	-	-	-	0.9	-	-	0.9	2.6	1.7
CO3	2.6	2.6	1.7	-	0.9	-	-	-	0.9	0.9	-	0.9	2.6	0.9
CO4	2.6	2.6	1.7	0.9	-	-	-	-	-	-	-	0.9	2.6	1.7
CO5	2.6	2.6	2.6	0.9	-	-	-	-	0.9	-	-	0.9	2.6	2.6
AVG	2.6	2.6	1.9	0.9	0.9	-	-	-	0.9	0.9	-	0.9	2.6	1.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: IV-I

Course Name: Cellular and Mobile Communications

Course Code: A70434

CO Attainment(Direct and Indirect)

CO	Mid Subjective Level		Mid Objective Level	Assignment Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP Level	CES Level	CO Indirect	Overall CO attainment				
CO1	29	0	51	3	100	3	1.5	54	3	2.4	96	3	80	3	3	2.6
CO2	47	0	51	3	100	3	1.5	54	3	2.4	96	3	78	3	3	2.6
CO3	33	0	51	3	100	3	1.5	54	3	2.4	96	3	74	3	3	2.6
CO4	40	0	51	3	100	3	1.5	54	3	2.4	96	3	79	3	3	2.6
CO5	80	3	51	3	100	3	3.0	54	3	3	96	3	80	3	3	3.0
AVG	46	1	51	3	100	3	2	54	3	3	96	3	78	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	1	2	-	1	3	2	-	-	-	2	2	-	2.6
CO2	3	2	2	1	-	-	1	-	-	-	-	1	1	-	2.6
CO3	3	3	2	3	-	-	1	2	-	-	-	1	2	1	2.6
CO4	3	3	1	2	-	-	2	-	-	-	-	1	1	1	2.6
CO5	2	2	1	1	-	2	2	2	-	-	-	1	2	-	3.0
AVG	2.6	2.4	1.4	1.8	-	1.5	1.8	2	-	-	-	1.2	1.6	1	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.7	1.7	0.9	1.7	-	0.9	2.6	1.7	-	-	-	1.7	1.7	-
CO2	2.6	1.7	1.7	0.9	-	-	0.9	-	-	-	-	0.9	0.9	-
CO3	2.6	2.6	1.7	2.6	-	-	0.9	1.7	-	-	-	0.9	1.7	0.9
CO4	2.6	2.6	0.9	1.7	-	-	1.7	-	-	-	-	0.9	0.9	0.9
CO5	2.0	2.0	1.0	1.0	-	2.0	2.0	2.0	-	-	-	1.0	2.0	-
AVG	2.3	2.1	1.2	1.6	-	1.4	1.6	1.8	-	-	-	1.1	1.4	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: IV-I

Course Name: Computer Networks

Course Code: A70515

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	62	1	71	3	100	3	2.0	62	3	2.6	96	3	94	3	3	2.7
CO2	49	0	71	3	100	3	1.5	62	3	2.4	96	3	93	3	3	2.6
CO3	42	0	71	3	100	3	1.5	62	3	2.4	96	3	90	3	3	2.6
CO4	47	0	71	3	100	3	1.5	62	3	2.4	96	3	90	3	3	2.6
CO5	67	1	71	3	100	3	2.0	62	3	2.6	96	3	94	3	3	2.7
AVG	53	0	71	3	100	3	2	62	3	2	96	3	92	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	2	-	-	-	-	-	-	-	-	1	-	1	2.7
CO2	2	1	2	-	-	-	-	-	-	-	-	1	-	1	2.6
CO3	2	1	2	-	-	-	-	-	-	-	-	1	-	1	2.6
CO4	1	1	3	-	-	-	-	-	-	-	-	1	-	1	2.6
CO5	3	1	3	-	-	-	-	-	-	-	-	2	-	1	2.7
AVG	1.8	1	2.4	-	-	-	-	-	-	-	-	1.2	-	1	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.9	0.9	1.8	-	-	-	-	-	-	-	-	0.9	-	0.9
CO2	1.7	0.9	1.7	-	-	-	-	-	-	-	-	0.9	-	0.9
CO3	1.7	0.9	1.7	-	-	-	-	-	-	-	-	0.9	-	0.9
CO4	0.9	0.9	2.6	-	-	-	-	-	-	-	-	0.9	-	0.9
CO5	2.7	0.9	2.7	-	-	-	-	-	-	-	-	1.8	-	0.9
AVG	1.6	0.9	2.1									1.1	-	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: IV-I

Course Name: Digital Image Processing

Course Code: A70515

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	52	0	70	3	100	3	1.5	64	3	2.4	96	3	92	3	3	2.6
CO2	24	0	70	3	100	3	1.5	64	3	2.4	96	3	91	3	3	2.6
CO3	0	0	70	3	100	3	1.5	64	3	2.4	96	3	92	3	3	2.6
CO4	0	0	70	3	100	3	1.5	64	3	2.4	96	3	90	3	3	2.6
CO5	81	3	70	3	100	3	3.0	64	3	3	96	3	91	3	3	3.0
CO6	0	0	70	3	100	3	1.5	64	3	2.4	96	3	92	3	3	2.6
CO7	68	1	70	3	100	3	2.0	64	3	2.6	96	3	92	3	3	2.7
AVG	32	1	70	3	100	3	2	64	3	3	96	3	91	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	2	-	1	2	-	-	-	-	-		2	3	3	2.4
CO2	1	2	3	2	3	1	1	-	-	-	-	2	3	3	2.4
CO3	1	2	3	2	3	1	1	-	-	-	-	2	3	3	2.4
CO4	1	2	3	2	3	1	1	-	-	-	-	2	3	3	2.4
CO5	1	2	3	2	3	1	1	-	-	-	-	2	3	3	2.9
CO6	1	2	3	2	3	1	1	-	-	-	-	2	3	3	2.4
CO7	1	2	3	2	3	1	1	-	-	-	-	2	3	3	2.6
AVG	1.0	2.0	3.0	1.9	2.9	1.0	1.0					2.0	3.0	3.0	2.5

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	1.6	-	0.8	1.6	-	-	-	-	-	-	1.6	2.4	2.4
CO2	0.8	1.6	2.4	1.6	2.4	0.8	0.8	-	-	-	-	1.6	2.4	2.4
CO3	0.8	1.6	2.4	1.6	2.4	0.8	0.8	-	-	-	-	1.6	2.4	2.4
CO4	0.8	1.6	2.4	1.6	2.4	0.8	0.8					1.6	2.4	2.4
CO5	1.0	1.9	2.9	1.9	2.9	1.0	1.0					1.9	2.9	2.9
CO6	0.8	1.6	2.4	1.6	2.4	0.8	0.8	-	-	-	-	1.6	2.4	2.4
CO7	0.9	1.7	2.6	1.7	2.6	0.9	0.9	-	-	-	-	1.7	2.6	2.6
AVG	0.8	1.7	2.5	1.5	2.4	0.8	0.8	0	0	0	0	1.1	2.5	2.5

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: IV-I

Course Name: Embedded System Design

Course Code: A70515

CO Attainment(Direct and Indirect)

CO	Mfd Subjective	Level	Mfd Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	62	2	47	1	97	3	2.00	54	2	2	84	3	95	3	3	2.3
CO2	62	1	47	1	97	3	1.50	54	2	1.8	84	3	94	3	3	2.1
CO3	8	0	47	1	97	3	1.00	54	2	1.6	84	3	94	3	3	2.0
CO4	17	0	47	1	97	3	1.00	54	2	1.6	84	3	94	3	3	2.0
AVG	37	1	47	1	97	3	1	54	2	2	84	3	94	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.3
CO2	1	1	3	-	-	-	-	-	-	-	-	-	3	-	2.1
CO3	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.0
CO4	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.0
AVG	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	0.8	2.3	1.5	-	-	-	-	-	-	-	-	2.3	-
CO2	0.7	0.7	2.1	-	-	-	-	-	-	-	-	-	2.1	-
CO3	0.7	0.7	2.0	1.3	-	-	-	-	-	-	-	-	2.0	-
CO4	0.7	0.7	2.0	1.3	-	-	-	-	-	-	-	-	2.0	-
AVG	0.7	0.7	2.1	1.4	-	-	-	-	-	-	-	-	2.1	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2014-2018

Year & Sem:IV-I

Course Name: Management Science

Course Code: A40507

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	89	3	84	3	100	3	3	63	3	3	70	2	94	3	2.4	2.9
CO2	95	3	84	3	100	3	3	63	3	3	70	2	91	3	2.4	2.9
CO3	71	3	84	3	100	3	3	63	3	3	70	2	92	3	2.4	2.9
CO4	95	3	84	3	100	3	3	63	3	3	70	2	92	3	2.4	2.9
CO5	96	3	84	3	100	3	3	63	3	3	70	2	91	3	2.4	2.9
CO6	82	3	84	3	100	3	3	63	3	3	70	2	92	3	2.4	2.9
AVG	88	3	84	3	100	3	3	63	3	3	70	2	92	3	2.4	2.9

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	-	-	-	1	1	1	1	2	2	2	2	2	2	2.9
CO2	2	-	-	-	1	-	1	-	1	-	1	1	2	1	2.9
CO3	2	-	-	-	1	-	1	-	1	-	1	1	2	1	2.9
CO4	1	-	-	-	2	-	2	-	-	-	-	2	2	2	2.9
CO5	1	-	-	-	2	-	2	-	2	-	2	1	2	1	2.9
CO6	2	-	-	-	2	-	2	-	2	-	-	2	2	2	2.9
AVG	1.7	-	-	-	1.5	1.0	1.5	1.0	1.6	2.0	1.5	1.5	2.0	1.5	2.9

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.9	-	-	-	1.0	0.95	1.0	1.0	1.9	1.9	1.9	1.9	1.9	1.9
CO2	1.9	-	-	-	1.0	-	1.0	-	1.0	-	1.0	1.0	1.9	1.0
CO3	1.9	-	-	-	1.0	-	1.0	-	1.0	-	1.0	1.0	1.9	1.0
CO4	1.0	-	-	-	1.9	-	1.9	-	-	-	-	1.9	1.9	1.9
CO5	1.0	-	-	-	1.9	-	1.9	-	1.9	-	1.9	1.0	1.9	1.0
CO6	1.9	-	-	-	1.9	-	1.9	-	1.9	-	-	1.9	1.9	1.9
AVG	1.6	-	-	-	1.4	1.0	1.4	1.0	1.5	1.9	1.4	1.4	1.9	1.4

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem:IV -I

Course Name: Microwave Engineering

Course Code: A70515

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	40	0	64	3	98	3	1.5	50	2	1.8	87	3	95	3	3	2.1
CO2	0	0	64	3	98	3	1.5	50	2	1.8	87	3	95	3	3	2.1
CO3	40	0	64	3	98	3	1.5	50	2	1.8	87	3	94	3	3	2.1
CO4	0	0	64	3	98	3	1.5	50	2	1.8	87	3	94	3	3	2.1
CO5	91	3	64	3	98	3	3.0	50	2	2.4	87	3	94	3	3	2.6
CO6	54	0	64	3	98	3	1.5	50	2	1.8	87	3	93	3	3	2.1
CO7	55	0	64	3	98	3	1.5	50	2	1.8	87	3	93	3	3	2.1
CO8	76	2	64	3	98	3	2.5	50	2	2.2	87	3	92	3	3	2.4
AVG	45	1	64	3	98	3	2	50	2	2	87	3	94	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	2	2	2	1	-	-	2	2	3	2	1	1	2.1
CO2	2	2	2	2	2	-	-	-	2	2	1	2	3	2	2.1
CO3	2	2	-	3	-	-	-	2	3	1	1	2	3	2	2.1
CO4	1	2	2	-	2	-	-	1	2	1	3	2	3	2	2.1
CO5	3	2	2	2	2	-	-	-	2	1	1	2	3	2	2.1
CO6	3	2	2	-	2	-	-	-	2	1	1	2	3	2	2.1
CO7	3	2	2	-	3	-	-	-	-	1	1	2	3	2	2.1
CO8	1	3	3	-	2	-	-	1	2	1	2	2	3	2	2.4
AVG	2.3	2.1	2.1	2.3	2.1	1.0	-	1.3	2.1	1.3	1.6	2.0	2.8	1.9	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.1	1.4	1.4	1.4	1.4	0.7	-	-	1.4	1.4	2.1	1.4	0.7	0.7
CO2	1.4	1.4	1.4	1.4	1.4	-	-	-	1.4	1.4	0.7	1.4	2.1	1.4
CO3	1.4	1.4	-	2.1	-	-	-	1.4	2.1	0.7	0.7	1.4	2.1	1.4
CO4	0.7	1.4	1.4	-	1.4	-	-	0.7	1.4	0.7	2.1	1.4	2.1	1.4
CO5	2.1	1.4	1.4	1.4	1.4	-	-	-	1.4	0.7	0.7	1.4	2.1	1.4
CO6	2.1	1.4	1.4	-	1.4	-	-	-	1.4	0.7	0.7	1.4	2.1	1.4
CO7	2.1	1.4	1.4	-	2.1	-	-	-	-	0.7	0.7	1.4	2.1	1.4
CO8	0.8	2.4	2.4	-	1.6	-	-	0.8	1.6	0.8	1.6	1.6	2.4	1.6
AVG	1.6	1.5	1.5	1.6	1.5	0.7	-	1.0	1.5	0.9	1.2	1.4	2.0	1.3

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem:IV –I

Course Name: Multimedia and Signal Coding

Course Code: A70443

CO Attainment(Direct and Indirect)

CO	Mid Subjective	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	75	2	49	1	1.4	81	3	94	3	3	1.8
CO2	75	2	49	1	1.4	81	3	94	3	3	1.8
CO3	75	2	49	1	1.4	81	3	91	3	3	1.8
AVG	75	2	49	1	1	81	3	93	3	3	1.8

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	1	2	2	1	-	1	1	1	2	1	2	-	-	1.8
CO2	2	2	3	3	1	-	-	-	1	1	-	1	-	-	1.8
CO3	2	3	3	3	2	-	-	1	2	1	-	1	-	-	1.8
AVG	2.0	2.0	2.7	2.7	1.3	-	1.0	1.0	1.3	1.3	1.0	1.3	-	-	1.8

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.2	0.6	1.2	1.2	0.6	-	0.6	0.6	0.6	1.2	0.6	1.2	-	-
CO2	1.2	1.2	1.8	1.8	0.6	-	-	-	0.6	0.6	-	0.6	-	-
CO3	1.2	1.8	1.8	1.8	1.2	-	-	0.6	1.2	0.6	-	0.6	-	-
AVG	1.2	1.2	1.6	1.6	0.8	-	0.6	0.6	0.8	0.8	0.6	0.8	-	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: IV-I

Course Name: Optical Communications

Course Code: A70444

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	91	3	49	2	100	3	2.8	52	2	2.3	81	3	94	3	3	2.5
CO2	73	2	49	2	100	3	2.3	52	2	2.1	81	3	93	3	3	2.3
CO3	55	0	49	2	100	3	1.3	52	2	1.7	81	3	90	3	3	2.0
CO4	63	1	49	2	100	3	1.8	52	2	1.9	81	3	90	3	3	2.2
CO5	0	0	49	2	100	3	1.3	52	2	1.7	81	3	94	3	3	2.0
AVG	56	1	49	2	100	3	2	52	2	2	81	3	92	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	3	3	3	-	-	-	-	-	-	1	3	2	2.5
CO2	2	2	3	3	3	-	-	-	-	-	-	1	3	2	2.3
CO3	1	2	3	1	3	-	-	-	-	-	-	1	3	1	2.0
CO4	1	2	3	2	3	-	-	-	-	-	-	1	3	3	2.2
CO5	2	2	3	1	2	-	-	-	-	-	-	1	3	2	2.0
AVG	1.6	2	3	2	2.8	-	-	-	-	-	-	1	3	2	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.7	1.7	2.5	2.5	2.5	-	-	-	-	-	-	0.8	2.5	1.7
CO2	1.6	1.6	2.3	2.3	2.3	-	-	-	-	-	-	0.8	2.3	1.6
CO3	0.7	1.4	2.0	0.7	2.0	-	-	-	-	-	-	0.7	2.0	0.7
CO4	0.7	1.5	2.2	1.5	2.2	-	-	-	-	-	-	0.7	2.2	2.2
CO5	1.4	1.4	2.0	0.7	1.4	-	-	-	-	-	-	0.7	2.0	1.4
AVG	1.2	1.5	2.2	1.5	2.1	-	-	-	-	-	-	0.7	2.2	1.5

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem:IV -I

Course Name: Object Oriented programming through JAVA

Course Code: A70505

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	56	0	62	3	97	3	1.5	49	1	1.2	81	3	95	3	3	1.7
CO2	84	3	62	3	97	3	3.0	49	1	1.8	81	3	95	3	3	2.1
CO3	70	2	62	3	97	3	2.5	49	1	1.6	81	3	94	3	3	2.0
CO4	44	0	62	3	97	3	1.5	49	1	1.2	81	3	94	3	3	1.7
CO5	69	1	62	3	97	3	2.0	49	1	1.4	81	3	94	3	3	1.8
CO6	78	2	62	3	97	3	2.5	49	1	1.6	81	3	93	3	3	2.0
AVG	67	1.3	62	3	97	3	2	49	1	1	81	3	94	3	3	1.9

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	1	2	2	1	-	1	1	1	2	1	2	-	-	1.7
CO2	2	2	3	3	1	-	-	-	1	1	-	1	-	-	2.1
CO3	2	3	3	3	2	-	-	1	2	1	-	1	-	-	2.0
CO4	2	1	2	1	2	-	1	-	1	1	1	2	-	-	1.7
CO5	2	3	3	3	2	1	1	1	2	2	2	2	-	1	2.0
CO6	2	3	3	3	2	1	1	1	2	1	2	2	-	1	2.0
AVG	2.0	2.2	2.7	2.5	1.7	1.0	1.0	1.0	1.5	1.3	1.5	1.7	-	1.0	1.9

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.1	0.6	1.1	1.1	0.6	-	0.6	0.6	0.6	1.1	0.6	1.1	-	-
CO2	1.4	1.4	2.1	2.1	0.7	-	-	-	0.7	0.7	-	0.7	-	-
CO3	1.3	2.0	2.0	2.0	1.3	-	-	0.7	1.3	0.7	-	0.7	-	-
CO4	1.1	0.6	1.1	0.6	1.1	-	0.6	-	0.6	0.6	0.6	1.1	-	-
CO5	1.3	2.0	2.0	2.0	1.3	0.7	0.7	0.7	1.3	1.3	1.3	1.3	-	0.7
CO6	1.3	2.0	2.0	2.0	1.3	0.7	0.7	0.7	1.3	0.7	1.3	1.3	-	0.7
AVG	1.3	1.4	1.7	1.6	1.0	0.7	0.6	0.6	1.0	0.8	0.9	1.0	-	0.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014 -2018

Year & Sem: IV- I Sem

Course Name: Microwave Engineering and Digital Communications Lab

Course Code: A70499

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	100	3	62	3	3	83	3	93	3	3	3
CO2	100	3	62	3	3	83	3	93	3	3	3
CO3	100	3	62	3	3	83	3	92	3	3	3
CO4	100	3	62	3	3	83	3	93	3	3	3
CO5	100	3	62	3	3	83	3	92	3	3	3
CO6	100	3	62	3	3	83	3	92	3	3	3
CO7	100	3	62	3	3	83	3	93	3	3	3
AVG	100	3	62	3	3	83	3	93	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	-	-	1	-	-	1	3	-	2	2	3	2	3
CO2	3	1	1	-	1	2	2	1	3	-	2	2	3	2	3
CO3	2	-	-	-	1	-	-	1	-	-	2	2	3	2	3
CO4	2	-	-	-	1	-	-	1	-	-	2	2	2	3	3
CO5	2	1	1	-	1	-	-	1	2	-	2	2	3	3	3
CO6	3	-	1	-	1	-	-	1	2	-	2	2	2	3	3
CO7	3	-	-	-	1	-	-	1	2	-	2	2	2	3	3
AVG	2.6	1.3	1	-	1	2	2	1	2.4	-	2	2	2.6	2.6	3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	1	-	-	1	3	-	2	2	3	2
CO2	3	1	1	-	1	2	2	1	3	-	2	2	3	2
CO3	2	-	-	-	1	-	-	1	-	-	2	2	3	2
CO4	2	-	-	-	1	-	-	1	-	-	2	2	2	3
CO5	2	1	1	-	1	-	-	1	2	-	2	2	3	3
CO6	3	-	1	-	1	-	-	1	2	-	2	2	2	3
CO7	3	-	-	-	1	-	-	1	2	-	2	2	2	3
AVG	2.5	1.3	1.0	-	1.0	2.0	2.0	1.0	2.5	-	2.0	2.0	2.7	2.6

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY
Department of Electronics & Communication Engineering
Batch: 2014 -2018 **Year& Sem: IV-I Sem**
Course Name: Advanced Communications skills Lab **Course Code: A70086**

CO Attainment(Direct and Indirect)

CO	Mid Subjective	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	98	3	62	3	3	81	3	92	3	3	3
CO2	98	3	62	3	3	81	3	92	3	3	3
CO3	98	3	62	3	3	81	3	93	3	3	3
CO4	98	3	62	3	3	81	3	93	3	3	3
AVG	98	3	62	3	3	81	3	93	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	-	-	-	-	-	2	-	3	3	3	-	3	-	1	3
CO2	-	-	-	-	-	2	-	3	3	3	-	3	-	1	3
CO3	-	-	-	-	-	-	-	2	3	3	-	3	-	1	3
CO4	-	-	-	-	-	2	-	2	3	3	-	3	-	1	3
AVG	0	0	0	0	0	2	0	2.5	3	3	0	3	-	1	3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	2.0	-	3.0	3.0	3.0	-	3.0	-	1.0
CO2	-	-	-	-	-	2.0	-	3.0	3.0	3.0	-	3.0	-	1.0
CO3	-	-	-	-	-	-	-	2.0	3.0	3.0	-	3.0	-	1.0
CO4	-	-	-	-	-	2.0	-	2.0	3.0	3.0	-	3.0	-	1.0
AVG	0	0	0	0	0	2.0	-	2.5	3.0	3.0	-	3.0	-	1.0

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2014-2018

Year & Sem: IV-II

Course Name: Radar Systems

Course Code: A80450

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	76	2	69	3	94	3	2.5	47	1	1.6	96	3	91	3	3	2.0
CO2	83	3	69	3	94	3	3.0	47	1	1.8	96	3	88	3	3	2.1
CO3	72	2	69	3	94	3	2.5	47	1	1.6	96	3	89	3	3	2.0
AVG	77	2.3	69	3	94	3	2.7	47	1	2	96	3	89	3	3	2.0

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	1	3	1	3	1	1	2	1	1	2	1	2	1	2.0
CO2	3	3	2	1	3	1	1	1	1	1	3	3	0	2	2.1
CO3	3	3	2	1	3	1	0	2	1	1	3	2	2	2	2.0
AVG	3.0	2.3	2.3	1.0	3.0	1.0	0.7	1.7	1.0	1.0	2.7	2.0	1.3	1.7	2.0

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.0	0.7	2.0	0.7	2.0	0.7	0.7	1.3	0.7	0.7	1.3	0.7	1.3	0.7
CO2	2.1	2.1	1.4	0.7	2.1	0.7	0.7	0.7	0.7	0.7	2.1	2.1	0.0	1.4
CO3	2.0	2.0	1.3	0.7	2.0	0.7	0.0	1.3	0.7	0.7	2.0	1.3	1.3	1.3
AVG	2.0	1.6	1.6	0.7	2.0	0.7	0.5	1.1	0.7	0.7	1.8	1.4	0.9	1.1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2014-2018

Year & Sem: IV-II

Course Name: Wireless Communication and networks

Course Code: A80454

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	66	1	58	3	100	3	2.0	54	2	2.0	81	3	93	3	3	2.3
CO2	53	0	58	3	100	3	1.5	54	2	1.8	81	3	92	3	3	2.1
CO3	83	3	58	3	100	3	3.0	54	2	2.4	81	3	92	3	3	2.6
CO4	88	3	58	3	100	3	3.0	54	2	2.4	81	3	92	3	3	2.6
CO5	97	3	58	3	100	3	3.0	54	2	2.4	81	3	92	3	3	2.6
AVG	77	2	58	3	100	3	2.5	54	2	2.2	81	3	92	3	3	2.4

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	3	3	1	3	1	1	3	1	1	3	3	3	2	2.3
CO2	1	3	1	1	3	1	2	1	1	1	1	2	3	2	2.1
CO3	1	3	1	1	3	1	1	2	1	1	3	3	3	2	2.6
CO4	1	3	1	1	3	1	2	1	1	1	3	3	3	2	2.6
CO5	1	3	2	1	3	1	1	2	1	1	3	3	3	2	2.6
AVG	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8	2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	2.3	2.3	0.8	2.3	0.8	0.8	2.3	0.8	0.8	2.3	2.3	2.3	1.5
CO2	0.7	2.1	0.7	0.7	2.1	0.7	1.4	0.7	0.7	0.7	0.7	1.4	2.1	1.4
CO3	0.9	2.6	0.9	0.9	2.6	0.9	0.9	1.7	0.9	0.9	2.6	2.6	2.6	1.7
CO4	0.9	2.6	0.9	0.9	2.6	0.9	1.7	0.9	0.9	0.9	2.6	2.6	2.6	1.7
CO5	0.9	2.6	1.7	0.9	2.6	0.9	0.9	1.7	0.9	0.9	2.6	2.6	2.6	1.7
AVG	0.8	2.4	1.3	0.8	2.4	0.8	1.1	1.4	0.8	0.8	2.1	2.3	2.4	1.6

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2014-2018

Year & Sem: IV-II

Course Name: Satellite Communications

Course Code: A80452

CO Attainment(Direct and Indirect)

CO	Mid Subjective Level	Mid Objective Level	Assignment Level	CO Levels in Internal SEE	CO Levels in External CO Direct	TLP Level	CES Level	CO Indirect	Overall CO attainment							
CO1	75	2	71	3	100	3	2.5	53	2	2.3	83	3	95	3	3	2.5
CO2	62	1	71	3	100	3	2.0	53	2	2	83	3	93	3	3	2.3
CO3	47	0	71	3	100	3	1.5	53	2	1.7	83	3	93	3	3	2.0
CO4	59	0	71	3	100	3	1.5	53	2	1.7	83	3	92	3	3	2.0
CO5	72	2	71	3	100	3	2.5	53	2	2.3	83	3	94	3	3	2.5
CO6	49	0	71	3	100	3	1.5	53	2	1.7	83	3	92	3	3	2.0
CO7	80	3	71	3	100	3	3.0	53	2	2.6	83	3	93	3	3	2.7
AVG	63	1	71	3	100	3	2	53	2	2.0	83	3	93	3	3	2.3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	2	-	-	-	2	2	-	1	-	1	2	-	2.5
CO2	2	-	1	-	-	-	1	-	-	-	-	1	1	-	2.3
CO3	2	2	2	2	-	1	2	2	-	-	-	2	2	-	2.0
CO4	2	2	2	2	-	1	2	-	-	-	-	2	2	-	2.0
CO5	2	1	1	1	-	2	1	1	-	-	-	2	2	-	2.5
CO6	2	2	2	-	-	2	1	1	-	-	-	2	2	-	2.0
CO7	2	2	1	-	-	2	1	1	-	-	-	2	2	-	2.7
AVG	2.1	1.7	1.6	0.7	-	1.1	1.4	1.0	-	0.1	-	1.7	1.9	-	2.3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.5	2.5	1.7	-	-	-	1.7	1.7	-	0.8	-	0.8	1.7	-
CO2	1.5	-	0.8	-	-	-	0.8	-	-	-	-	0.8	0.8	-
CO3	1.4	1.4	1.4	1.4	-	0.7	1.4	1.4	-	-	-	1.4	1.4	-
CO4	1.4	1.4	1.4	1.4	-	0.7	1.4	-	-	-	-	1.4	1.4	-
CO5	1.7	0.8	0.8	0.8	-	1.7	0.8	0.8	-	-	-	1.7	1.7	-
CO6	1.4	1.4	1.4	-	-	1.4	0.7	0.7	-	-	-	1.4	1.4	-
CO7	1.8	1.8	0.9	-	-	1.8	0.9	0.9	-	-	-	1.8	1.8	-
AVG	1.7	1.5	1.2	1.2	-	1.0	1.2	1.3	-	0.8	-	1.2	1.4	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY
Department of Electronics & Communication Engineering
R13 (JNTUH) - POs and PSOs Attainment for 2014-18 Batch
2014-2018

Code	Name of the Course	Pos												PSOs	
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
A10001	English				2.67		1	3	1	2.67	2.67		1		
A10002	MathematicsI	3	2	1.4			1						2	1	
A10003	Mathematical Methods	3	2	1.4			1						2	1	
A10004	Engineering Physics	2	2						1				1	1	
A10005	Engineering Chemistry	2	1	1					1				1	1	
A10501	Computer Programming	2											1	1	
A10301	Engineering Drawing	2	1	1									1		
A10581	Computer Programming lab	2											2		
A10081	Engineering Physics/ Engineering Chemistry lab	2	2	1					1						
A10083	English Language Communication Skills lab				1			2							
A10082	IT Workshop / Engineering Workshop	2							1						
A30007	MathematicsIII	3	1.75												
A30405	Probability Theory and Stochastic Processes	2	3	2.4									1	3	
A30407	Switching Theory and Logic Design	2.5	3	2	2								1	3	
A30204	Electrical circuits	2.8	2.4	1.6	1.4	1	1					1	3	1	
A30404	Electronic Devices and Circuits	2.33	2.17	2.06	1.16								1	2	1
A30406	Signals and Systems	2.75	1	2.87								1.87	3		
A30482	Electronic Devices and Circuits Lab	1.87											2	2	
A30481	Basic Simulation lab	1.87	2	2.25	2.37	3							1	3	3
A40215	Principles of Electrical Engineering	2	1											1	
A40412	Electronic Circuit	2	3	2.62									1	3	

Pos												PSOs		CO
PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
			2.3		0.9	2.6	0.9	2.3	2.3		0.9			2.6
2.1	1.4	1.0			0.7						1.4	0.7		2.1
2.1	1.4	1.0			0.7						1.4	0.7		2.1
1.4	1.4							0.7			0.7	0.7		2.1
1.2	0.6	0.6					0.6					0.6	0.6	1.8
1.4											0.7	0.7		2.1
1.1	0.6	0.6									0.6			1.7
1.7											1.7			2.6
1.7	1.7	0.9					0.9							2.6
			0.9			1.7								2.6
1.4								0.7						2.1
1.2	0.7													1.2
1.3	2.0	1.6									0.7	2.0		2.0
1.8	2.1	1.4	1.4								0.7	2.1		2.1
1.7	1.4	1.0	0.8	0.6	0.6					0.6		1.8	0.6	1.8
1.3	1.2	1.1	0.6								0.6	1.1	0.6	1.7
1.8	0.7	1.9									1.2	2.0		2.0
1.4												1.5	1.5	2.3
1.9	2.0	2.3	2.4	3.0							1.0	3.0	3.0	3.0
1.5	0.8											0.8		2.3
1.7	2.6	2.2									0.9	2.6		2.6

A60494	Microprocessors and Microcontrollers lab	3	3	2.75	1	1				4	1		1	3	2
A60493	Digital Signal Processing Lab	2	1											1	
A70014	Management Science											3		1	
A70442	Microwave Engineering	2.87	2.75	1.87	1.25	1.25	1.25	1	1.16	1	1.25	1.87	2	2	1.62
A70515	Computer Networks	1.8	1	2.4									1.2		1
A70434	Cellular and Mobile Communications	2.6	2.4	1.4	1.8		1.5	1.8	2				1.2	1.6	1
A70436	Digital Image Processing*	1	2	2.5	1.8	2.8	1	0.8					2	3	3
A70444	Optical Communications*	2	1											1	
A70505	OOPS through JAVA	2	2.2	2.67	2.5	1.67	1	1	1	1.5	1.3	1.5	1.67		1
A70086	Advanced Communication Skills lab					2	1							2	
A70499	Microwave Engineering and Digital Communications lab	3	2							2			1	3	2
A80452	Satellite Communications*	1.8	2.6	3	1.2	1.6							1	2.4	1.4
A80450	Radar Systems*	3	1.75	3	2	1.66						1	1	3	1.71
A80454	Wireless communications & Networks*	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8
A80087	Industry Oriented Mini Project	3	2.1	2.5	3	3				3	3		1	3	2
A80089	Seminar	2	2		1		1	1		2			2	2	1
A80088	Major Project	3	2.1	2.5	3	3				3	3		1	3	2
A80090	Comprehensive Viva	3	2	1			1			3					

2.6	2.6	2.3	0.9	0.9						3.4	0.9		0.9	2.6	1.7	2.6
2.0	1.0													1.0		3.0
													2.7		0.9	2.7
2.1	2.0	1.4	0.9	0.9	0.9	0.7	0.8	0.7	0.9	1.4	1.5	1.5	1.2	2.2		
1.6	0.9	2.1											1.1		0.9	2.6
2.2	2.0	1.2	1.5		1.3	1.5	1.7						1.0	1.4	0.9	2.6
0.8	1.7	2.1	1.5	2.3	0.8	0.7							1.7	2.5	2.5	2.5
1.2	0.6															1.8
1.4	1.5	1.9	1.8	1.2	0.7	0.7	0.7	1.1	0.9	1.1	1.2			0.7	2.1	
														1.8		2.7
2.7	1.8									1.8			0.9	2.7	1.8	2.7
1.6	2.3	2.7	1.1	1.4									0.9	2.2	1.3	2.7
2.2	1.3	2.2	1.4	1.2									0.7	0.7	2.2	1.2
0.8	2.3	1.2	0.8	2.3	0.8	1.1	1.4	0.8	0.8	2.0	2.2	2.3	2.2	2.3		
3.0	2.1	2.5	3.0	3.0						3.0	3.0		1.0	3.0	2.0	3.0
2.0	2.0		1.0		1.0	1.0				2.0			2.0	2.0	1.0	3.0
2.6	1.8	2.1	2.6	2.6						2.6	2.6		0.9	2.6	1.7	2.6
2.3	1.5	0.8			0.8					2.3						2.3

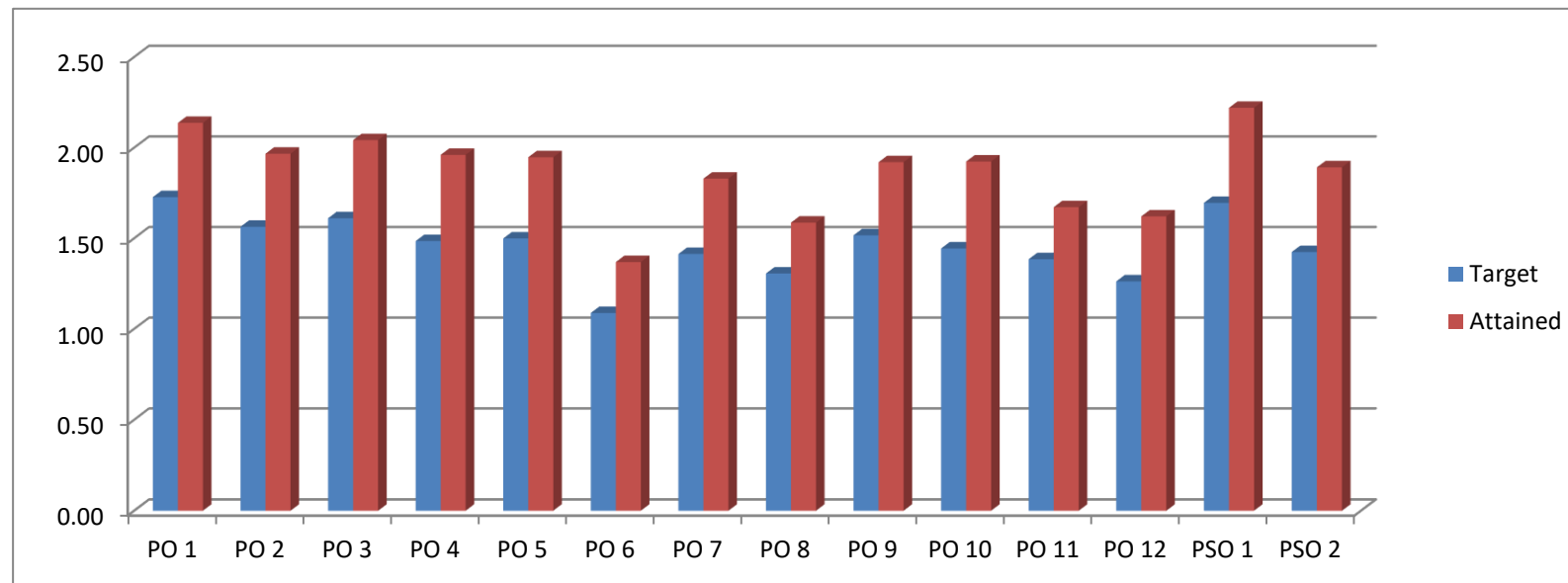
POs/ PSOs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Average Correlation Strength	2.29	1.98	2.07	1.83	1.86	1.07	1.69	1.49	1.89	1.75	1.64	1.40	2.23	1.71
PO Direct - Average	1.86	1.62	1.70	1.59	1.58	0.80	1.44	1.08	1.55	1.53	1.23	1.16	1.96	1.51
$X=0.75*$ Average correlation strength $+0.25*3$	2.47	2.23	2.30	2.12	2.14	1.55	2.02	1.87	2.17	2.06	1.98	1.80	2.42	2.03
PO Indirect - Exit Survey (15%)	90.58	91.43	90.47	92.38	91.43	92.67	90.95	89.34	91.71	91.84	91.71	90.81	91.52	91.81
PO Indirect Level - Exit Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
PO Indirect - Alumni Survey (10%)	90.40	91.20	93.40	90.80	92.00	92.80	94.20	95.20	91.80	94.30	90.60	93.20	94.10	93.50
PO Indirect Level - Alumni Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
PO Indirect attainment level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Y=PO Overall attainment level	2.15	1.96	2.03	1.94	1.93	1.35	1.83	1.56	1.91	1.90	1.68	1.62	2.22	1.88
Y/X*100	87.1	87.8	88.1	91.5	90.2	87.0	90.5	83.6	88.2	92.1	84.7	89.9	91.5	92.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Consolidated Report

Batch	Target	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
2014-2018	2014-18 Target 70%	1.73	1.56	1.61	1.48	1.50	1.09	1.41	1.31	1.52	1.44	1.38	1.26	1.70	1.42
	2014-18 Attained	2.14	1.97	2.04	1.96	1.95	1.37	1.83	1.59	1.92	1.92	1.67	1.62	2.22	1.89



2015-2019

I YEAR

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Computer Programming and Data Structures	1	1	1	3	3	3	1.5
Computer Programming lab	2	2	2	3	3	3	2.3
Engineering Chemistry	2	2	2	3	3	3	2.3
Engineering Drawing	3	2	2.4	3	3	3	2.6
Engineering Physics	3	2	2	3	3	3	2.6
Engineering Physics/Engineering Chemistry Lab	3	3	3	3	3	3	3.0
English	3	2	2.4	3	3	3	2.6
English Language and Communication Skills lab	3	2	2.4	3	3	3	2.6
IT Workshop/Engineering workshop	3	3	3	3	3	3	3.0
Mathematical Methods	1	2	1.6	3	3	3	2.0
Mathematics-I	1	2	1.6	3	3	3	2.0

II-I

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Electric Circuits	1.3	2	1.7	3	3	3	2.0
Electronic Devices and Circuits	1.3	2	1.7	3	3	3	2.1
Probability Theory and Stochastic Process	1.5	1	1.2	3	3	3	1.7
Signals and Systems	1.6	3	2.4	3	3	3	2.6
Switching Theory and Logic Design	1.5	3	2.4	3	3	3	2.6
Electronic Devices and Circuits lab	1.0	2	1.6	3	3	3	2.0
Mathematics-III	1.7	2	1.9	3	3	3	2.2
Basic Simulation Lab	3.0	2	2.4	3	3	3	2.6

II-II

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Pulse and Digital Circuits	1.8	2.0	1.9	3.0	3.0	3.0	2.2
Electronic Circuit Analysis	1.9	2.0	2.0	3.0	3.0	3.0	2.2
Electromagnetic Theory and Transmission Lines	1.8	2.0	1.9	3.0	3.0	3.0	2.2
Environmental Science	2.9	2.0	2.4	3.0	3.0	3.0	2.5
Electrical Technology lab	3.0	2.0	2.4	3.0	3.0	3.0	2.6
Digital Design through verilog HDL	1.3	2.0	1.7	3.0	3.0	3.0	2.0
Electronic Circuits and Pulse Circuits Lab	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Gender Sensitization	3.0	2.0	2.4	3.0	3.0	3.0	2.6
Principles of Electrical Engineering	1.6	2.0	1.8	3.0	3.0	3.0	2.1

III-I

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Analog Communications	1.5	2.0	1.8	3.0	3.0	3.0	2.1
Linear and Digital IC Applications	1.3	2.0	1.7	3.0	3.0	3.0	2.0
Antennas and Wave Propagation	1.8	2.0	1.9	3.0	3.0	3.0	2.2
Computer Organization and Operating Systems	1.4	2.0	1.8	3.0	3.0	3.0	2.1
Control Systems Engineering	1.8	3.0	2.5	3.0	3.0	3.0	2.6
Electronic Measurements and Instrumentation	1.6	1.0	1.2	3.0	3.0	3.0	1.7
Analog Communications Lab	3.0	3.0	3.0	3.0	3.0	3.0	3.0
IC Applications and HDL Simulation lab	3.0	2.0	2.4	3.0	3.0	3.0	2.6

III-II

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Digital Communications	1.5	1.0	1.2	2.0	3.0	2.4	1.5
Digital Signal Processing	1.6	3.0	2.4	3.0	3.0	3.0	2.6
Managerial Economics and financial analysis	2.4	3.0	2.8	1.0	3.0	1.8	2.5
Microprocessors and Microcontrollers	1.8	1.0	1.3	2.0	3.0	2.4	1.6
VLSI Design	1.6	3.0	2.4	2.0	3.0	2.4	2.4

Human values and professional ethics	3.0	1.0	1.8	2.0	3.0	2.4	2.0
Microprocessors and Microcontrollers Lab	3.0	1.0	1.8	3.0	3.0	3.0	2.1
Digital Signal Processing Lab	3.0	3.0	3.0	3.0	3.0	3.0	3.0

IV-I

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Computer Networks	1.7	2.0	1.9	2.0	3.0	2.4	2.0
Digital Image Processing	2.9	2.0	2.4	1.0	2.0	1.4	2.1
Embedded System Design	2.4	2.0	2.2	2.0	3.0	2.4	2.2
Management Science	2.3	3.0	2.7	1.0	3.0	1.8	2.5
Microwave Engineering	2.2	2.0	2.1	2.0	3.0	2.4	2.2
Object Oriented Programming through Java	1.8	3.0	2.5	2.0	3.0	2.4	2.5
Cellular and Mobile Communications	1.5	2.0	1.8	2.0	3.0	2.4	1.9
Advanced English Communication Skills lab	3.0	2.0	2.4	3.0	3.0	3.0	2.6
Microwave Engineering and Digital Communications Lab	3.0	3.0	3.0	3.0	3.0	3.0	3.0

IV-II

Subjects	Internal	External	Direct Attainment	TLP	CES	Indirect Attainment	Overall Attainment
Wireless Communications and Networks	2.3	2.0	2.1	3.0	3.0	3.0	2.3
Radar Systems	2.4	2.0	2.2	3.0	3.0	3.0	2.4
Satellite Communications	1.6	3.0	2.4	3.0	3.0	3.0	2.6
Telecommunications and Switching Networks	2.3	3.0	2.7	3.0	3.0	3.0	2.8
Comprehensive Viva		3.0	3.0				3.0
Seminar	3.0		3.0				3.0
Mini Project		1.0	1.0				1.0
Major Project	3.0	3.0	3.0				3.0

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-I

Course Name:Electrical Circuits

Course Code:A30204

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	35	0	50	2	100	3	1.3	58	2	1.7	81	3	88	3	3	2
CO2	36	0	50	2	100	3	1.3	58	2	1.7	81	3	85	3	3	2
CO3	26	0	50	2	100	3	1.3	58	2	1.7	81	3	84	3	3	2
CO4	50	0	50	2	100	3	1.3	58	2	1.7	81	3	83	3	3	2
CO5	56	0	50	2	100	3	1.3	58	2	1.7	81	3	83	3	3	2
AVG	41	0	50	2	100	3	1.3	58	2	1.7	81	3	85	3	3	2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	2	3	2	2	2	1	-	-	-	-	2	2	3	2
CO2	1	2	3	2	2	2	1	-	-	-	-	2	2	3	2
CO3	1	2	3	2	2	2	1	-	-	-	-	2	2	3	2
CO4	1	2	3	2	2	2	1	-	-	-	-	2	2	3	2
CO5	1	2	3	2	2	2	1	-	-	-	-	2	2	3	2
AVG	1	2	3	2	2	2	1	-	-	-	-	2	2	3	2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.7	1.4	2.0	1.4	1.4	1.4	0.7	-	-	-	-	1.4	1.4	2.0
CO2	0.7	1.4	2.0	1.4	1.4	1.4	0.7	-	-	-	-	1.4	1.4	2.0
CO3	0.7	1.4	2.0	1.4	1.4	1.4	0.7	-	-	-	-	1.4	1.4	2.0
CO4	0.7	1.4	2.0	1.4	1.4	1.4	0.7	-	-	-	-	1.4	1.4	2.0
CO5	0.7	1.4	2.0	1.4	1.4	1.4	0.7	-	-	-	-	1.4	1.4	2.0
AVG	0.7	1.4	2.0	1.4	1.4	1.4	0.7	-	-	-	-	1.4	1.4	2.0

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-I

Course Name: Electronic Devices and Circuits

Course Code: A30404

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	46	0	59	2	100	3	1.3	53	2	1.7	85	3	91	3	3	2.0
CO2	35	0	59	2	100	3	1.3	53	2	1.7	85	3	89	3	3	2.0
CO3	50	0	59	2	100	3	1.3	53	2	1.7	85	3	89	3	3	2.0
CO4	50	0	59	2	100	3	1.3	53	2	1.7	85	3	87	3	3	2.0
CO5	62	1	59	2	100	3	1.8	53	2	1.9	85	3	87	3	3	2.2
CO6	0	0	59	2	100	3	1.3	53	2	1.7	85	3	86	3	3	2.0
AVG	40	0.2	59	2	100	3	1.3	53	2	1.7	85	3	88	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	2	1	-	-	-	-	-	-	-	1	2	-	2.0
CO2	2	2	2	2	-	-	-	-	-	-	-	1	2	-	2.0
CO3	3	3	-	2	-	-	-	-	-	-	-	-	1	-	2.0
CO4	2	2	3	2	-	-	-	-	-	-	-	-	3	1	2.0
CO5	2	2	2	-	-	-	-	-	-	-	-	-	2	-	2.2
CO6	2	2	2	-	-	-	-	-	-	-	-	-	2	-	2.0
AVG	2.3	2.2	2.2	1.8	-	-	-	-	-	-	-	1.0	2.0	1.0	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	1	1	-	-	-	-	-	-	-	1	1	-
CO2	1	1	1	1	-	-	-	-	-	-	-	1	1	-
CO3	2	2	-	1	-	-	-	-	-	-	-	-	1	-
CO4	1	1	2	1	-	-	-	-	-	-	-	-	2	1
CO5	1	1	1	-	-	-	-	-	-	-	-	-	1	-
CO6	1	1	1	-	-	-	-	-	-	-	-	-	1	-
AVG	2	2	2	1	-	-	-	-	-	-	-	1	1	1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-I

Course Name: Signals and Systems

Course Code: A30406

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	27	0	60	3	100	3	1.5	66	3	2.4	81	3	90	3	3	2.6
CO2	33	0	60	3	100	3	1.5	66	3	2.4	81	3	85	3	3	2.6
CO3	21	0	60	3	100	3	1.5	66	3	2.4	81	3	86	3	3	2.6
CO4	35	0	60	3	100	3	1.5	66	3	2.4	81	3	86	3	3	2.6
CO5	47	0	60	3	100	3	1.5	66	3	2.4	81	3	88	3	3	2.6
CO6	48	0	60	3	100	3	1.5	66	3	2.4	81	3	86	3	3	2.6
CO7	61	1	60	3	100	3	2.0	66	3	2.6	81	3	87	3	3	2.7
CO8	41	0	60	3	100	3	1.5	66	3	2.4	81	3	85	3	3	2.6
AVG	39	0.1	60	3	100	3	1.6	66	3	2.4	81	3	87	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	1	2									2	3		2.6
CO2	3	1	3									2	3		2.6
CO3	3	1	3									2	3		2.6
CO4	2	1	3									2	3		2.6
CO5	2	1	3									2	3		2.6
CO6	3	1	3									2	3		2.6
CO7	3	1	3									2	3		2.7
CO8	3	1	3									1	3		2.6
AVG	2.8	1.0	2.9	0	0	0		0	0	0	0	1.9	3	0	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	0.9	1.7	-	-	-	-	-	-	-	-	1.7	2.6	-
CO2	2.6	0.9	2.6	-	-	-	-	-	-	-	-	1.7	2.6	-
CO3	2.6	0.9	2.6	-	-	-	-	-	-	-	-	1.7	2.6	-
CO4	1.7	0.9	2.6	-	-	-	-	-	-	-	-	1.7	2.6	-
CO5	1.7	0.9	2.6	-	-	-	-	-	-	-	-	1.7	2.6	-
CO6	2.6	0.9	2.6	-	-	-	-	-	-	-	-	1.7	2.6	-
CO7	2.7	0.9	2.7	-	-	-	-	-	-	-	-	1.8	2.7	-
CO8	2.6	0.9	2.6	-	-	-	-	-	-	-	-	0.9	2.6	-
AVG	2.4	0.9	2.5	-	-	-	-	-	-	-	-	1.6	2.6	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-I

Course Name: Electronic Devices and Circuits Lab

Course Code:A30482

CO Attainment(Direct and Indirect)

CO	MID	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	64	1	54	2	1.6	85	3	88	3	3	2.0
CO2	64	1	54	2	1.6	85	3	86	3	3	2.0
CO3	64	1	54	2	1.6	85	3	88	3	3	2.0
CO4	64	1	54	2	1.6	85	3	86	3	3	2.0
CO5	64	1	54	2	1.6	85	3	87	3	3	2.0
CO6	64	1	54	2	1.6	85	3	86	3	3	2.0
AVG	64	1	54	2	2	85	3	87	3	3	2.0

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	2				1		-	-	-	-	2	1	2
CO2	3	2	2				1		-	-	-	-	2	1	2
CO3	2	1	2	2	1	1	2		-	-	-	-	2	2	2
CO4	2	1	3	1	1	2	-	-	-	-	-	-	2	2	2
CO5	3	1	3	1	1	2	1	-	-	-	-	-	2	2	2
CO6	3	2	3	1	2	1	2		-	-	-	-	2	2	2
AVG	2.67	1.50	2.50	1.25	1.25	1.5	1.4	-	-	-	-	-	2	1.67	2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.0	1.3	1.3				0.7						1.3	0.7
CO2	2.0	1.3	1.3				0.7						1.3	0.7
CO3	1.3	0.7	1.3	1.3	0.7	0.7	1.3						1.3	1.3
CO4	1.3	0.7	2.0	0.7	0.7	1.3	-						1.3	1.3
CO5	2.0	0.7	2.0	0.7	0.7	1.3	0.7						1.3	1.3
CO6	2.3	1.5	2.3	0.8	1.5	0.8	1.5						1.5	1.5
AVG	1.8	1.0	1.7	0.8	0.9	1.0	1.0						1.3	1.1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-I

Course Name: Basic Simulation Lab

Course Code: A30481

CO Attainment(Direct and Indirect)

CO	MID	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	85	3	53	2	2.4	86	3	88	3	3	2.6
CO2	85	3	53	2	2.4	86	3	88	3	3	2.6
CO3	85	3	53	2	2.4	86	3	86	3	3	2.6
CO4	85	3	53	2	2.4	86	3	86	3	3	2.6
CO5	85	3	53	2	2.4	86	3	88	3	3	2.6
CO6	85	3	53	2	2.4	86	3	85	3	3	2.6
CO7	85	3	53	2	2.4	86	3	86	3	3	2.6
CO8	85	3	53	2	2.4	86	3	85	3	3	2.6
AVG	85	3	53	2	2	86	3	87	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	2	2	3							1	3	3	2.6
CO2	1	2	2	3	3							1	3	3	2.6
CO3	1	2	2	2	3							1	3	3	2.6
CO4	2	2	3	2	3							1	3	3	2.6
CO5	2	3	2	2	3							1	3	3	2.6
CO6	2	2	2	3	3							1	3	3	2.6
CO7	2	2	2	3	3							1	3	3	2.6
CO8	2	2	3	2	3							1	3	3	2.6
AVG	1.9	2.1	2.3	2.4	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	3.0	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	1.7	1.7	1.7	2.6	-	-	-	-	-	-	0.9	2.6	2.6
CO2	0.9	1.7	1.7	2.6	2.6	-	-	-	-	-	-	0.9	2.6	2.6
CO3	0.9	1.7	1.7	1.7	2.6	-	-	-	-	-	-	0.9	2.6	2.6
CO4	1.7	1.7	2.6	1.7	2.6	-	-	-	-	-	-	0.9	2.6	2.6
CO5	1.7	2.6	1.7	1.7	2.6	-	-	-	-	-	-	0.9	2.6	2.6
CO6	1.7	1.7	1.7	2.6	2.6	-	-	-	-	-	-	0.9	2.6	2.6
CO7	1.7	1.7	1.7	2.6	2.6	-	-	-	-	-	-	0.9	2.6	2.6
CO8	1.7	1.7	2.6	1.7	2.6	-	-	-	-	-	-	0.9	2.6	2.6
AVG	1.6	1.8	1.9	2.0	2.6	-	-	-	-	-	-	0.9	2.6	2.6

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-I

Course Name: Probability Theory and Stochastic Process

Course Code: A30405

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	31	0	63	3	100	3	1.5	49	1	1.2	83	3	89	3	3	1.7
CO2	52	0	63	3	100	3	1.5	49	1	1.2	83	3	89	3	3	1.7
CO3	28	0	63	3	100	3	1.5	49	1	1.2	83	3	90	3	3	1.7
CO4	52	0	63	3	100	3	1.5	49	1	1.2	83	3	90	3	3	1.7
CO5	50	0	63	3	100	3	1.5	49	1	1.2	83	3	90	3	3	1.7
AVG	43	0	63	3	100	3	1.5	49	1	1.2	83	3	90	3	3	1.7

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	3	-									1	3	-	1.7
CO2	2	3	3									1	3	-	1.7
CO3	2	3	3									1	3	-	1.7
CO4	2	3	3									1	3	-	1.7
CO5	2	3	3									1	3	-	1.7
AVG	2	3	3	-	0	0	0	0	0	0	0	1	3	-	2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2	-	-	-	-	-	-	-	-	-	1	2	-
CO2	1	2	2	-	-	-	-	-	-	-	-	1	2	-
CO3	1	2	-	-	-	-	-	-	-	-	-	1	2	-
CO4	1	2	2	-	-	-	-	-	-	-	-	1	2	-
CO5	1	2	2	-	-	-	-	-	-	-	-	1	2	-
AVG	1	2	2	-	-	-	-	-	-	-	-	1	2	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-I

Course Name: Switching Theory and logic design

Course Code: A30407

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	55	0	64	3	99	3	1.5	60	3	2.4	84	3	90	3	3	2.6
CO2	44	0	64	3	99	3	1.5	60	3	2.4	84	3	85	3	3	2.6
CO3	34	0	64	3	99	3	1.5	60	3	2.4	84	3	86	3	3	2.6
CO4	40	0	64	3	99	3	1.5	60	3	2.4	84	3	86	3	3	2.6
AVG	43	0	64	3	99	3	1.5	60	3	2.4	84	3	87	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	3	3	-	-	-	-	-	-	-	1	1	-	2.6
CO2	3	3	1	2	-	-	-	-	-	-	-	1	3	-	2.6
CO3	3	3	1	2	-	-	-	-	-	-	-	1	3	-	2.6
CO4	3	3	3	2	-	-	-	-	-	-	-	1	3	-	2.6
AVG	3	3	3	2	-	-	-	-	-	-	-	1	3	-	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	2.6	2.6	2.6	-	-	-	-	-	-	-	0.9	0.9	-
CO2	2.6	2.6	0.9	1.7	-	-	-	-	-	-	-	0.9	2.6	-
CO3	2.6	2.6	0.9	1.7	-	-	-	-	-	-	-	0.9	2.6	-
CO4	2.6	2.6	2.6	1.7	-	-	-	-	-	-	-	0.9	2.6	-
AVG	2.6	2.6	2.6	1.7	0	0	0	0	0	0	0	1.4	2.1	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: Digital Design Through verilog HDL

Course Code: A40410

CO Attainment(Direct and Indirect)

CO	Mfd Subjective	Level	Mfd Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	55	0	57	2	99	3	1.3	55	2	1.7	81	3	89	3	3	2
CO2	54	0	57	2	99	3	1.3	55	2	1.7	81	3	86	3	3	2
CO3	43	0	57	2	99	3	1.3	55	2	1.7	81	3	87	3	3	2
CO4	53	0	57	2	99	3	1.3	55	2	1.7	81	3	85	3	3	2
AVG	51	0	57	2	99	3	1.3	55	2	1.7	81	3	87	3	3	2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	3	3	-	-	-	-	-	1	-	-	2	3	3	2
CO2	2	3	3	-	-	-	-	-	1	-	-	2	3	3	2
CO3	2	3	3	2	-	-	-	-	1	-	-	2	3	3	2
CO4	2	3	3	2	-	-	-	-	1	-	-	2	3	3	2
AVG	2	3	3	2	-	-	-	-	1	-	-	2	3	3	2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.4	2.0	2.0	-	-	-	-	-	0.7	-	-	1.4	2.0	2.0
CO2	1.4	2.0	2.0	-	-	-	-	-	0.7	-	-	1.4	2.0	2.0
CO3	1.4	2.0	2.0	1.4	-	-	-	-	0.7	-	-	1.4	2.0	2.0
CO4	1.4	2.0	2.0	1.4	-	-	-	-	0.7	-	-	1.4	2.0	2.0
AVG	1.4	2.0	2.0	1.4	0	0	0	0	0.7	0.0	0.0	1.4	2.0	2.0

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: Electronic Circuit Analysis

Course Code: A40412

CO Attainment (Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	72	2	61	3	100	3	2.5	54	2	2.2	85	3	91	3	3	2.4
CO2	34	0	61	3	100	3	1.5	54	2	1.8	85	3	88	3	3	2.1
CO3	18	0	61	3	100	3	1.5	54	2	1.8	85	3	88	3	3	2.1
CO4	17	0	61	3	100	3	1.5	54	2	1.8	85	3	88	3	3	2.1
CO5	81	3	61	3	100	3	3.0	54	2	2.4	85	3	90	3	3	2.6
CO6	68	1	61	3	100	3	2.0	54	2	2	85	3	88	3	3	2.3
CO7	50	0	61	3	100	3	1.5	54	2	1.8	85	3	88	3	3	2.1
CO8	35	0	61	3	100	3	1.5	54	2	1.8	85	3	88	3	3	2.1
AVG	47	0.8	61	3	100	3	1.9	54	2	2.0	85	3	89	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	3										1	3		2.4
CO2	2	3	3									1	3		2.1
CO3	2	3	3									1	3		2.1
CO4	2	3	3									1	3		2.1
CO5	2	3	3									1	3		2.6
CO6	2	3	3									1	3		2.3
CO7	2	3	3									1	3		2.1
CO8	2	3	3									1	3		2.1
AVG	2	3	2.6	0	0	0	0	0	0	0	0	1	3	0	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.6	2.4	0									0.8	2.4	
CO2	1.6	2.1	2.1									0.7	2.1	
CO3	1.6	2.1	2.1									0.7	2.1	
CO4	1.6	2.1	2.1									0.7	2.1	
CO5	1.6	2.6	2.6									0.9	2.6	
CO6	1.6	2.3	2.3									0.8	2.3	
CO7	1.6	2.1	2.1									0.7	2.1	
CO8	1.6	2.1	2.1									0.7	2.1	
AVG	1.6	2.2	1.9									0.7	2.2	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: Electromagnetic Theory and Transmission Lines

Course Code: A40411

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	38	0	63	3	100	3	1.5	57	2	1.8	84	3	86	3	3	2.1
CO2	52	0	63	3	100	3	1.5	57	2	1.8	84	3	85	3	3	2.1
CO3	64	1	63	3	100	3	2.0	57	2	2	84	3	85	3	3	2.3
CO4	66	1	63	3	100	3	2.0	57	2	2	84	3	85	3	3	2.3
AVG	55	1	63	3	100	3	1.8	57	2	1.9	84	3	85	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall I CO
CO1	3	3	2	1	-	-	-	-	1	-	-	-	3	1	2.1
CO2	3	3	3	2	-	-	-	-	1	-	-	-	3	1	2.1
CO3	3	3	3	3	-	-	-	-	1	-	-	-	3	1	2.3
CO4	2	3	2	2	-	-	-	-	1	-	-	-	3	2	2.3
AVG	2.75	3	2.5	2	-	-	-	-	1	-	-	-	3	1.25	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.1	2.1	1.4	0.7	-	-	-	-	0.7	-	-	-	2.1	0.7
CO2	2.1	2.1	2.1	1.4	-	-	-	-	0.7	-	-	-	2.1	0.7
CO3	2.3	2.3	2.3	2.3	-	-	-	-	0.8	-	-	-	2.3	0.8
CO4	1.5	2.3	1.5	1.5	-	-	-	-	0.8	-	-	-	2.3	1.5
AVG	2.0	2.2	1.8	1.5	0	0	0	0	0.7	0	0	0	2.2	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: Pulse & Digital Circuits

Course Code: A40415

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	58	0	62	3	100	3	1.5	53	2	1.8	85	3	92	3	3	2.1
CO2	43	0	62	3	100	3	1.5	53	2	1.8	85	3	91	3	3	2.1
CO3	68	1	62	3	100	3	2.0	53	2	2	85	3	91	3	3	2.3
CO4	66	1	62	3	100	3	2.0	53	2	2	85	3	91	3	3	2.3
CO5	38	0	62	3	100	3	1.5	53	2	1.8	85	3	92	3	3	2.1
CO6	0	0	62	3	100	3	1.5	53	2	1.8	85	3	91	3	3	2.1
CO7	80	3	62	3	100	3	3.0	53	2	2.4	85	3	91	3	3	2.6
CO8	0	0	62	3	100	3	1.5	53	2	1.8	85	3	91	3	3	2.1
AVG	44	0.6	62	3	100	3	1.8	53	2	1.9	85	3	91	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	3	3	3	-	-	-	-	-	-	1	3	2	2.1
CO2	2	2	3	3	3	-	-	-	-	-	-	1	3	2	2.1
CO3	1	2	3	1	3	-	-	-	-	-	-	1	3	1	2.3
CO4	1	2	3	2	3	-	-	-	-	-	-	1	3	3	2.3
CO5	2	2	3	1	2	-	-	-	-	-	-	1	3	2	2.1
CO6	1	1	3	1	2	-	-	-	-	-	-	1	3	2	2.1
CO7	2	1	3	2	1	-	-	-	-	-	-	1	3	3	2.6
CO8	2	1	3	1	2	-	-	-	-	-	-	1	3	3	2.1
AVG	1.6	1.6	3	1.75	2.3	-	-	-	-	-	-	1	3	2.25	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.4	1.4	2.1	2.1	2.1	-	-	-	-	-	-	0.7	2.1	1.4
CO2	1.4	1.4	2.1	2.1	2.1	-	-	-	-	-	-	0.7	2.1	1.4
CO3	0.8	1.5	2.3	0.8	2.3	-	-	-	-	-	-	0.8	2.3	0.8
CO4	0.8	1.5	2.3	1.5	2.3	-	-	-	-	-	-	0.8	2.3	2.3
CO5	1.4	1.4	2.1	0.7	1.4	-	-	-	-	-	-	0.7	2.1	1.4
CO6	0.7	0.7	2.1	0.7	1.4	-	-	-	-	-	-	0.7	2.1	1.4
CO7	1.7	0.9	2.6	1.7	0.9	-	-	-	-	-	-	0.9	2.6	2.6
CO8	1.4	0.7	2.1	0.7	1.4	-	-	-	-	-	-	0.7	2.1	2.1
AVG	1.1	1.4	2.2	1.4	2.0	-	-	-	-	-	-	0.7	2.2	1.4

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: Principles of Electrical Engineering

Course Code: A40215

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	61	1	59	2	100	3	1.8	50	2	1.9	87	3	89	3	3	2.2
CO2	58	0	59	2	100	3	1.3	50	2	1.7	87	3	89	3	3	2.0
CO3	61	1	59	2	100	3	1.8	50	2	1.9	87	3	89	3	3	2.2
CO4	63	1	59	2	100	3	1.8	50	2	1.9	87	3	83	3	3	2.2
CO5	58	0	59	2	100	3	1.3	50	2	1.7	87	3	86	3	3	2.0
AVG	60	0.6	59	2.0	100	3	1.6	50	2	1.8	87	3	87	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	2	3	3	2	2	2	3	2	2	2	2	3	2.2
CO2	3	3	2	3	3	2	2	2	3	2	2	2	2	3	2.0
CO3	3	3	3	3	3	3	2	3	2	3	3	3	2	3	2.2
CO4	3	3	3	3	3	2	2	3	2	3	3	2	2	3	2.2
CO5	3	3	2	3	2	3	2	3	3	3	3	3	3	3	2.0
AVG	3	3	2.4	3	2.8	2.4	2	2.6	2.6	2.6	2.6	2.4	2.2	3	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.2	2.2	1.5	2.2	2.2	1.5	1.5	1.5	2.2	1.5	1.5	1.5	1.5	2.2
CO2	2.0	2.0	1.4	2.0	2.0	1.4	1.4	1.4	2.0	1.4	1.4	1.4	1.4	2.0
CO3	2.2	2.2	2.2	2.2	2.2	2.2	1.5	2.2	1.5	2.2	2.2	2.2	1.5	2.2
CO4	2.2	2.2	2.2	2.2	2.2	1.5	1.5	2.2	1.5	2.2	2.2	1.5	1.5	2.2
CO5	2.0	2.0	1.4	2.0	1.4	2.0	1.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0
AVG	2.1	2.1	1.7	2.1	2.0	1.7	1.4	1.8	1.8	1.8	1.8	1.7	1.5	2.1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: Environmental Science

Course Code: A40009

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	76	2	62	3	100	3	2.5	57	2	2.2	87	3	89	3	3	2.4
CO2	81	3	62	3	100	3	3.0	57	2	2.4	87	3	89	3	3	2.6
CO3	85	3	62	3	100	3	3.0	57	2	2.4	87	3	89	3	3	2.6
CO4	85	3	62	3	100	3	3.0	57	2	2.4	87	3	83	3	3	2.6
CO5	81	3	62	3	100	3	3.0	57	2	2.4	87	3	86	3	3	2.6
AVG	82	2.8	62	3	100	3	2.9	57	2	2.4	87	3	87	3	3	2.5

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3						3								2.4
CO2	1						3								2.6
CO3	2						3								2.6
CO4	3						3								2.6
CO5	3						3								2.6
AVG	2.4						3								2.5

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.4						2.4							
CO2	0.9						2.6							
CO3	1.7						2.6							
CO4	2.6						2.6							
CO5	2.6						2.6							
AVG	2.0						2.5							

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2015-2019

Year & Sem: II-II

Course Name: Gender Sensitization

Course Code: A12434

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	98	3	54	2	2.4	88	3	88	3	3	2.6
CO2	98	3	54	2	2.4	88	3	86	3	3	2.6
CO3	98	3	54	2	2.4	88	3	86	3	3	2.6
CO4	98	3	54	2	2.4	88	3	86	3	3	2.6
CO5	98	3	54	2	2.4	88	3	88	3	3	2.6
CO6	98	3	54	2	2.4	88	3	87	3	3	2.6
AVG	98	3	54	2	2.4	88	3	87	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	-	-	-	-	-	1	-	-	3	-	-	-	1	-	2.6
CO2	-	-	-	-	-	1	-	-	3	-	-	-	1	-	2.6
CO3	-	-	-	-	-	1	-	-	3	-	-	-	1	-	2.6
CO4	-	-	-	-	-	1	-	-	3	-	-	-	1	-	2.6
CO5	-	-	-	-	-	1	-	-	3	-	-	-	1	-	2.6
CO6	-	-	-	-	-	1	-	-	3	-	-	-	1	-	2.6
AVG	-	-	-	-	-	1	-	-	3	-	-	-	1	-	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	0.9	-	-	2.6	-	-	-	0.9	-
CO2	-	-	-	-	-	0.9	-	-	2.6	-	-	-	0.9	-
CO3	-	-	-	-	-	0.9	-	-	2.6	-	-	-	0.9	-
CO4	-	-	-	-	-	0.9	-	-	2.6	-	-	-	0.9	-
CO5	-	-	-	-	-	0.9	-	-	2.6	-	-	-	0.9	-
CO6	-	-	-	-	-	0.9	-	-	2.6	-	-	-	0.9	-
AVG	-	-	-	-	-	0.9	-	-	2.6	-	-	-	0.9	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: EC PC Lab

Course Code:A40484

CO Attainment(Direct and Indirect)

CO	MID	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	92	3	60	3	3	84	3	90	3	3	3.0
CO2	92	3	60	3	3	84	3	87	3	3	3.0
CO3	92	3	60	3	3	84	3	87	3	3	3.0
CO4	92	3	60	3	3	84	3	87	3	3	3.0
AVG	92	3	60	3	3	84	3	88	3	3	3.0

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	2	1	-	-	-	-	1	-	-	1	3	1	3.0
CO2	3	3	3	1	-	-	-	-	1	-	-	1	3	1	3.0
CO3	3	3	3	3	-	-	-	-	1	-	-	1	3	1	3.0
CO4	3	3	3	1	-	-	-	-	-	-	-	1	3	1	3.0
AVG	3	3	2.8	1.5	-	-	-	-	1	-	-	1	3	1	3.0

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3.0	3.0	2.0	1.0	-	-	-	-	0.9	-	-	1.0	3.0	1.0
CO2	3.0	3.0	3.0	1.0	-	-	-	-	0.9	-	-	1.0	3.0	1.0
CO3	3.0	3.0	3.0	3.0	-	-	-	-	0.9	-	-	1.0	3.0	1.0
CO4	3.0	3.0	3.0	1.0	-	-	-	-	-	-	-	1.0	3.0	1.0
AVG	3.0	3.0	2.8	1.5	-	-	-	-	0.9	-	-	1.0	3.0	1.0

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: II-II

Course Name: ET Lab

Course Code:A40288

CO Attainment(Direct and Indirect)

CO	MID	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	90	3	59	2	2.4	84	3	90	3	3	2.6
CO2	90	3	59	2	2.4	84	3	87	3	3	2.6
CO3	90	3	59	2	2.4	84	3	87	3	3	2.6
CO4	90	3	59	2	2.4	84	3	87	3	3	2.6
CO5	90	3	59	2	2.4	84	3	89	3	3	2.6
CO6	90	3	59	2	2.4	84	3	87	3	3	2.6
CO7	90	3	59	2	2.4	84	3	87	3	3	2.6
CO8	90	3	59	2	2.4	84	3	87	3	3	2.6
AVG	90	3	59	2	2.4	84	3	88	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3								1				2		2.6
CO2	3								1				2		2.6
CO3	2								1				2		2.6
CO4	3								1				2		2.6
CO5	3								1				2		2.6
CO6	2								1				2		2.6
CO7	2								1				2		2.6
CO8	2								1				2		2.6
AVG	2.5								1				2		2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6								0.9				1.7	
CO2	2.6								0.9				1.7	
CO3	1.7								0.9				1.7	
CO4	2.6								0.9				1.7	
CO5	2.6								0.9				1.7	
CO6	1.7								0.9				1.7	
CO7	1.7								0.9				1.7	
CO8	1.7								0.9				1.7	
AVG	2.1								0.9				1.7	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: Analog Communications

Course Code:A50408

CO Attainment (Direct and Indirect)

CO	Mfd Subjective	Level	Mfd Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	54	0	54	2	97	3	1.3	53	2	1.7	83	3	88	3	3	2.0
CO2	42	0	54	2	97	3	1.3	53	2	1.7	83	3	87	3	3	2.0
CO3	42	0	54	2	97	3	1.3	53	2	1.7	83	3	86	3	3	2.0
CO4	55	0	54	2	97	3	1.3	53	2	1.7	83	3	87	3	3	2.0
CO5	41	0	54	2	97	3	1.3	53	2	1.7	83	3	87	3	3	2.0
CO6	86	3	54	2	97	3	2.8	53	2	2.3	83	3	87	3	3	2.5
AVG	53	1	54	2	97	3	1.5	53	2	2	83	3	87	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	2	1								2	3	2	2.0
CO2	3	2	2	1								2	3	2	2.0
CO3	3	2	2	1								2	3	2	2.0
CO4	3	2	2	2								2	3	2	2.0
CO5	2	2	2	1								2	3	2	2.0
CO6	2	2	1	1								2	3	2	2.5
AVG	2.7	2	1.8	1.2								2	3	2	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.0	1.4	1.4	0.7								1.4	2.0	1.4
CO2	2.0	1.4	1.4	0.7								1.4	2.0	1.4
CO3	2.0	1.4	1.4	0.7								1.4	2.0	1.4
CO4	2.0	1.4	1.4	1.4								1.4	2.0	1.4
CO5	1.4	1.4	1.4	0.7								1.4	2.0	1.4
CO6	1.4	1.7	0.8	0.8								1.7	2.5	1.7
AVG	1.8	1.4	1.3	0.8								1.4	2.1	1.4

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: Computer Organization & Operating Systems

Course Code: A50516

CO Attainment(Direct & Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	59	0	54	2	94	3	1.3	50	2	1.7	96	3	91	3	3	2.0
CO2	60	1	54	2	94	3	1.8	50	2	1.9	96	3	88	3	3	2.2
CO3	50	0	54	2	94	3	1.3	50	2	1.7	96	3	89	3	3	2.0
CO4	59	0	54	2	94	3	1.3	50	2	1.7	96	3	88	3	3	2.0
CO5	45	0	54	2	94	3	1.3	50	2	1.7	96	3	88	3	3	2.0
CO6	42	0	54	2	94	3	1.3	50	2	1.7	96	3	88	3	3	2.0
CO7	72	2	54	2	94	3	2.3	50	2	2.1	96	3	89	3	3	2.3
CO8	55	0	54	2	94	3	1.3	50	2	1.7	96	3	89	3	3	2.0
AVG	55	0	54	2	94	3	1	50	2	2	96	3	89	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	1	1	1							1	3	1	2.0
CO2	2	2	3	2	1							2	2	2	2.2
CO3	3	2	3	2	1							2	3	2	2.0
CO4	3	2	3	2	1							2	2	2	2.0
CO5	3	2	2	2	1							2	3	3	2.0
CO6	3	2	2	2	2							2	2	3	2.0
CO7	3	2	2	2	1							2	3	2	2.3
CO8	3	2	2	2	1							2	2	2	2.0
AVG	2.6	1.9	2.3	1.9	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.5	2.1	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.7	0.7	0.7	0.7	0.7	-	-	-	-	-	-	0.7	2.0	0.7
CO2	1.5	1.5	2.2	1.5	0.7	-	-	-	-	-	-	1.5	1.5	1.5
CO3	2.0	1.4	2.0	1.4	0.7	-	-	-	-	-	-	1.4	2.0	1.4
CO4	2.0	1.4	2.0	1.4	0.7	-	-	-	-	-	-	1.4	1.4	1.4
CO5	2.0	1.4	1.4	1.4	0.7	-	-	-	-	-	-	1.4	2.0	2.0
CO6	2.0	1.4	1.4	1.4	1.4	-	-	-	-	-	-	1.4	1.4	2.0
CO7	2.3	1.6	1.6	1.6	0.8	-	-	-	-	-	-	1.6	2.3	1.6
CO8	2.0	1.4	1.4	1.4	0.7	-	-	-	-	-	-	1.4	1.4	1.4
AVG	2.2	1.5	1.5	1.5	0.7	-	-	-	-	-	-	1.5	1.8	1.5

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: Antennas and Wave Propagation

Course Code: A50418

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	28	0	66	3	97	3	1.5	54	2	1.8	83	3	88	3	3	2.1
CO2	29	0	66	3	97	3	1.5	54	2	1.8	83	3	87	3	3	2.1
CO3	73	2	66	3	97	3	2.5	54	2	2.2	83	3	87	3	3	2.4
CO4	44	1	66	3	97	3	2.0	54	2	2.0	83	3	87	3	3	2.3
CO5	39	0	66	3	97	3	1.5	54	2	1.8	83	3	87	3	3	2.1
CO6	55	0	66	3	97	3	1.5	54	2	1.8	83	3	86	3	3	2.1
AVG	45	0.5	66	3	97	3	1.8	54	2	1.9	83	3	87	3	3	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	3	1	1	-	-	-	-	-	-	1	3	1	2.1
CO2	1	1	1	1	1	-	-	-	-	-	-	1	3	2	2.1
CO3	2	2	2	2	2	-	-	-	-	-	-	1	3	1	2.4
CO4	3	3	3	3	2	-	-	-	-	-	-	1	3	1	2.3
CO5	3	3	3	3	2	-	-	-	-	-	-	1	3	2	2.1
CO6	3	3	3	2	1	-	-	-	-	-	-	1	3	2	2.1
AVG	2.5	2.5	2.5	2.0	1.5	-	-	-	-	-	-	1.0	3.0	1.5	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.1	2.1	2.1	0.7	0.7	-	-	-	-	-	-	0.7	2.1	0.7
CO2	0.7	0.7	0.7	0.7	0.7	-	-	-	-	-	-	0.7	2.1	1.4
CO3	1.6	1.6	1.6	1.6	1.6	-	-	-	-	-	-	0.8	2.4	0.8
CO4	2.3	2.3	2.3	2.3	1.5	-	-	-	-	-	-	0.8	2.3	0.8
CO5	2.1	2.1	2.1	2.1	1.4	-	-	-	-	-	-	0.7	2.1	1.4
CO6	2.1	2.1	2.1	1.4	0.7	-	-	-	-	-	-	0.7	2.1	1.4
AVG	1.8	1.8	1.8	1.5	1.1	-	-	-	-	-	-	0.7	2.2	1.1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: Electronic Measurements and Instrumentation

Course Code: A50422

CO Attainment](Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	26	0	55	3	100	3	1.5	44	1	1.2	85	3	88	3	3	1.7
CO2	24	0	55	3	100	3	1.5	44	1	1.2	85	3	85	3	3	1.7
CO3	30	0	55	3	100	3	1.5	44	1	1.2	85	3	88	3	3	1.7
CO4	29	0	55	3	100	3	1.5	44	1	1.2	85	3	87	3	3	1.7
CO5	48	0	55	3	100	3	1.5	44	1	1.2	85	3	87	3	3	1.7
CO6	69	1	55	3	100	3	2.0	44	1	1.4	85	3	87	3	3	1.8
CO7	61	1	55	3	100	3	2.0	44	1	1.4	85	3	86	3	3	1.8
AVG	41	0.3	55	3	100	3	1.6	44	1	1.3	85	3	87	3	3	1.7

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	3	1	1	-	-	-	-	-	-	1	3	1	1.7
CO2	1	1	1	1	1	-	-	-	-	-	-	1	3	2	1.7
CO3	2	2	2	2	2	-	-	-	-	-	-	1	3	1	1.7
CO4	3	3	3	3	2	-	-	-	-	-	-	1	3	1	1.7
CO5	3	3	3	3	2	-	-	-	-	-	-	1	3	2	1.7
CO6	3	3	3	3	2	-	-	-	-	-	-	1	3	2	1.8
CO7	3	3	3	2	1	-	-	-	-	-	-	1	3	2	1.8
AVG	2.6	2.6	2.6	2.1	1.6	-	-	-	-	-	-	1.0	3.0	1.6	1.7

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.7	1.7	1.7	0.6	0.6	-	-	-	-	-	-	0.6	1.7	0.6
CO2	0.6	0.6	0.6	0.6	0.6	-	-	-	-	-	-	0.6	1.7	1.1
CO3	1.1	1.1	1.1	1.1	1.1	-	-	-	-	-	-	0.6	1.7	0.6
CO4	1.7	1.7	1.7	1.7	1.1	-	-	-	-	-	-	0.6	1.7	0.6
CO5	1.7	1.7	1.7	1.7	1.1	-	-	-	-	-	-	0.6	1.7	1.1
CO6	1.8	1.8	1.8	1.8	1.2	-	-	-	-	-	-	0.6	1.8	1.2
CO7	1.8	1.8	1.8	1.2	0.6	-	-	-	-	-	-	0.6	1.8	1.2
AVG	1.5	1.4	1.4	1.2	0.9	-	-	-	-	-	-	0.6	1.7	0.8

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: Linear and Digital IC applications

Course Code: A50425

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	38	0	52	2	96	3	1.3	57	2	1.7	86	3	88	3	3	2.0
CO2	31	0	52	2	96	3	1.3	57	2	1.7	86	3	88	3	3	2.0
CO3	42	0	52	2	96	3	1.3	57	2	1.7	86	3	88	3	3	2.0
CO4	37	0	52	2	96	3	1.3	57	2	1.7	86	3	87	3	3	2.0
CO5	39	0	52	2	96	3	1.3	57	2	1.7	86	3	87	3	3	2.0
AVG	37	0	52	2	96	3	1.3	57	2	1.7	86	3	88	3	3	2.0

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	3	-	1	-	-	-	-	-	-	1	3	1	2.0
CO2	2	3	3	-	1	-	-	-	-	-	-	1	3	1	2.0
CO3	2	3	3	-	1	-	-	-	-	-	-	1	3	1	2.0
CO4	2	3	3	-	1	-	-	-	-	-	-	1	3	2	2.0
CO5	2	2	3	-	1	-	-	-	-	-	-	1	3	2	2.0
AVG	2	2.6	3	-	1	-	-	-	-	-	-	1	3	1.4	2.0

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.4	1.4	2.0	-	0.7	-	-	-	-	-	-	0.7	2.0	0.7
CO2	1.4	2.0	2.0	-	0.7	-	-	-	-	-	-	0.7	2.0	0.7
CO3	1.4	2.0	2.0	-	0.7	-	-	-	-	-	-	0.7	2.0	0.7
CO4	1.4	2.0	2.0	-	0.7	-	-	-	-	-	-	0.7	2.0	1.4
CO5	1.4	1.4	2.0	-	0.7	-	-	-	-	-	-	0.7	2.0	1.4
AVG	1.4	1.8	2.0	-	0.7	-	-	-	-	-	-	0.7	2.0	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: Control Systems Engineering

Course Code: A50217

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	79	2	60	3	98	3	2.5	66	3	2.8	96	3	90	3	3	2.9
CO2	38	0	60	3	98	3	1.5	66	3	2.4	96	3	88	3	3	2.6
CO3	63	1	60	3	98	3	2.0	66	3	2.6	96	3	89	3	3	2.7
CO4	56	0	60	3	98	3	1.5	66	3	2.4	96	3	88	3	3	2.6
CO5	48	0	60	3	98	3	1.5	66	3	2.4	96	3	89	3	3	2.6
AVG	57	0.6	60	3	98	3	1.8	66	3	2.52	96	3	89	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	-	1	1		-	-	-	-	-	2	2	3	1	2.9
CO2	2	2	-	1		-	-	-	-	-	2	2	3	2	2.6
CO3	2	1	1	1		-	-	-	-	-	1	2	3	1	2.7
CO4	2	2	2	1	2	-	2	2	-	1	2	2	3	1	2.6
CO5	2	2	1	1	2	-	-	-	-	-	1	1	3	2	2.6
AVG	2.0	1.5	1	1	1	-	0.5	0.5	-	0.2	1.5	2	3	1.5	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.0	-	1.0	1.4	-	-	-	-	-	-	1.9	1.9	2.9	1.0
CO2	1.7	1.7	-	1.3	-	-	-	-	-	-	1.7	1.7	2.6	1.7
CO3	1.8	0.9	0.9	1.4	-	-	-	-	-	-	0.9	1.8	2.7	0.9
CO4	1.7	1.7	1.7	1.3	1.7	-	1.7	1.7	-	0.9	1.7	1.7	2.6	0.9
CO5	1.7	1.7	0.9	1.3	1.7	-	-	-	-	-	0.9	0.9	2.6	1.7
AVG	1.7	1.7	1.3	1.3	1.7	-	1.7	1.7	-	0.9	1.3	1.3	2.6	1.3

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: Analog Communications Lab

Course Code: A50487

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	89	3	60	3	3	96	3	90	3	3	3
CO2	89	3	60	3	3	96	3	88	3	3	3
CO3	89	3	60	3	3	96	3	86	3	3	3
CO4	89	3	60	3	3	96	3	87	3	3	3
CO5	89	3	60	3	3	96	3	89	3	3	3
CO6	89	3	60	3	3	96	3	87	3	3	3
CO7	89	3	60	3	3	96	3	89	3	3	3
CO8	89	3	60	3	3	96	3	87	3	3	3
AVG	85	3	60	3	3	96	3	88	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
CO2	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
CO3	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
CO4	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
CO5	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
CO6	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
CO7	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
CO8	3	1	1	2	2	--	2	1	2	2	1	2	2	1	3
AVG	3	1	1	2	2	-	2	1	2	2	1	2	2	1	3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	1	2	2	-	2	1	2	2	1	2	2	1
CO2	3	1	1	2	2	-	2	1	2	2	1	2	2	1
CO3	3	1	1	2	2	-	2	1	2	2	1	2	2	1
CO4	3	1	1	2	2	-	2	1	2	2	1	2	2	1
CO5	3	1	1	2	2	-	2	1	2	2	1	2	2	1
CO6	3	1	1	2	2	-	2	1	2	2	1	2	2	1
CO7	3	1	1	2	2	-	2	1	2	2	1	2	2	1
CO8	3	1	1	2	2	-	2	1	2	2	1	2	2	1
AVG	3	1	1	2	2	-	2	1	2	2	1	2	2	1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-I

Course Name: IC Applications & HDL Simulation Lab

Course Code: A50488

CO Attainment(Direct and Indirect)

CO	MID	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	96	3	56	2	2.4	85	3	91	3	3	2.6
CO2	96	3	56	2	2.4	85	3	90	3	3	2.6
CO3	96	3	56	2	2.4	85	3	90	3	3	2.6
CO4	96	3	56	2	2.4	85	3	90	3	3	2.6
CO5	96	3	56	2	2.4	85	3	89	3	3	2.6
CO6	96	3	56	2	2.4	85	3	92	3	3	2.6
CO7	96	3	56	2	2.4	85	3	89	3	3	2.6
CO8	96	3	56	2	2.4	85	3	90	3	3	2.6
AVG	96	3	56	2	2.4	85	3	90	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	-	-	1	-	-	1	3	-	2	2	3	2	2.6
CO2	3	1	1	-	1	2	2	1	3	-	2	2	3	2	2.6
CO3	2	-	-	-	1	-	-	1	-	-	2	2	3	2	2.6
CO4	2	-	-	-	1	-	-	1	-	-	2	2	2	3	2.6
CO5	2	1	1	-	1	-	-	1	2	-	2	2	3	3	2.6
CO6	3	-	1	-	1	-	-	1	2	-	2	2	2	3	2.6
CO7	3	-	-	-	1	-	-	1	2	-	2	2	2	3	2.6
CO8	3	-	-	-	1	-	-	1	2	-	2	2	2	3	2.6
AVG	2.6	1.3	1	-	1	2	2	1	2.4	-	2	2	2.6	2.6	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.6	1.7	-	-	0.9	-	-	0.9	2.6	-	1.7	1.7	2.6	1.7
CO2	2.6	0.9	0.9	-	0.9	1.7	1.7	0.9	2.6	-	1.7	1.7	2.6	1.7
CO3	1.7	-	-	-	0.9	-	-	0.9	-	-	1.7	1.7	2.6	1.7
CO4	1.7	-	-	-	0.9	-	-	0.9	-	-	1.7	1.7	1.7	2.6
CO5	1.7	0.9	0.9	-	0.9	-	-	0.9	1.7	-	1.7	1.7	2.6	2.6
CO6	2.6	-	0.9	-	0.9	-	-	0.9	1.7	-	1.7	1.7	1.7	2.6
CO7	2.6	-	-	-	0.9	-	-	0.9	1.7	-	1.7	1.7	1.7	2.6
CO8	2.6	-	-	-	0.9	-	-	0.9	1.7	-	1.7	1.7	1.7	2.6
AVG	2.1	1.1	0.9	-	0.9	1.7	1.7	0.9	2.1	-	1.7	1.7	2.3	2.2

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2015-2019

Year & Sem: III & II

Course Name: VLSI Design

Course Code: A60432

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	69	1	57	2	96	3	1.8	61	3	2.5	76	2	90	3	2.4	2.5
CO2	53	0	57	2	96	3	1.3	61	3	2.3	76	2	88	3	2.4	2.3
CO3	56	0	57	2	96	3	1.3	61	3	2.3	76	2	88	3	2.4	2.3
CO4	51	0	57	2	96	3	1.3	61	3	2.3	76	2	86	3	2.4	2.3
CO5	72	2	57	2	96	3	2.3	61	3	2.7	76	2	87	3	2.4	2.6
AVG	60	0.60	57	2	96	3	1.6	61	3	2.42	76	2	88	3	2.4	2.4

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	-	-	1	-	-	-	1	2	-	2	3	3	2.5
CO2	3	3	-	-	1	-	-	-	1	2	-	2	3	3	2.3
CO3	-	3	3	2	1	-	-	-	1	2	-	2	3	3	2.3
CO4	3	-	3	2	1	-	-	-	1	2	-	2	3	3	2.3
CO5	3	-	3	2	1	-	-	-	1	2	-	2	3	3	2.6
AVG	3	3	3	2	1	0	0	0	1	2	0	2	3	3	2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.5	2.5	-	-	0.8	-	-	-	0.8	1.7	-	1.7	2.5	2.5
CO2	2.3	2.3	-	-	0.8	-	-	-	0.8	1.6	-	1.6	2.3	2.3
CO3	-	2.3	2.3	1.6	0.8	-	-	-	0.8	1.6	-	1.6	2.3	2.3
CO4	2.3	-	2.3	1.6	0.8	-	-	-	0.8	1.6	-	1.6	2.3	2.3
CO5	2.6	-	2.6	1.8	0.9	-	-	-	0.9	1.8	-	1.8	2.6	2.6
AVG	2.4	2.4	2.4	1.6	0.8	0.0	0.0	0.0	0.8	1.6	0.0	1.6	2.4	2.4

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-II

Course Name: Managerial Economics and financial analysis

Course Code:A60010

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	85	3	65	3	100	3	3.0	73	3	3	67	1	92	3	1.8	2.7
CO2	54	0	65	3	100	3	1.5	73	3	2.4	67	1	90	3	1.8	2.3
CO3	78	2	65	3	100	3	2.5	73	3	2.8	67	1	91	3	1.8	2.6
CO4	83	3	65	3	100	3	3.0	73	3	3	67	1	91	3	1.8	2.7
CO5	93	3	65	3	100	3	3.0	73	3	3	67	1	91	3	1.8	2.7
CO6	0	0	65	3	100	3	1.5	73	3	2.4	67	1	92	3	1.8	2.3
AVG	66	1.8	65	3	100	3	2.4	73	3	2.8	67	1	91	3	1.8	2.5

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	1	1	-	-	-	-	-	-	-	1	2	1	2.7
CO2	2	2	2	2	-	-	-	-	-	-	-	1	2	1	2.3
CO3	2	2	2	2	-	-	-	-	-	-	-	1	2	1	2.6
CO4	1	1	-	-	-	-	-	-	-	-	-	1	2	1	2.7
CO5	1	1	2	2	-	-	-	-	-	-	-	1	2	1	2.7
CO6	1	1	1	1	-	-	-	-	-	-	-	1	1	1	2.3
AVG	2	2	2	3	-	-	-	-	-	-	-	1	3	3	2.5

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.8	1.8	0.9	0.9	-	-	-	-	-	-	-	0.9	1.8	0.9
CO2	1.5	1.5	1.5	1.5	-	-	-	-	-	-	-	0.8	1.5	0.8
CO3	1.7	1.7	1.7	1.7	-	-	-	-	-	-	-	0.9	1.7	0.9
CO4	0.9	0.9	-	-	-	-	-	-	-	-	-	0.9	1.8	0.9
CO5	0.9	0.9	1.8	1.8	-	-	-	-	-	-	-	0.9	1.8	0.9
CO6	0.75	0.75	0.75	0.75	-	-	-	-	-	-	-	0.8	0.8	0.8
AVG	1.3	1.3	1.3	1.3	-	-	-	-	-	-	-	0.8	1.6	0.8

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-II

Course Name: Human values and professional ethics

Course Code:A60018

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	93	3	62	3	98	3	3	41	1	1.8	84	3	94	3	3	2.1
CO2	80	3	62	3	98	3	3	41	1	1.8	84	3	91	3	3	2.1
CO3	85	3	62	3	98	3	3	41	1	1.8	84	3	92	3	3	2.1
CO4	87	3	62	3	98	3	3	41	1	1.8	84	3	92	3	3	2.1
AVG	86	3	62	3	98	3	3	41	1	1.8	84	3	92	3	3	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1							2	2	2	2		2	2		2.1
CO2						1	2	2	2	2		2	2		2.1
CO3							2	2	2	2		2	2		2.1
CO4						1	2	2	2	2	1	2	2		2.1
AVG						1	2	2	2	2	1	2	2		2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1							1.4	1.4	1.4	1.4		1.4	1.4	
CO2						0.7	1.4	1.4	1.4	1.4		1.4	1.4	
CO3							1.4	1.4	1.4	1.4		1.4	1.4	
CO4						0.7	1.4	1.4	1.4	1.4	0.7	1.4	1.4	
AVG						0.7	1.4	1.4	1.4	1.4	0.7	1.4	1.4	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-II

Course Name: Microprocessors and Microcontrollers

Course Code: A60430

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	55	0	60	3	100	3	1.5	47	1	1.2	78	2	92	3	2.4	1.5
CO2	31	0	60	3	100	3	1.5	47	1	1.2	78	2	89	3	2.4	1.5
CO3	63	1	60	3	100	3	2.0	47	1	1.4	78	2	90	3	2.4	1.7
CO4	57	0	60	3	100	3	1.5	47	1	1.2	78	2	90	3	2.4	1.5
CO5	32	0	60	3	100	3	1.5	47	1	1.2	78	2	91	3	2.4	1.5
CO6	70	2	60	3	100	3	2.5	47	1	1.6	78	2	90	3	2.4	1.8
AVG	51	0.5	60	3	100	3	1.8	47	1	1.30	78	2	90	3	2.4	1.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.5
CO2	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.5
CO3	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.7
CO4	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.5
CO5	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.5
CO6	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.8
AVG	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.0	1.0	1.0	1.5	-	-	-	-	-	-	-	0.5	1.5	1.0
CO2	1.0	1.0	1.0	1.5	-	-	-	-	-	-	-	0.5	1.5	1.5
CO3	1.1	1.1	1.1	1.7	-	-	-	-	-	-	-	0.6	1.7	1.1
CO4	1.0	1.0	1.0	1.5	-	-	-	-	-	-	-	0.5	1.5	1.0
CO5	1.0	1.0	1.0	1.5	-	-	-	-	-	-	-	0.5	1.5	1.5
CO6	1.2	1.2	1.2	1.8	-	-	-	-	-	-	-	0.6	1.8	1.2
AVG	1.1	1.1	1.1	1.6	-	-	-	-	-	-	-	0.5	1.6	1.2

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-II

Course Name: Digital Communications

Course Code:A60420

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	60	1	54	2	100	3	1.8	49	1	1.3	75	2	91	3	2.4	1.6
CO2	59	0	54	2	100	3	1.3	49	1	1.1	75	2	89	3	2.4	1.4
CO3	40	0	54	2	100	3	1.3	49	1	1.1	75	2	89	3	2.4	1.4
CO4	57	0	54	2	100	3	1.3	49	1	1.1	75	2	89	3	2.4	1.4
CO5	46	0	54	2	100	3	1.3	49	1	1.1	75	2	88	3	2.4	1.4
CO6	74	2	54	2	100	3	2.3	49	1	1.5	75	2	88	3	2.4	1.7
AVG	56	0.5	54	2	100	3	1.5	49	1	1.8	75	2	89	3	2.4	1.5

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.6
CO2	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.4
CO3	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.4
CO4	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.4
CO5	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.4
CO6	2	2	2	3	-	-	-	-	-	-	-	1	3	2	1.7
AVG	2	2	2	3	-	-	-	-	-	-	-	1	3	3	1.5

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.1	1.1	1.1	1.6	-	-	-	-	-	-	-	0.5	1.6	1.1
CO2	1.0	1.0	1.0	1.4	-	-	-	-	-	-	-	0.5	1.4	1.4
CO3	1.0	1.0	1.0	1.4	-	-	-	-	-	-	-	0.5	1.4	1.0
CO4	1.0	1.0	1.0	1.4	-	-	-	-	-	-	-	0.5	1.4	1.0
CO5	1.0	1.0	1.0	1.4	-	-	-	-	-	-	-	0.5	1.4	1.4
CO6	1.2	1.2	1.2	1.7	-	-	-	-	-	-	-	0.6	1.7	1.2
AVG	1.0	1.0	1.0	1.5	-	-	-	-	-	-	-	0.5	1.5	1.2

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-II

Course Name: Digital Signal Processing

Course Code: A56027

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	49	0	64	3	100	3	1.5	63	3	2.4	76	2	92	3	2.4	2.4
CO2	46	0	64	3	100	3	1.5	63	3	2.4	76	2	89	3	2.4	2.4
CO3	60	1	64	3	100	3	2.0	63	3	2.6	76	2	90	3	2.4	2.6
CO4	0	0	64	3	100	3	1.5	63	3	2.4	76	2	89	3	2.4	2.4
CO5	55	0	64	3	100	3	1.5	63	3	2.4	76	2	90	3	2.4	2.4
CO6	58	0	64	3	100	3	1.5	63	3	2.4	76	2	89	3	2.4	2.4
CO7	69	1	64	3	100	3	2.0	63	3	2.6	76	2	89	3	2.4	2.6
CO8	0	0	64	3	100	3	1.5	63	3	2.4	76	2	89	3	2.4	2.4
AVG	42	0.3	64	3	100	3	1.6	63	3	2.5	76	2	90	3	2.4	2.4

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	0	-	-	-	-	-	-	-	1	1	3	1	2.4
CO2	2	2	0	-	-	-	-	-	-	-	1	1	3	2	2.4
CO3	2	2	0	-	-	-	-	-	-	-	1	1	3	1	2.6
CO4	3	2	0	-	-	-	-	-	-	-	1	1	3	1	2.4
CO5	3	2	3	-	-	-	-	-	-	-	1	1	3	2	2.4
CO6	3	2	3	-	-	-	-	-	-	-	1	1	3	2	2.4
CO7	2	2	2	-	-	-	-	-	-	-	1	1	3	2	2.6
CO8	2	2	2	-	-	-	-	-	-	-	1	1	3	1	2.4
AVG	2.4	2	1.3	-	-	-	-	-	-	-	1	1	3	1.5	2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.6	1.6	0.0	-	-	-	-	-	-	-	0.8	0.8	2.4	0.8
CO2	1.6	1.6	0.0	-	-	-	-	-	-	-	0.8	0.8	2.4	1.6
CO3	1.7	1.7	0.0	-	-	-	-	-	-	-	0.9	0.9	2.6	0.9
CO4	2.4	1.6	0.0	-	-	-	-	-	-	-	0.8	0.8	2.4	0.8
CO5	2.4	1.6	2.4	-	-	-	-	-	-	-	0.8	0.8	2.4	1.6
CO6	2.4	1.6	2.4	-	-	-	-	-	-	-	0.8	0.8	2.4	1.6
CO7	1.7	1.7	1.7	-	-	-	-	-	-	-	0.9	0.9	2.6	1.7
CO8	1.6	1.6	1.6	-	-	-	-	-	-	-	0.8	0.8	2.4	0.8
AVG	1.9	1.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	2.4	1.2

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-II

Course Name: Digital Signal Processing Lab

Course Code: A60493

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	98	3	63	3	3	81	3	85	3	3	3
CO2	98	3	63	3	3	81	3	88	3	3	3
CO3	98	3	63	3	3	81	3	88	3	3	3
CO4	98	3	63	3	3	81	3	86	3	3	3
CO5	98	3	63	3	3	81	3	88	3	3	3
AVG	98	3	63	3	3	81	3	87	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	1											1		3
CO2	2	1											1		3
CO3	2	1											1		3
CO4	2	1											1		3
CO5	2	1											1		3
AVG	2	1											1		3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1											1	
CO2	2	1											1	
CO3	2	1											1	
CO4	2	1											1	
CO5	2	1											1	
AVG	2	1											1	

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: III-II

Course Name: Microprocessors and Microcontrollers Lab

Course Code: A60494

CO Attainment(Direct and Indirect)

CO	MID	Level	SEE	Level	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	93	3	48	1	1.8	73	2	89	3	2.4	2
CO2	93	3	48	1	1.8	73	2	88	3	2.4	2
CO3	93	3	48	1	1.8	73	2	87	3	2.4	2
CO4	93	3	48	1	1.8	73	2	87	3	2.4	2
CO5	93	3	48	1	1.8	73	2	89	3	2.4	2
AVG	93	3	48	1	1.8	73	2	88	3	2.4	2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	2	1	-	-	-	-	1	-	-	1	3	2	2
CO2	3	3	2	1	-	-	-	-	1	-	-	1	3	2	2
CO3	3	3	2	-	1	-	-	-	1	1	-	1	3	1	2
CO4	3	3	2	1	-	-	-	-	-	-	-	1	3	2	2
CO5	3	3	3	1	-	-	-	-	1	-	-	1	3	3	2
AVG	3	3	2.2	1	1	-	-	-	1	1	-	1	3	2	2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.0	2.0	1.3	0.7	-	-	-	-	0.9	-	-	0.7	2.0	1.3
CO2	2.0	2.0	1.3	0.7	-	-	-	-	0.9	-	-	0.7	2.0	1.3
CO3	2.0	2.0	1.3	-	0.7	-	-	-	0.9	0.7	-	0.7	2.0	0.7
CO4	2.0	2.0	1.3	0.7	-	-	-	-	0.9	-	-	0.7	2.0	1.3
CO5	2.0	2.0	2.0	0.7	-	-	-	-	0.9	-	-	0.7	2.0	2.0
AVG	2.0	2.0	1.4	0.7	0.7	-	-	-	0.9	-	-	0.7	2.0	1.3

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: IV-I

Course Name: Cellular and Mobile Communications

Course Code: A70434

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	64	1	58	2	100	3	1.8	59	2	1.9	78	2	86	3	2.4	2.0
CO2	40	0	58	2	100	3	1.3	59	2	1.7	78	2	84	3	2.4	1.9
CO3	38	0	58	2	100	3	1.3	59	2	1.7	78	2	82	3	2.4	1.9
CO4	56	0	58	2	100	3	1.3	59	2	1.7	78	2	86	3	2.4	1.9
CO5	68	1	58	2	100	3	1.8	59	2	1.9	78	2	85	3	2.4	2.0
AVG	53	0.4	58	2	100	3	1.5	59	2	1.8	78	2	85	3	2.4	1.9

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	2	1	2	-	1	3	2	-	-	-	2	2	-	2.0
CO2	3	2	2	1	-	-	1	-	-	-	-	1	1	-	1.9
CO3	3	3	2	3	-	-	1	2	-	-	-	1	2	1	1.9
CO4	3	3	1	2	-	-	2	-	-	-	-	1	1	1	1.9
CO5	2	2	1	1	-	2	2	2	-	-	-	1	2	-	2.0
AVG	2.6	2.4	1.4	1.8	-	1.5	1.8	2	-	-	-	1.2	1.6	1	1.9

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.4	1.4	0.7	1.4	-	0.7	2.0	1.4	-	-	-	1.4	1.4	-
CO2	1.9	1.3	1.3	0.6	-	-	0.6	-	-	-	-	0.6	0.6	-
CO3	1.9	1.9	1.3	1.9	-	-	0.6	1.3	-	-	-	0.6	1.3	0.6
CO4	1.9	1.9	0.6	1.3	-	-	1.3	-	-	-	-	0.6	0.6	0.6
CO5	1.4	1.4	0.7	0.7	-	1.4	1.4	0.0	-	-	-	0.7	1.4	-
AVG	1.8	1.7	1.0	1.3	-	1.1	1.3	1.0	-	-	-	0.9	1.1	0.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: IV-I

Course Name: Computer Networks

Course Code: A70515

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	62	1	67	3	100	3	2.0	55	2	2	79	2	93	3	2.4	2.1
CO2	28	0	67	3	100	3	1.5	55	2	1.8	79	2	92	3	2.4	2.0
CO3	36	0	67	3	100	3	1.5	55	2	1.8	79	2	90	3	2.4	2.0
CO4	56	0	67	3	100	3	1.5	55	2	1.8	79	2	90	3	2.4	2.0
CO5	60	1	67	3	100	3	2.0	55	2	2	79	2	95	3	2.4	2.1
AVG	49	0.4	67	3	100	3	1.7	55	2	1.88	79	2	92	3	2.4	2.0

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	2	-	-	-	-	-	-	-	-	1	-	1	2.1
CO2	2	1	2	-	-	-	-	-	-	-	-	1	-	1	2.0
CO3	2	1	2	-	-	-	-	-	-	-	-	1	-	1	2.0
CO4	1	1	3	-	-	-	-	-	-	-	-	1	-	1	2.0
CO5	3	1	3	-	-	-	-	-	-	-	-	2	-	1	2.1
AVG	1.8	1	2.4	-	-	-	-	-	-	-	-	1.2	-	1	2.0

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.7	0.7	1.4	-	-	-	-	-	-	-	-	0.7	-	0.7
CO2	1.3	0.7	1.3	-	-	-	-	-	-	-	-	0.7	-	0.7
CO3	1.3	0.7	1.3	-	-	-	-	-	-	-	-	0.7	-	0.7
CO4	0.7	0.7	2.0	-	-	-	-	-	-	-	-	0.7	-	0.7
CO5	2.1	0.7	2.1	-	-	-	-	-	-	-	-	1.4	-	0.7
AVG	1.2	0.7	1.6	-	-	-	-	-	-	-	-	0.8	-	0.7

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: IV-I Sem

Course Name: Digital Image Processing

Course Code: A70436

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	95	3	71	3	100	3	3	58	2	2.4	67	1	79	2	1.4	2.2
CO2	90	3	71	3	100	3	3	58	2	2.4	67	1	76	2	1.4	2.2
CO3	63	1	71	3	100	3	2	58	2	2	67	1	73	2	1.4	1.9
CO4	86	3	71	3	100	3	3	58	2	2.4	67	1	74	2	1.4	2.2
CO5	91	3	71	3	100	3	3	58	2	2.4	67	1	73	2	1.4	2.2
CO6	82	3	71	3	100	3	3	58	2	2.4	67	1	74	2	1.4	2.2
CO7	100	3	71	3	100	3	3	58	2	2.4	67	1	74	2	1.4	2.2
AVG	87	3	71	3	100	3	3	58	2	2.3	67	1	75	2	1.4	2.1

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	2	-	1	2	-	-	-	-	-	-	2	3	3	2.2
CO2	1	2	3	2	3	-	1	-	-	-	-	2	3	3	2.2
CO3	1	2	3	2	3	-	1	-	-	-	-	2	3	3	1.9
CO4	1	2	3	2	3	-	1	-	-	-	-	2	3	3	2.2
CO5	1	2	3	2	3	-	1	-	-	-	-	2	3	3	2.2
CO6	1	2	3	2	3	-	1	-	-	-	-	2	3	3	2.2
CO7	1	2	3	2	3	-	1	-	-	-	-	2	3	3	2.2
AVG	1	2	3	2	3	-	1	-	-	-	-	2	3	3	2.1

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.7	1.4	-	0.7	1.4	-	-	-	-	-	-	1.4	2.2	2.2
CO2	0.7	1.4	2.2	1.4	2.2	-	0.7	-	-	-	-	1.4	2.2	2.2
CO3	0.6	1.2	1.9	1.2	1.9	-	0.6	-	-	-	-	1.2	1.9	1.9
CO4	0.7	1.4	2.2	1.4	2.2	-	0.7	-	-	-	-	1.4	2.2	2.2
CO5	0.7	1.4	2.2	1.4	2.2	-	0.7	-	-	-	-	1.4	2.2	2.2
CO6	0.7	1.4	2.2	1.4	2.2	-	0.7	-	-	-	-	1.4	2.2	2.2
CO7	0.7	1.4	2.2	1.4	2.2	-	0.7	-	-	-	-	1.4	2.2	2.2
AVG	0.7	1.4	2.1	1.3	2.0	-	0.7	0.0	0.0	0.0	0.0	1.4	2.1	2.1

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: IV-I

Course Name: Embedded System Design

Course Code: A70440

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	83	3	75	3	100	3	3.0	56	2	2.4	78	2	91	3	2.4	2.4
CO2	62	1	75	3	100	3	2.0	56	2	2	78	2	90	3	2.4	2.1
CO3	81	3	75	3	100	3	3.0	56	2	2.4	78	2	91	3	2.4	2.4
CO4	49	0	75	3	100	3	1.5	56	2	1.8	78	2	90	3	2.4	2.0
AVG	69	1.8	75	3	100	3	2.4	56	2	2.2	78	2	91	3	2.4	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.4
CO2	1	1	3	-	-	-	-	-	-	-	-	-	3	-	2.1
CO3	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.4
CO4	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.0
AVG	1	1	3	2	-	-	-	-	-	-	-	-	3	-	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	0.8	2.4	1.6	-	-	-	-	-	-	-	-	2.4	-
CO2	0.7	0.7	2.1	-	-	-	-	-	-	-	-	-	2.1	-
CO3	0.8	0.8	2.4	1.6	-	-	-	-	-	-	-	-	2.4	-
CO4	0.7	0.7	2.0	1.3	-	-	-	-	-	-	-	-	2.0	-
AVG	1	1	3	2	-	-	-	-	-	-	-	-	3	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2015-2019

Year & Sem:IV-I

Course Name: Management Science

Course Code: A40507

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	73	2	62	3	100	3	2.5	77	3	2.8	69	1	86	3	1.8	2.6
CO2	61	1	62	3	100	3	2.0	77	3	2.6	69	1	85	3	1.8	2.4
CO3	59	0	62	3	100	3	1.5	77	3	2.4	69	1	85	3	1.8	2.3
CO4	80	3	62	3	100	3	3.0	77	3	3	69	1	85	3	1.8	2.7
CO5	74	2	62	3	100	3	2.5	77	3	2.8	69	1	83	3	1.8	2.6
AVG	69	2	62	3	100	3	2	77	3	2.7	69	1	85	3	1.8	2.5

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	-	-	2	-	-	2	2	2	2	1	3	1	-	1	2.6
CO2	2	-	2	2	-	2	1	2	1	2	1	1	1	2	2.4
CO3	1	2	2	2	1	1	2	3	3	3	2	2	2	2	2.3
CO4	1	-	-	-	-	-	1	1	1		3	1	1	1	2.7
CO5	1	1	2	2	1	1	1	2	2	3	1	-	-	3	2.6
AVG	1	0.6	1.6	1.2	0.4	1.2	1.4	2	1.8	1.8	2	1	0.8	1.8	2.5

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	1.7	-	-	1.7	1.7	1.7	1.7	0.9	2.6	0.9	-	0.9
CO2	1.6	-	1.6	1.6	-	1.6	0.8	1.6	0.8	1.6	0.8	0.8	0.8	1.6
CO3	0.8	1.5	1.5	1.5	0.75	0.75	1.5	2.3	2.3	2.3	1.5	1.5	1.5	1.5
CO4	0.9	-	-	-	-	-	0.9	0.9	0.9	0.0	2.7	0.9	0.9	0.9
CO5	0.9	0.85	1.7	1.7	0.85	0.85	0.9	1.7	1.7	2.6	0.9	-	-	2.6
AVG	1.0	1.2	1.6	1.6	0.8	1.2	1.2	1.6	-	-	-	1.0	1.1	1.5

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem:IV -I

Course Name: Microwave Engineering

Course Code: A70442

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	57	0	75	3	98	3	1.5	57	2	1.8	78	2	95	3	2.4	2.0
CO2	75	2	75	3	98	3	2.5	57	2	2.2	78	2	95	3	2.4	2.3
CO3	58	0	75	3	98	3	1.5	57	2	1.8	78	2	94	3	2.4	2.0
CO4	49	0	75	3	98	3	1.5	57	2	1.8	78	2	94	3	2.4	2.0
CO5	80	3	75	3	98	3	3.0	57	2	2.4	78	2	94	3	2.4	2.4
CO6	87	3	75	3	98	3	3.0	57	2	2.4	78	2	93	3	2.4	2.4
CO7	80	3	75	3	98	3	3.0	57	2	2.4	78	2	93	3	2.4	2.4
CO8	54	0	75	3	98	3	1.5	57	2	1.8	78	2	92	3	2.4	2.0
AVG	67	1.4	75	3	98	3	2.2	57	2	2.1	78	2	94	3	2.4	2.2

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	2	2	2	1	-	-	2	2	3	2	1	1	2.0
CO2	2	2	2	2	2	-	-	-	2	2	1	2	3	2	2.3
CO3	2	2	-	3	-	-	-	2	3	1	1	2	3	2	2.0
CO4	1	2	2	-	2	-	-	1	2	1	3	2	3	2	2.0
CO5	3	2	2	2	2	-	-	-	2	1	1	2	3	2	2.4
CO6	3	2	2	-	2	-	-	-	2	1	1	2	3	2	2.4
CO7	3	2	2	-	3	-	-	-	-	1	1	2	3	2	2.4
CO8	1	3	3	-	2	-	-	1	2	1	2	2	3	2	2.0
AVG	2.3	2.1	2.1	2.3	2.1	1.0	-	1.3	2.1	1.3	1.6	2.0	2.8	1.9	2.2

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.0	1.3	1.3	1.3	1.3	0.7	-	-	1.3	1.3	2.0	1.3	0.7	0.7
CO2	1.5	1.5	1.5	1.5	1.5	-	-	-	1.5	1.5	0.8	1.5	2.3	1.5
CO3	1.3	1.3	-	2.0	-	-	-	1.3	2.0	0.7	0.7	1.3	2.0	1.3
CO4	0.7	1.3	1.3	-	1.3	-	-	0.65	1.3	0.7	2.0	1.3	2.0	1.3
CO5	2.4	1.6	1.6	1.6	1.6	-	-	-	1.6	0.8	0.8	1.6	2.4	1.6
CO6	2.4	1.6	1.6	-	1.6	-	-	-	1.6	0.8	0.8	1.6	2.4	1.6
CO7	2.4	1.6	1.6	-	2.4	-	-	-	-	0.8	0.8	1.6	2.4	1.6
CO8	0.7	2.0	2.0	-	1.3	-	-	0.65	1.3	0.7	1.3	1.3	2.0	1.3
AVG	1.7	1.5	1.6	1.6	1.6	0.7	-	0.9	1.5	0.9	1.1	1.4	2.0	1.4

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: IV - I

Course Name: OOPS Through JAVA

Course Code:A70505

CO Attainment(Direct and Indirect)

CO	Mfd Subjective	Level	Mfd Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	45	0	59	2	99	3	1.3	62	3	2.3	73	2	88	3	2.4	2.3
CO2	66	1	59	2	99	3	1.8	62	3	2.5	73	2	87	3	2.4	2.5
CO3	55	0	59	2	99	3	1.3	62	3	2.3	73	2	86	3	2.4	2.3
CO4	81	3	59	2	99	3	2.8	62	3	2.9	73	2	84	3	2.4	2.8
CO5	75	2	59	2	99	3	2.3	62	3	2.7	73	2	86	3	2.4	2.6
CO6	50	0	59	2	99	3	1.3	62	3	2.3	73	2	85	3	2.4	2.3
AVG	62	1	59	2	99	3	1.8	62	3	2.5	73	2	86	3	2.4	2.5

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	2	1	2	2	1	-	1	1	1	2	-	2	-	-	2.3
CO2	2	2	3	3	1	-	-	-	1	1	-	1	-	-	2.5
CO3	2	3	3	3	2	-	-	1	2	1	-	1	-	1	2.3
CO4	2	1	2	1	2	-	1	-	1	1	-	2	-	-	2.8
CO5	2	3	3	3	2	-	1	1	1	1	-	1	-	1	2.6
CO6	2	3	3	3	2	-	1	1	2	2	-	2	1	1	2.3
AVG	2	2.2	2.7	2.5	1.7	-	1	1	1.3	1.3	-	1.5	1	1	2.5

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1.6	0.8	1.6	1.6	0.8	-	0.8	0.8	0.8	1.6	-	1.6	-	-
CO2	1.7	1.7	2.5	2.5	0.8	-	-	-	0.8	0.8	-	0.8	-	-
CO3	1.6	2.3	2.3	2.3	1.6	-	-	0.8	1.6	0.8	-	0.8	-	0.8
CO4	1.9	0.9	1.9	0.9	1.9	-	0.9	-	0.9	0.9	-	1.9	-	-
CO5	1.8	2.6	2.6	2.6	1.8	-	0.9	0.9	0.9	0.9	-	0.9	-	0.9
CO6	1.6	2.3	2.3	2.3	1.6	-	0.8	0.8	1.6	1.6	-	1.6	0.8	0.8
AVG	1.65	1.8	2.2	2.0	1.4	-	0.8	0.8	1.1	1.1	-	1.2	0.8	0.8

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015 -2019

Year & Sem: IV- I Sem

Course Name: Microwave Engineering and Digital Communications Lab

Course Code: A70499

CO Attainment(Direct and Indirect)

CO	Internal	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	100	3	62	3	3	83	3	93	3	3	3
CO2	100	3	62	3	3	83	3	93	3	3	3
CO3	100	3	62	3	3	83	3	92	3	3	3
CO4	100	3	62	3	3	83	3	93	3	3	3
CO5	100	3	62	3	3	83	3	92	3	3	3
CO6	100	3	62	3	3	83	3	92	3	3	3
CO7	100	3	62	3	3	83	3	93	3	3	3
AVG	100	3	62	3	3	83	3	93	3	3	3

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	2	-	-	1	-	-	1	3	-	2	2	3	2	3
CO2	3	1	1	-	1	2	2	1	3	-	2	2	3	2	3
CO3	2	-	-	-	1	-	-	1	-	-	2	2	3	2	3
CO4	2	-	-	-	1	-	-	1	-	-	2	2	2	3	3
CO5	2	1	1	-	1	-	-	1	2	-	2	2	3	3	3
CO6	3	-	1	-	1	-	-	1	2	-	2	2	2	3	3
CO7	3	-	-	-	1	-	-	1	2	-	2	2	2	3	3
AVG	2.6	1.3	1	-	1	2	2	1	2.4	-	2	2	2.6	2.6	3

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	1	-	-	1	3	-	2	2	3	2
CO2	3	1	1	-	1	2	2	1	3	-	2	2	3	2
CO3	2	-	-	-	1	-	-	1	-	-	2	2	3	2
CO4	2	-	-	-	1	-	-	1	-	-	2	2	2	3
CO5	2	1	1	-	1	-	-	1	2	-	2	2	3	3
CO6	3	-	1	-	1	-	-	1	2	-	2	2	2	3
CO7	3	-	-	-	1	-	-	1	2	-	2	2	2	3
AVG	2.5	1.3	1	-	1	2	2	1	2.5	-	2.0	2.0	2.7	2.6

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

CO Attainment(Direct and Indirect)

CO	Mid Subjective	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	98	3	56	2	2.4	81	3	92	3	3	2.6
CO2	98	3	56	2	2.4	81	3	92	3	3	2.6
CO3	98	3	56	2	2.4	81	3	94	3	3	2.6
CO4	98	3	56	2	2.4	81	3	94	3	3	2.6
AVG	98	3	56	2	2	81	3	93	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	-	-	-	-	-	2	-	3	3	3	-	3	-	1	2.6
CO2	-	-	-	-	-	2	-	3	3	3	-	3	-	1	2.6
CO3	-	-	-	-	-	-	-	2	3	3	-	3	-	1	2.6
CO4	-	-	-	-	-	2	-	2	3	3	-	3	-	1	2.6
AVG	0	0	0	0	0	2	0	2.5	3	3	0	3	-	1	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	1.7	-	2.6	2.6	2.6	-	2.6	-	0.9
CO2	-	-	-	-	-	1.7	-	2.6	2.6	2.6	-	2.6	-	0.9
CO3	-	-	-	-	-	-	-	1.7	2.6	2.6	-	2.6	-	0.9
CO4	-	-	-	-	-	1.7	-	1.7	2.6	2.6	-	2.6	-	0.9
AVG	0	0	0	0	0	1.7	-	2.1	2.6	2.6	-	2.6	-	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year& Sem: IV-II

Course Name: Radar Systems

Course Code: A80450

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	76	2	51	2	100	3	2.3	52	2	2.1	83	3	91	3	3	2.3
CO2	83	3	51	2	100	3	2.8	52	2	2.3	83	3	88	3	3	2.5
CO3	71	2	51	2	100	3	2.3	52	2	2.1	83	3	89	3	3	2.3
AVG	77	2	51	2	100	3	2.4	52	2	2	83	3	89	3	3	2.4

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	1	3	1	3	1	1	2	1	1	2	1	2	1	2.3
CO2	3	3	2	1	3	1	1	1	1	1	3	3	0	2	2.5
CO3	3	3	2	1	3	1	0	2	1	1	3	2	2	2	2.3
AVG	3.0	2.3	2.3	1.0	3.0	1.0	0.7	1.7	1.0	1.0	2.7	2.0	1.3	1.7	2.4

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.3	0.8	2.3	0.8	2.3	0.8	0.8	1.6	0.8	0.8	1.6	0.8	1.6	0.8
CO2	2.5	2.5	1.7	0.8	2.5	0.8	0.8	0.8	0.8	0.8	2.5	2.5	0.0	1.7
CO3	2.3	2.3	1.6	0.8	2.3	0.8	0.0	1.6	0.8	0.8	2.3	1.6	1.6	1.6
AVG	2.4	1.9	1.8	0.8	2.4	0.8	0.5	1.3	0.8	0.8	2.1	1.6	1.0	1.3

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2015-2019

Year & Sem: IV-II

Course Name: Satellite Communications

Course Code: A80452

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	77	2	47	1	100	3	2.0	60	3	2.6	84	3	90	3	3	2.7
CO2	67	1	47	1	100	3	1.5	60	3	2.4	84	3	91	3	3	2.6
CO3	51	0	47	1	100	3	1.0	60	3	2.2	84	3	91	3	3	2.4
CO4	78	2	47	1	100	3	2.0	60	3	2.6	84	3	91	3	3	2.7
CO5	61	1	47	1	100	3	1.5	60	3	2.4	84	3	90	3	3	2.6
CO6	58	0	47	1	100	3	1.0	60	3	2.2	84	3	91	3	3	2.4
CO7	74	2	47	1	100	3	2.0	60	3	2.6	84	3	91	3	3	2.7
AVG	67	1	47	1	100	3	1.6	60	3	2.4	84	3	91	3	3	2.6

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	3	3	2	-	-	-	2	2	-	1	-	1	2	-	2.7
CO2	2	-	1	-	-	-	1	-	-	-	-	1	1	-	2.6
CO3	2	2	2	2	-	1	2	2	-	-	-	2	2	-	2.4
CO4	2	2	2	2	-	1	2	-	-	-	-	2	2	-	2.7
CO5	2	1	1	1	-	2	1	1	-	-	-	2	2	-	2.6
CO6	2	2	2	-	-	2	1	1	-	-	-	2	2	-	2.4
CO7	2	2	1	-	-	2	1	1	-	-	-	2	2	-	2.7
AVG	2.1	1.7	1.6	0.7	-	1.1	1.4	1.0	-	0.1	-	1.7	1.9	-	2.6

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.7	2.7	1.8	-	-	-	1.8	1.8	-	0.9	-	0.9	1.8	-
CO2	1.7	-	0.9	-	-	-	0.9	-	-	-	-	0.9	0.9	-
CO3	1.6	1.6	1.6	1.6	-	0.8	1.6	1.6	-	-	-	1.6	1.6	-
CO4	1.8	1.8	1.8	1.8	-	0.9	1.8	-	-	-	-	1.8	1.8	-
CO5	1.7	0.9	0.9	0.9	-	1.7	0.9	0.9	-	-	-	1.7	1.7	-
CO6	1.6	1.6	1.6	-	-	1.6	0.8	0.8	-	-	-	1.6	1.6	-
CO7	1.8	1.8	0.9	-	-	1.8	0.9	0.9	-	-	-	1.8	1.8	-
AVG	1.9	1.7	1.4	1.4	-	1.1	1.4	1.4	-	0.9	-	1.4	1.6	-

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch: 2015-2019

Year & Sem: IV-II

Course Name: Telecommunication and switching Networks

Course Code: A80431

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	68	1	89	3	100	3	2	63	3	2.6	80	3	89	3	3	2.7
CO2	8	0	89	3	100	3	1.5	63	3	2.4	80	3	91	3	3	2.6
CO3	100	3	89	3	100	3	3	63	3	3	80	3	94	3	3	3.0
CO4	97	3	89	3	100	3	3	63	3	3	80	3	91	3	3	3.0
CO5	61	1	89	3	100	3	2	63	3	2.6	80	3	92	3	3	2.7
AVG	67	2	89	3	100	3	2	63	3	2.7	80	3	92	3	3	2.8

Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	1	2	-	-	-	-	-	-	-	-	1	1	1	2.7
CO2	2	1	2	1	-	-	-	-	-	-	-	1	-	1	2.6
CO3	2	1	2	-	-	1	-	1	-	1	-	1	-	1	3.0
CO4	1	1	3	2	2	-	1	-	2	-	1	1	1	1	3.0
CO5	3	1	3	-	-	-	-	-	-	-	-	2	-	1	2.7
AVG	1.8	1	2.4	1.5	2	1	1	1	2	1	1	1.2	1	1	2.8

Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.9	0.9	1.8	-	-	-	-	-	-	-	-	0.9	0.9	0.9
CO2	1.7	0.9	1.7	0.9	-	-	-	-	-	-	-	0.9	-	0.9
CO3	2.0	1	2.0	-	-	1	-	1	-	1	-	1	-	1.0
CO4	1	1.0	3.0	2.0	2.0	-	1	-	2	-	1	1	1	1
CO5	2.7	0.9	2.7	-	-	-	-	-	-	-	-	1.8	-	0.9
AVG	1.7	0.9	2.2	1.4	2.0	1	1	1	2	1	1	1.1	0.9	0.9

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

Batch:2015-2019

Year & Sem: IV-II

Course Name: Wireless Communication and networks

Course Code: A80454

CO Attainment(Direct and Indirect)

CO	Mid Subjective	Level	Mid Objective	Level	Assignment	Level	CO Levels in Internal	SEE	CO Levels in External	CO Direct	TLP	Level	CES	Level	CO Indirect	Overall CO attainment
CO1	72	2	64	3	94	3	2.5	50	2	2.2	84	3	90	3	3	2.4
CO2	73	2	64	3	94	3	2.5	50	2	2.2	84	3	88	3	3	2.4
CO3	82	3	64	3	94	3	3.0	50	2	2.4	84	3	90	3	3	2.6
CO4	46	0	64	3	94	3	1.5	50	2	1.8	84	3	90	3	3	2.1
CO5	63	1	64	3	94	3	2.0	50	2	2	84	3	90	3	3	2.3
AVG	67	2	64	3	94	3	2	50	2	2	84	3	90	3	3	2.3

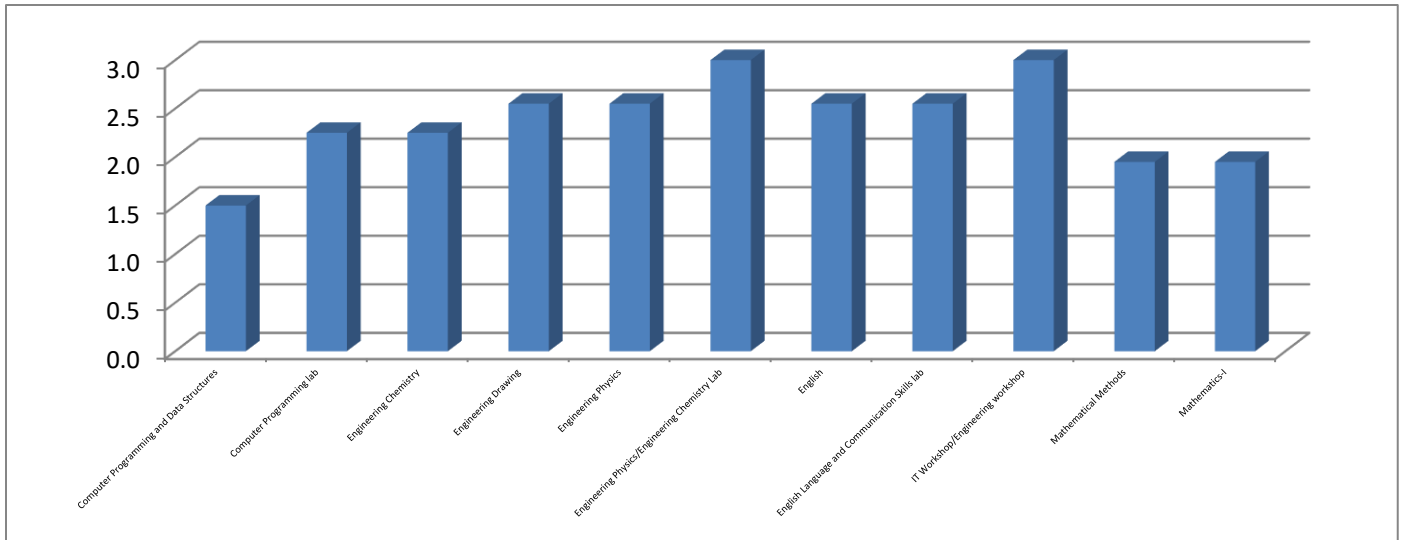
Mapping of CO in CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Overall CO
CO1	1	3	3	1	3	1	1	3	1	1	3	3	3	2	2.4
CO2	1	3	1	1	3	1	2	1	1	1	1	2	3	2	2.4
CO3	1	3	1	1	3	1	1	2	1	1	3	3	3	2	2.6
CO4	1	3	1	1	3	1	2	1	1	1	3	3	3	2	2.1
CO5	1	3	2	1	3	1	1	2	1	1	3	3	3	2	2.3
AVG	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8	2.3

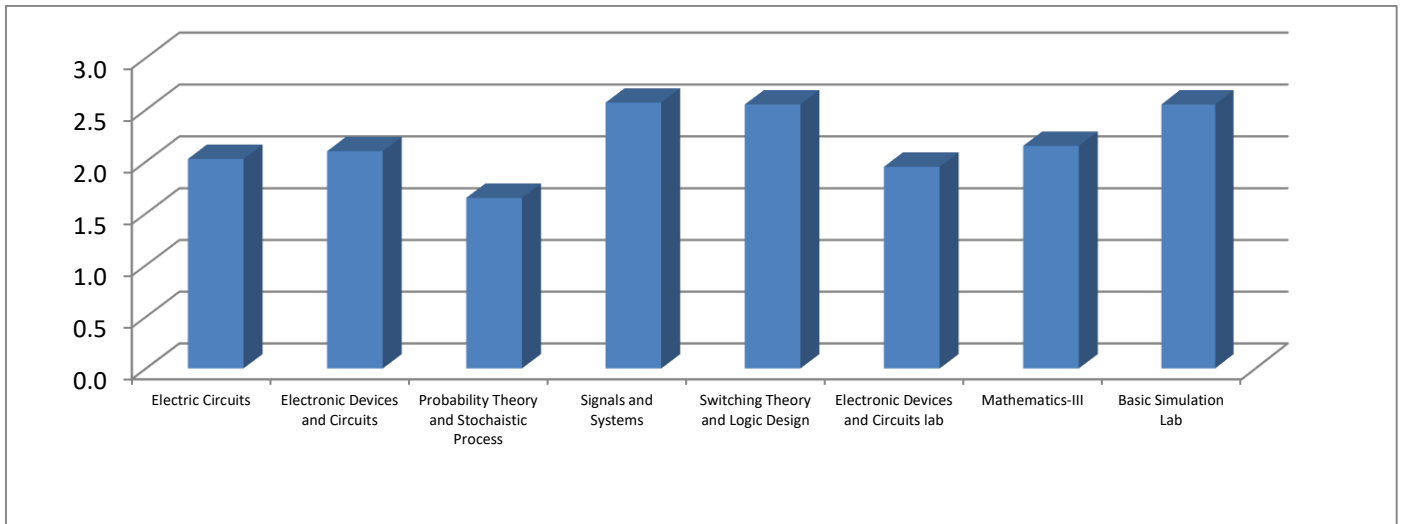
Attainment of CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	0.8	2.4	2.4	0.8	2.4	0.8	0.8	2.4	0.8	0.8	2.4	2.4	2.4	1.6
CO2	0.8	2.4	0.8	0.8	2.4	0.8	1.6	0.8	0.8	0.8	0.8	1.6	2.4	1.6
CO3	0.9	2.6	0.9	0.9	2.6	0.9	0.9	1.7	0.9	0.9	2.6	2.6	2.6	1.7
CO4	0.7	2.1	0.7	0.7	2.1	0.7	1.4	0.7	0.7	0.7	2.1	2.1	2.1	1.4
CO5	0.8	2.3	1.5	0.8	2.3	0.8	0.8	1.5	0.8	0.8	2.3	2.3	2.3	1.5
AVG	0.8	2.3	1.3	0.8	2.3	0.8	1.1	1.4	0.8	0.8	2.0	2.2	2.3	1.6

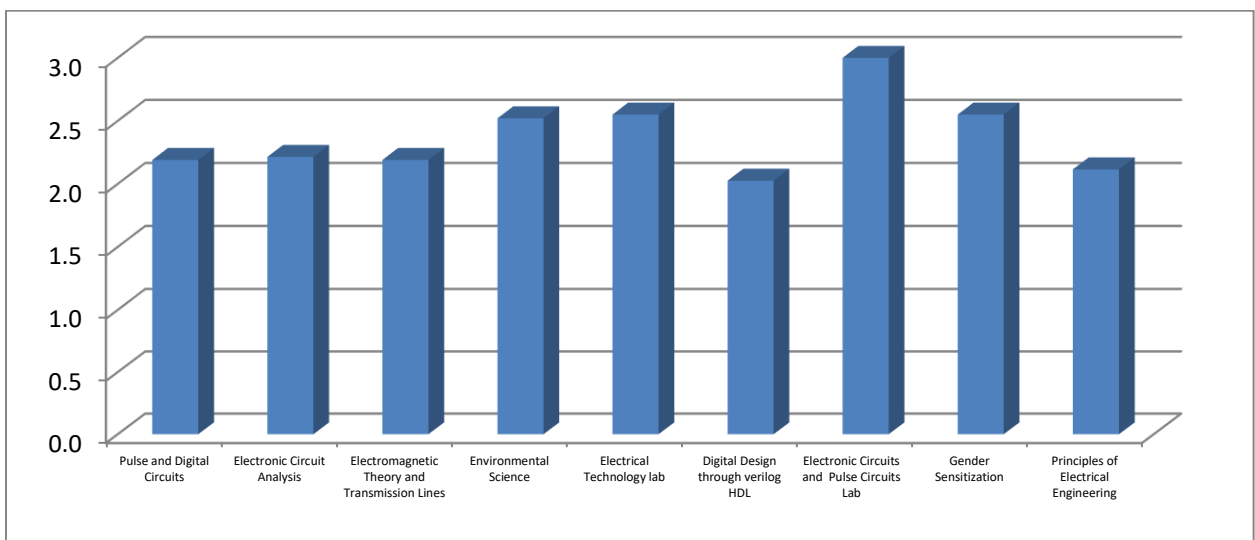
I Year



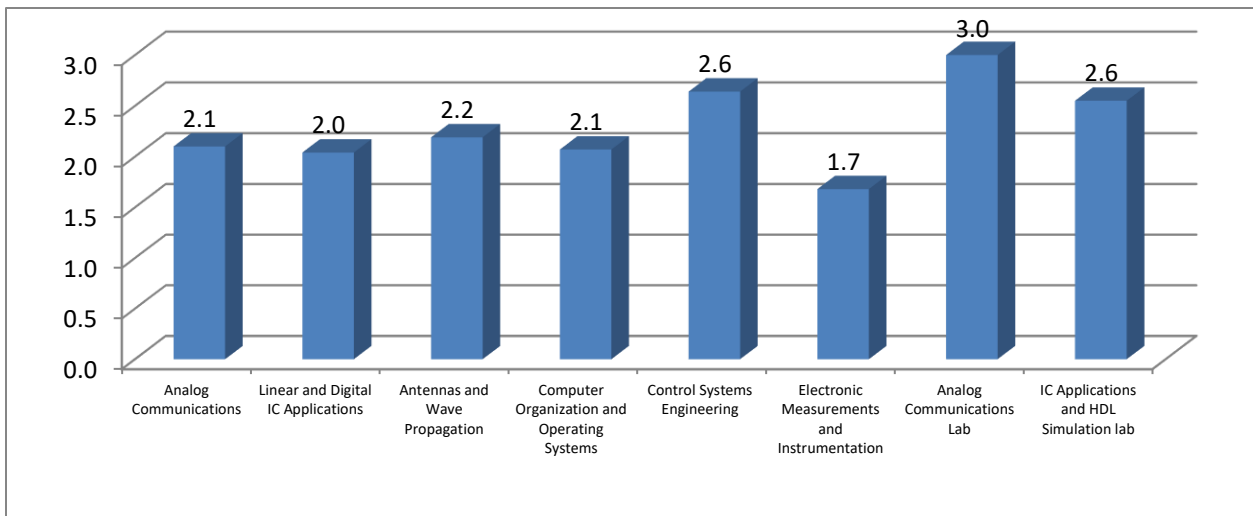
II-I



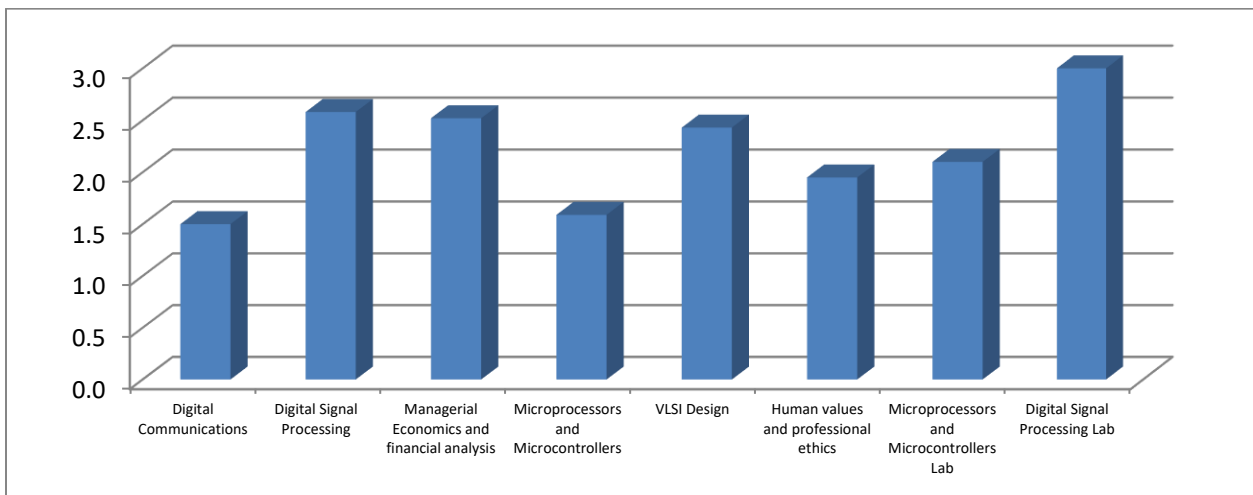
II-II



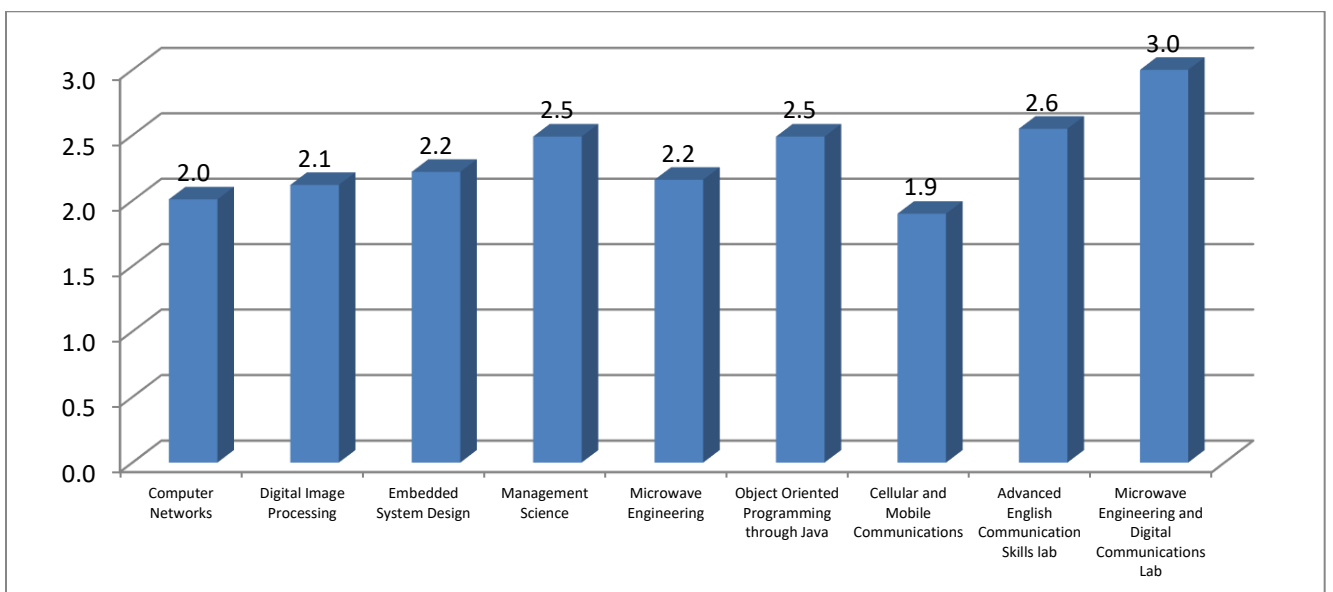
III-I



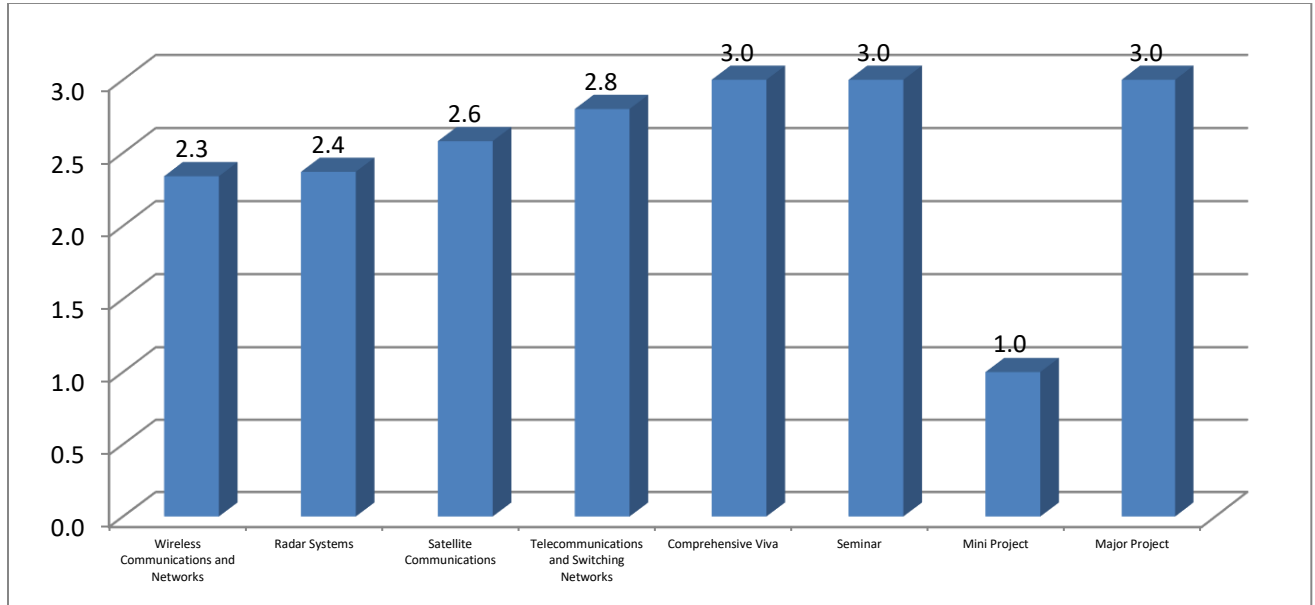
III-II



IV-I



IV-II



GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

R13 (JNTUH) - POs and PSOs Attainments for 2015-19 Batch

2015-2019

Code	Name of the Course	Pos												PSOs	
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
A10001	English				2.67		1	3	1	2.67	2.67		1		
A10002	MathematicsI	3	2	1.4			1						2	1	
A10003	Mathematical Methods	3	2	1.4			1						2	1	
A10004	Engineering Physics	2	2							1			1	1	
A10005	Engineering Chemistry	2	1	1					1					1	1
A10501	Computer Programming	2											1	1	
A10301	Engineering Drawing	2	1	1									1		
A10581	Computer Programming lab	2											2		
A10081	Engineering Physics/ Engineering Chemistry lab	2	2	1					1						
A10083	English Language Communication Skills lab				1			2							
A10082	IT Workshop / Engineering Workshop	2								1					
A30007	MathematicsIII	3	1.75												
A30405	Probability Theory and Stochastic Processes	2	3	2.4									1	3	
A30407	Switching Theory and Logic Design	2.5	3	2	2								1	3	
A30204	Electrical circuits	2.8	2.4	1.6	1.4	1	1					1		3	1
A30404	Electronic Devices and Circuits	2.33	2.17	2.06	1.16								1	2	1

A30406	Signals and Systems	2.75	1	2.87									1.87	3	
A30482	Electronic Devices and Circuits Lab	1.87												2	2
A30481	Basic Simulation lab	1.87	2	2.25	2.37	3							1	3	3
A40215	Principles of Electrical Engineering	2	1											1	
A40412	Electronic Circuit Analysis	2	3	2.62									1	3	
A40415	Pulse and Digital Circuits		1.6	3	1.75	2.3							1	3	2.25
A40009	Environmental Studies	2.4						3							
A40411	Electromagnetic theory and Transmission lines	2.14	2.14	2.14	1.84	1.71							1	3	1.57
A40410	Digital Design using Verilog HDL	2	3	3	1					1			2	3	3
A40288	Electrical Technology Lab	2.5								1				2	
A40289	Gender Sensitization						1			3				1	
A40484	Electronic Circuits and Pulse Circuits Lab	2.38								1				2	
A50217	Control Systems Engineering	2.42	2												
A50516	Computer Organization and Operating Systems	2.5	2												
A50418	Antennas and Wave Propagation	2.5	2.5	2.5	2	1.5							1	3	1.5
A50422	Electronic Measurements and Instrumentation	2.83	1												
A50408	Analog Communications	2.62	1.87	2.25	1.87	1.12							1.87	2.75	1.87
A50425	Linear and Digital IC Applications	2	2.6	3		1							1	3	1.4
A50482	Analog Communications Lab	1.75	1	1	2	2		2	1	2	2	1	2	2	1
A50488	IC Applications and HDL Simulation Lab		2	1	1.75	1.5	1	2	2	1	1	1	1.75	2.5	2.25
A60010	Managerial Economics and Financial Analysis	2	1.5	2.2	2.5	1	1.4	1	2.4	1.6	1	2.4	2		

A60018	Human Values and Professional Ethics*						1	2	2	2	2	1	2		
A60420	Digital Communications	1.33	1.33	1.5	1.5								1	1.83	1
A60432	VLSI Design	3	2											2	1
A60430	Microprocessors and Microcontrollers	2	2	2	3								1	3	3
A60421	Digital Signal Processing	2.5	2.25											2	1
A60494	Microprocessors and Microcontrollers lab	3	3	2.75	1	1				4	1		1	3	2
A60493	Digital Signal Processing Lab	2	1											1	
A70014	Management Science											3		1	
A70442	Microwave Engineering	2.87	2.75	1.87	1.25	1.25	1.25	1	1.16	1	1.25	1.87	2	2	1.62
A70515	Computer Networks	1.8	1	2.4									1.2		1
A70434	Cellular and Mobile Communications	2.6	2.4	1.4	1.8		1.5	1.8	2				1.2	1.6	1
A70436	Digital Image Processing*	1	2	2.5	1.8	2.8	1	0.8					2	3	3
A70505	OOPS through JAVA	2	2.2	2.67	2.5	1.67	1	1	1	1.5	1.3	1.5	1.67		1
A70440	Embedded system Design	1	1	3	2									3	
A70086	Advanced Communication Skills lab					2	1							2	
A70499	Microwave Engineering and Digital Communications lab	3	2							2			1	3	2
A80452	Satellite Communications*	1.8	2.6	3	1.2	1.6							1	2.4	1.4
A80450	Radar Systems*	3	1.75	3	2	1.66						1	1	3	1.71
A80454	Wireless communications & Networks*	1	3	1.6	1	3	1	1.4	1.8	1	1	2.6	2.8	3	2.8
A80431	Telecommunication and switching networks	2.2	2.3	2.5	1.4	2.1	1	1.4	1.8	1.5	1	1.8	1.5	2.7	2
A80087	Industry Oriented Mini Project	3	2.1	2.5	3	3				3	3		1	3	2

A80089	Seminar	2	2		1		1	1		2			2	2	1
A80088	Major Project	3	2.1	2.5	3	3				3	3		1	3	2
A80090	Comprehensive Viva	3	2	1			1			3					

Note: * indicates Elective

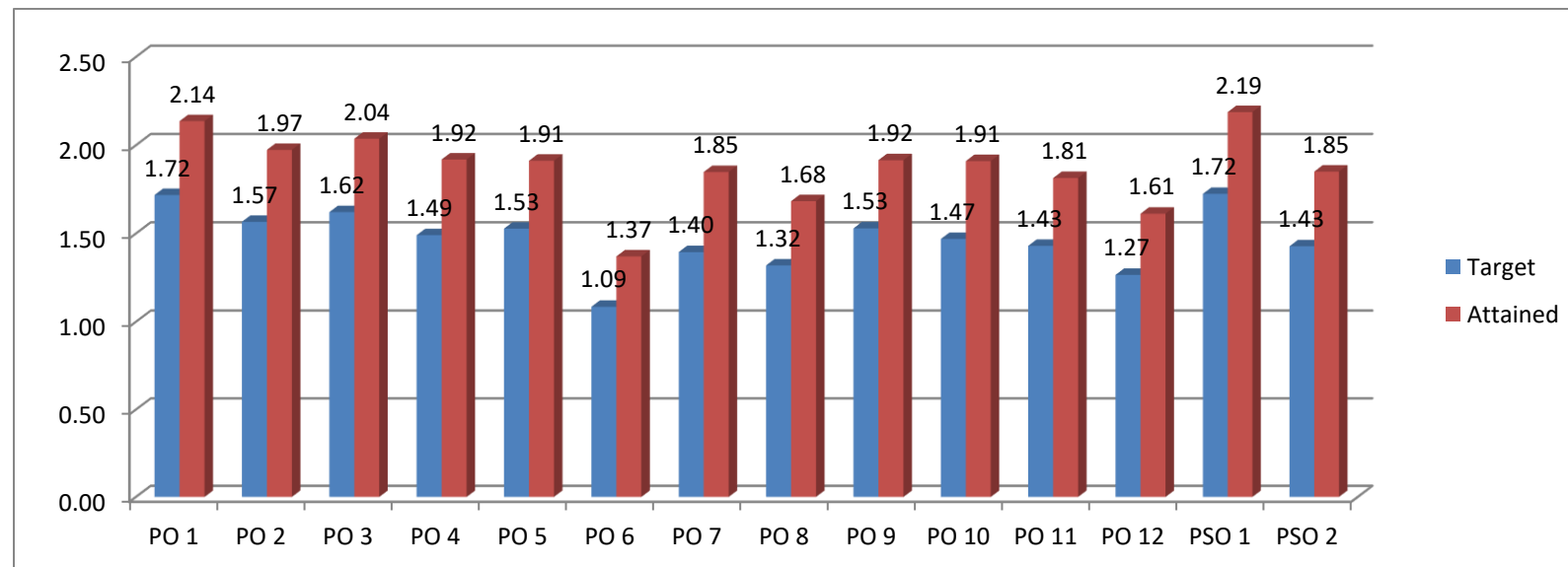
Average Correlation Strength	2.27	1.98	2.09	1.84	1.91	1.07	1.66	1.51	1.91	1.80	1.72	1.41	2.29	1.72
PO Direct - Average	1.85	1.63	1.72	1.56	1.55	0.83	1.46	1.24	1.55	1.55	1.42	1.15	1.92	1.47
$X=0.75 \times \text{Average correlation strength} + 0.25 \times 3$	2.45	2.24	2.32	2.13	2.18	1.55	1.99	1.89	2.18	2.10	2.04	1.81	2.46	2.04
PO Indirect - Exit Survey (15%)	90.58	91.43	90.47	92.38	91.43	92.67	90.95	89.34	91.71	91.84	91.71	90.81	91.52	91.81
PO Indirect Level - Exit Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
PO Indirect - Alumni Survey (10%)	90.40	91.20	93.40	90.80	92.00	92.80	94.20	95.20	91.80	94.30	90.60	93.20	94.10	93.50
PO Indirect Level - Alumni Survey	3	3	3	3	3	3	3	3	3	3	3	3	3	3
PO Indirect attainment level	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Y=PO Overall attainment level	2.14	1.97	2.04	1.92	1.91	1.37	1.85	1.68	1.92	1.91	1.81	1.61	2.19	1.85
Y/X*100	87.0	88.2	87.9	90.1	87.6	88.4	92.8	89.3	87.7	91.0	88.8	89.1	88.8	90.7
Target (70%)	1.72	1.57	1.62	1.49	1.53	1.09	1.40	1.32	1.53	1.47	1.43	1.27	1.72	1.43

GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

PO ATTAINMENT Consolidated Report

BATCH	TARGET	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
2015-2019	Target 70%	1.72	1.57	1.62	1.49	1.53	1.09	1.40	1.32	1.53	1.47	1.43	1.27	1.72	1.43
	Attained	2.14	1.97	2.04	1.92	1.91	1.37	1.85	1.68	1.92	1.91	1.81	1.61	2.19	1.85

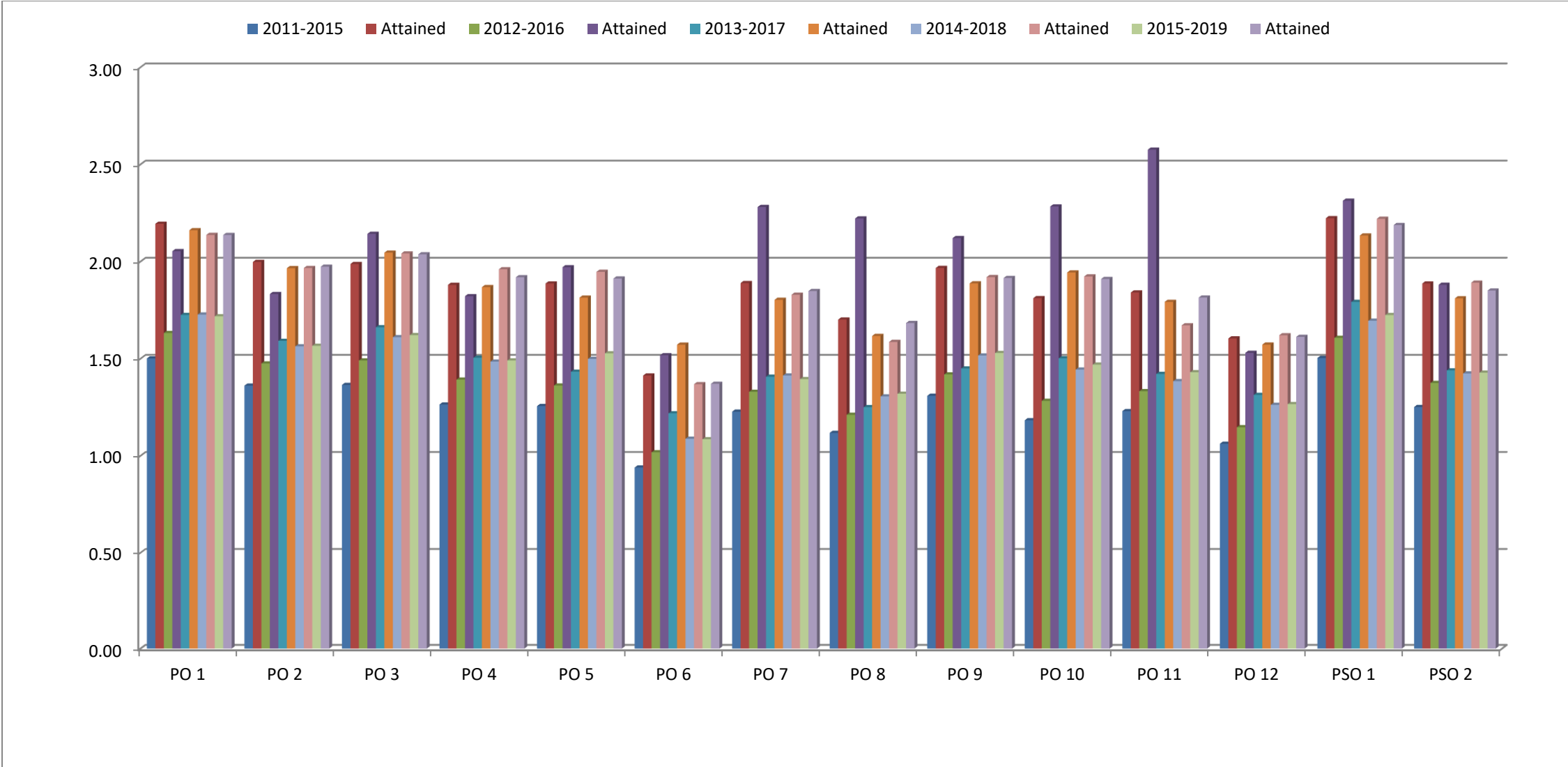


GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Electronics & Communication Engineering

PO ATTAINMENT Consolidated Report

BATCH	TARGET	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
2011-2015	Target 60%	1.50	1.36	1.36	1.26	1.26	0.94	1.23	1.12	1.31	1.18	1.23	1.06	1.50	1.25
	Attained	2.19	2.00	1.99	1.88	1.89	1.41	1.89	1.70	1.97	1.81	1.84	1.60	2.22	1.89
2012-2016	Target 65%	1.63	1.48	1.49	1.39	1.36	1.02	1.33	1.21	1.42	1.28	1.33	1.15	1.61	1.38
	Attained	2.05	1.83	2.14	1.82	1.97	1.52	2.28	2.22	2.12	2.28	2.58	1.53	2.31	1.88
2013-2017	Target 70%	1.73	1.59	1.66	1.50	1.43	1.22	1.41	1.25	1.45	1.50	1.42	1.31	1.79	1.44
	Attained	2.16	1.97	2.05	1.87	1.81	1.57	1.80	1.62	1.89	1.94	1.79	1.57	2.13	1.81
2014-2018	Target 70%	1.73	1.56	1.61	1.48	1.50	1.09	1.41	1.31	1.52	1.44	1.38	1.26	1.70	1.42
	Attained	2.14	1.97	2.04	1.96	1.95	1.37	1.83	1.59	1.92	1.92	1.67	1.62	2.22	1.89
2015-2019	Target 70%	1.72	1.57	1.62	1.49	1.53	1.09	1.40	1.32	1.53	1.47	1.43	1.27	1.72	1.43
	Attained	2.14	1.97	2.04	1.92	1.91	1.37	1.85	1.68	1.92	1.91	1.81	1.61	2.19	1.85



Appendix A
FORMAT FOR COURSE END SURVEY

CAY : 2018-19	SEM : Even	Date :
COURSE	Electromagnetic Theory and Transmission Lines	Year and Sem: II B.Tech II sem
FACULTY		Section:

Please evaluate on the following Scale:

Excellent(E)	Good(G)	Average(A)	Poor(P)	No Comment(NC)
5	4	3	2	1

SNO	QUESTIONNAIRE	E	G	A	P	NC
		5	4	3	2	1
GENERAL OBJECTIVES:						
1)	Did the course achieve its stated objectives?					
2)	Have you acquired the stated skills?					
3)	Whether the syllabus content is adequate to achieve the objectives?					
4)	Whether the instructor has helped you in acquiring the stated skills?					
5)	Whether the instructor has given real life applications of the course?					
6)	Whether tests, assignments, projects and grading were fair?					
7)	The instructional approach (es) used was (were) appropriate to the course.					
8)	The instructor motivated me to do my best work.					
9)	I gave my best effort in this course.					
10)	To what extent you feel the course outcomes have been achieved.					
Please provide written comments						
a) What was the most effective part of this course						
b) What are your suggestions, if any, for changes that would improve this course?						
c) Given all that you learned as a result of this course, what do you consider to be most important?						
d) Do you have any additional comments or clarifications to make regarding your responses to any particular survey item?						
e) Do you have any additional comments or suggestions that go beyond issues addressed on this survey?						

Roll No.

Signature

Course End Survey

CAY : 2018-19	SEM : Even	Date :
COURSE	Electromagnetic Theory and Transmission Lines	Year and Sem: II B.Tech II sem
FACULTY		Section:

Please indicate to what extent the following Course Outcomes have been achieved:

Excellent(E)	Good(G)	Average(A)	Poor(P)	No Comment(NC)
5	4	3	2	1

SNO	QUESTIONNAIRE	E	G	A	P	NC
		5	4	3	2	1
COURSE OUTCOMES :						
1)	CO1.Explain the concept of static electric and magnetic fields and their implications.					
2)	CO2.Explain Maxwell's equations and their applications in static and time varying electric and magnetic fields.					
3)	CO3.Explain the concept of Electromagnetic wave and its characteristics in different propagation media.					
4)	CO4.Analyze basic transmission line parameters in terms of its electrical equivalent and its applications as various circuit elements at RF and UHF.					

Appendix B

Program Evaluation assessment through Graduate Survey

AY:

No.of Samples

S.No.	QUESTIONNAIRE	E (5)	G (4)	A (3)	P (2)	NC (1)	Avg(Out of 5)	Percentage
1)	What is your perception of the academic expectations of your program vis-à-vis your achievements?							
2)	How would you rate your program's performance in keeping pace with recent trends and developments in ECE discipline?							
3)	How would you rate your professional training and research opportunities your program provided to graduate students?							
4)	How would you rate the adequacy of space, facilities and equipment in your program?							
5)	Indicate your level of satisfaction with the supervision and guidance you received during your study.							
6)	What is your perception of the quality of the faculty vis-à-vis qualifications , experience and teaching expertise in your program							
7)	How would you rate the overall quality of your program?							
Percentage								

Appendix C

Alumni Exit Feedback on POs and PSOs

A.Y.

Number of samples:

S.No	QUESTIONNAIRE	5	4	3	2	1	Average out of 5	Percentage
1	1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.							
2	2. 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.							
3	3. 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.							
4	4. 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.							
5	5. 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.							
6	6. The Engineering 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.							
7	7. 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.							
8	8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.							
9	9. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.							
10	10. 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.							
11	11. 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							
12	12. 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.							
Average								
Program Specific Outcomes								

1	An ability to design an Electronic and Communication Engineering system, component, or process and conduct experiments, analyze, interpret data and prepare a report with conclusions to meet desired needs within the realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.							
2	2. An ability to use modern Electronic Design Automation (EDA) tools, software and electronic equipment to analyze, synthesize and evaluate Electronics and Communication Engineering systems for multidisciplinary tasks.							
Average								

**Appendix D
Feedback Format on TLP**

Questions are asked by the students while taking feedback regarding lab courses	
1	The lab instructor explained objectives and outcomes of lab experiments clearly well before the commencement of the lab
2	The lab instructor explained the procedures involved to perform the lab experiments/algorithms clearly well before the commencement of the lab.
3	The laboratory assignments/discussion questions given after the completion of the experiment are interesting and reinforce what I have learned in the lab and its corresponding theoretical concepts.
4	The lab instructor is impartial in dealing with all students and were regularly available for consultation during the lab.
5	The lab instructor evaluated my work promptly, provided helpful feedback on my progress and offer specific advice to promote improvement.
6	The lab instructor encourages me to work better with others in the lab.
7	The lab instructor helps me learn important techniques associated with this lab course.
8	Experiments/Algorithms detailed in the lab course have enhanced my critical thinking ability.
Questions are asked by the students while taking feedback regarding Theory courses	
1	Passion and enthusiasm to teach
2	Subject knowledge
3	Clarity and emphasis on concepts
4	Motivating and inspiring the student
5	Creating interest in the subject
6	Quality of illustrative visuals, examples and applications
7	Regularity, punctuality,& uniform coverage of syllabus
8	Discipline and control over the class
9	Promoting student thinking
10	Encouraging student effort & inviting student interaction