PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE

(Approved by AICTE & Affiliated to Anna University, Chennai)

Madurai - Sivagangai Highway, Arasanoor, Thirumansolai Post, Sivagangai Dt. - 630 561, Tamilnadu
Mobile : 9842102628, 7373002628   Email: info@psyec.edu.in   Website : www.psyec.edu.in

City Office : 10, Pandian Saraswathi St, Sivagami Nagar, Narayanapuram, Madurai - 625 014. Telefax- 0452 2682338, Mobile : 98423-02628

Program outcomes (Pos) and Program specific Outcomes(PSOs) of the

Electronics and Communication Engineering

PROGRAM EDUCATIONAL OBJECTIVES PEOs)

1. To provide the students with a strong foundation in the required sciences in order to pursue studies in Electronics and Communication Engineering.
2. To gain adequate knowledge to become good professional in electronic and communication engineering associated industries, higher education and research.
3. To develop attitude in lifelong learning, applying and adapting new ideas and technologies as their field evolves.
4. To prepare students to critically analyze existing literature in an area of specialization and ethically develop innovative and research oriented methodologies to solve the problems identified.
5. To inculcate in the students a professional and ethical attitude and anability to visualize the engineering issues in a broader social context.

I.   **PROGRAM OUTCOMES(POs)**

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.

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4. **Conduct investigations of complex problems** Use research-based knowledge and research methods including design of experiments,analysis and interpretation and modeling to complex engineering activities with an understanding of the limitations.

5. **Modern tool usage** Create, select, and apply appropriate techniques,resources, and modern engineering and IT tools includingprediction and modeling to complex engineering acitivites with an understanding of the limitations.

6. **The engineer and society** Apply reasoning informed by the contextual knowledge to asses 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.

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II.   Program Specific Outcomes(PSOs)

At the end of BE program Computer Science and Engineering graduates will   be able to

PSO1   The students will be able to exhibit design and programming skills to build and computerize business solutions using cutting edge technologies.

PSO2   Strong theoretical foundation leading to excellence and excitement towards   research,to provide elegant solutions to complex problems.

PSO3   Ability to work effectively with various engineering fields as a team to design,build and develop system applications.

PEOs(1to5)mapped with POsandPSOs

PEO	PO												PSO		
	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	PSO 3
I.	3	3	2	2	2	2	-	-	-	-	-	3	3	2	3
II.	3	3	3	3	2	-	-	-	2	1	2	3	3	3	3
III.	3	2	3	3	3	-	-	-	2	2	-	3	3	3	3
IV.	3	3	3	3	2	-	-	3	-	-	-	2	2	2	2
V.	-	-	-	-	2	2	2	2	-	-	-	-	1	1	1

1-low,2-medium,3-high,'-'-nocorrelation

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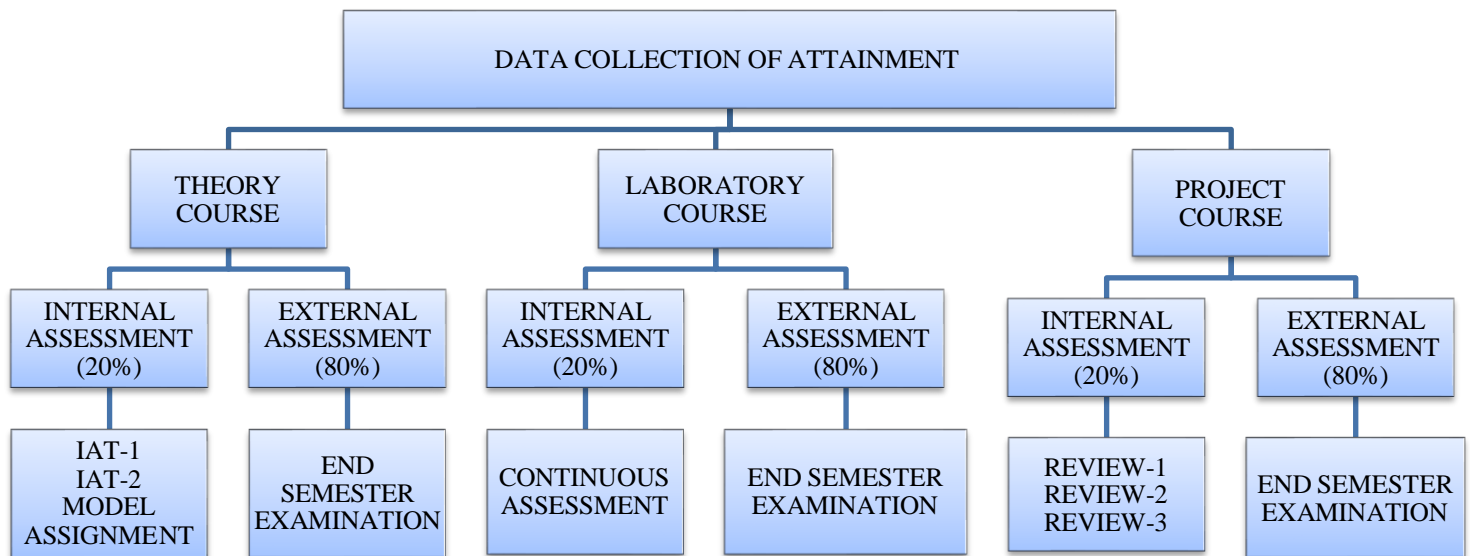Mobile : 9842102628, 7373002628   Email: info@psyec.edu.in   Website : www.psyec.edu.in

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III.   **Attainment of course for the Electronics and communication engineering assessment processor.**

Assessment is carried out by the department periodically to identify, collect, analyze and evaluate the data towards the achievement of course outcomes(CO), for the calculation of CO attainment, data from various theory and lab course and project course are taken in to consideration.For the entire course,20% weightage is given for internal assessment and 80% weightage for external assessment.

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                          DATA COLLECTION OF ATTAINMENT

        THEORY                     LABORATORY                    PROJECT
        COURSE                      COURSE                       COURSE

  INTERNAL    EXTERNAL      INTERNAL     EXTERNAL        INTERNAL      EXTERNAL
ASSESSMENT   ASSESSMENT    ASSESSMENT   ASSESSMENT      ASSESSMENT    ASSESSMENT
  (20%)        (80%)         (20%)        (80%)           (20%)         (80%)

  IAT-1                                                 REVIEW-1
  IAT-2        END          CONTINUOUS   END SEMESTER    REVIEW-2     END SEMESTER
  MODEL      SEMESTER       ASSESSMENT   EXAMINATION     REVIEW-3     EXAMINATION
ASSIGNMENT  EXAMINATION
```

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The end semester examinations:

It is conducted by the Anna University. The examination is conducted for 100 marks in 3hours duration. Exam evaluation is carried out by controller of examination, Anna University and the performance grades of students are published in online. The grades are used to measure the overall CO attainment for each course.

Theory Course:

Two internal assessment tests(IAT-I and IAT-II) and model exam are conducted in the duration as given by Anna University these tests and exams address the course outcomes.The assessment is carried out by the course instructor after each test/exam is completed and the level of attainment of all the COs are computed at the end of the semester.All the students are assigned with course related tasks and assessment will be done based on their performance.Marks are awarded depending on their innovation in solving/answering the tasks.The assignment is a performance assessment tool designed to assess student's knowledge of engineering practices, examinations are also used to measure the overall CO attainment.During pandemic all the exams are conducted in online mode.

Laboratory Course:

For all lab courses students should undergo Viva Voce session in which their understanding and designing/programming skills are tested orally.Marks will be awarded based on their performance.Model exam will be conducted at the end of the semester. The model exam mark and end semester marks are considered for overall CO attainment.

Project Course:

A project course is offered in the final semester.Three reviews are conducted.The assessment during the reviews is considered and the level of attainment of all the Cos are computed at the end of the semester.The grades scored in the end semester examinations are also use to measure the overall CO attainment.

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IV.   **Attainment of course outcomes of all couses with respect to set attainment levels**

CO attainment is calculated by allocating 80% weightage to university examination and 20% weightage to internal assessment process.

Theory course CO Attainment calculation CO attainment

Assessment Tool	*Weightage*	Overall weightage
Internal assessment test, model examination, Assignment, course end survey	**20%**	**100%**
End semester	**80%**	

Laboratory course CO attainment calculation

Assessment Tool	Weightage	Overall weightage
Lab excersise+viva+record work	**20%**	**100%**
End semester practical examination	**80%**	

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Project work CO attainment calculation

Assessment Tool	Weightage	Overall weightage
Lab excersise+viva+record work	20%	100%
End semester practical examination	80%	

The attainment levels are framed as per the following rules.

For both internal and university examination

Level 1	If 50% of students more than threshold
Level 2	If 60% of students more than threshold
Level 3	If 70% of students more than threshold

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V.   Assessment tools and process used for measuring the attainment of each of the program outcomes and program specific outcomes.

Direct Method: Direct method involves the direct assessment of students through end semester examinations,internal assessments, seminar/presentation, viva voce, Mini project and project reviews.

Indirect Method: Indirect method of assessment is done by conducting survey among students

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                    ┌─────────────────────────────────────┐
                    │   PO AND PSO ASSESSMENT TOOLS        │
                    └─────────────────────────────────────┘
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Direct Assessment tool(80%)	Indirect Assessment tool(20%)
End semester examinations	Program exit survey
Internal assessment tests	Alumni survey
Assignments,Seminar, Presentation	Industrial visit feedback
Miniproject	Internship feedback
Project review,Viva-voce	

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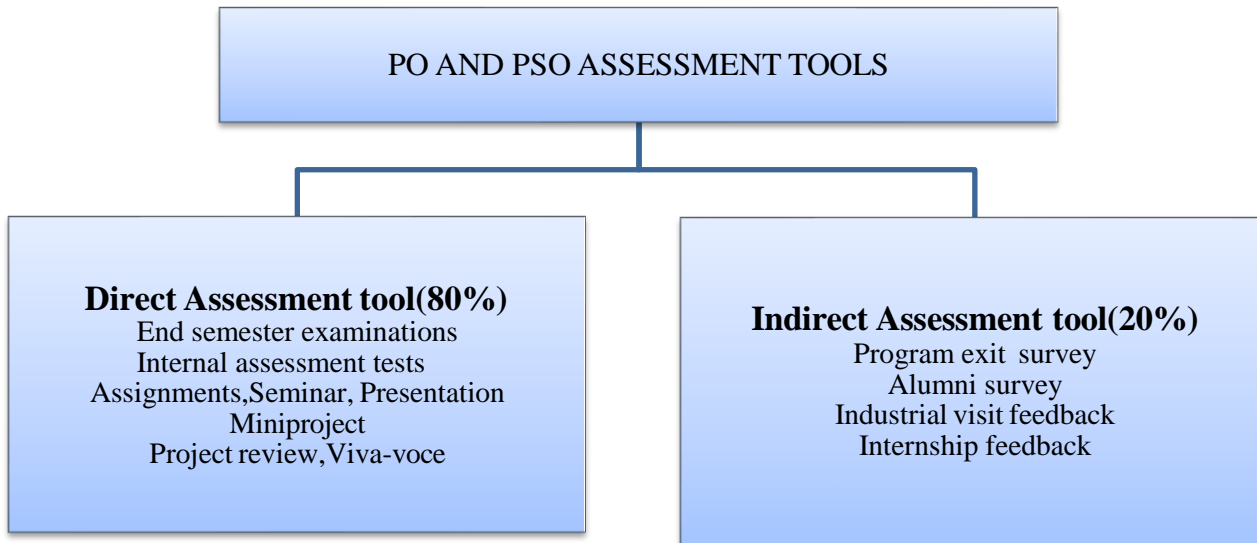Mobile : 9842102628, 7373002628   Email: info@psyec.edu.in   Website : www.psyec.edu.in

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Subject Code	HS3152	Semester	I
	PROFESSIONAL ENGLISH		
CO	**Course Outcome Statement**		
CO1:	To use appropriate words in a professional context		
CO2:	To gain understanding of basic Grammatic structures and use them right context.		
CO3:	To read and infer the denotative and connotative meanings of technical texts		
CO4:	To write definitions, descriptions, narrations and essays on various topics		

CO's-PO's &PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	1	1	1	1	3	3	3	1	3	-	3	-	-	-
2	1	1	1	1	1	3	3	3	1	3	-	3	-	-	-
3	2	3	2	3	2	3	3	3	2	3	3	3	-	-	-
4	2	3	2	3	2	3	3	3	2	3	3	3	-	-	-
5	2	3	3	3	-	3	3	3	2	3	-	3	-	-	-
AVg.	1.6	2.2	1.8	2.2	1.5	3	3	3	1.6	3	3	3	-	-	-

Subject Code	PH3151	Semester	I

	ENGINEERING PHYSICS
CO	**Course Outcome Statement**
CO1	Understand the importance of mechanics.
CO2:	Express their knowledge in electromagnetic waves.
CO3	Demonstrate a strong foundational knowledge in oscillations,optics and lasers.
CO4	Understand the importance of quantum physics.
CO5	Comprehend and apply quantum mechanical principles towards the formation of energy bands.

CO's-PO's &PSO's MAPPING

CO	PO	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	1	1	1	-	-	-	-	-	-	-	-	-
2	3	3	2	1	2	1	-	-	-	-	-	-	-	-	-
3	3	3	2	2	2	1	-	-	-	-	-	1	-	-	-
4	3	3	1	1	2	1	-	-	-	-	-	-	-	-	-
5	3	3	1	1	2	1	-	-	-	-	-	-	-	-	-
AV	3	3	1.6	1.2	1.8	1	-	-	-	-	-	1	-	-	-

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Subject Code	MA3151	Semester	I

MATRICS AND CALCULUS	
CO	**Course Outcome Statement**
CO1	Use the matrix algebra methods for solving practical problems.
CO2	Applydifferentialcalculustoolsinsolvingvariousapplicationproblems.
CO3	Able to use differential calculus ideas on several variable functions.
CO4	Apply different methods of integration in solving practical problems.
CO5	Apply multiple integral ideas in solving areas,volumes and other practical problems

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO2	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO3	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO4	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
CO5	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
Avg	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-

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Subject Code	CY3151	Semester	I
	ENGINEERING CHEMISTRY		
CO	Course Outcome Statement		
CO1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.		
CO2	To identify and apply basic concepts of nano science and nanotechnology in designing the synthesis of nano materials for engineering and technology applications.		
CO3	To apply the knowledge of phase rule and composites for material selection requirements.		
CO4	To recommend suitable fuels for engineering processes and applications.		
CO5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	1	-	1	1	-	-	-	-	1	-	-	-
2	2	-	-	1	-	2	2	-	-	-	-	-	-	-	-
3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
4	3	1	1	-	-	1	2	-	-	-	-	-	-	-	-
5	3	1	2	1	-	2	2	-	-	-	-	2	-	-	-
CO	2.8	1.3	1.6	1	-	1.5	1.8	-		-	-	1.5	-	-	-

Subject Code	GE3151	Semester	I
	PROBLEM SOLVING AND PYTHON PROGRAMMING		
CO	**Course Outcome Statement**		
CO1:	Develop algorithmic solutions to simple computational problems.		
CO2:	Develop and execute simple Python programs.		
CO3:	Write simple Python programs using conditionals and loops for solving problems.		
CO4:	Decompose a Python program in to functions.		
CO5	Represent compound data using Python lists, tuples, dictionaries etc.		
CO6	Read and write data from/to files in Python programs		

CO's-PO's& PSO'S mapping

CO's	PO's												PSO's	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	3	3	3	3	2	-	-	-	-	-	2	2	3	3
2	3	3	3	3	2	-	-	-	-	-	2	2	3	-
3	3	3	3	3	2	-	-	-	-	-	2	-	3	-
4	2	2	-	2	2	-	-	-	-	-	1	-	3	-
5	1	2	-	-	1	-	-	-	-	-	1	-	2	-
6	2	2	-	-	2	-	-	-	-	-	1	-	2	-
AVg.	2	3	3	3	2	-	-	-	-	-	2	2	3	3

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Subject Code	GE3172	Semester	I
	ENGLISH LABORATORY		
CO	Course Outcome Statement		
CO1	To listen to and comprehend general as well as complex academic information		
CO2	To listen to and understand different points of view in a discussion		
CO3	To speak fluently and accurately in formal and informal communicative contexts		
CO4	To describe products and processes and explain their uses and purposes clearly and		
CO5	To express their opinions effectively in both formal and informal discussions		

CO's-PO's&PSO'sMAPPING

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
3	2.4	2.6	1	1										

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Subject Code	BS3171	Semester	I
	PHYSICS AND CHEMISTRY LABORATORY		
CO	**Course Outcome Statement**		
CO1	Understand the functioning of various physics laboratory equipment.		
CO2	Use graphical models to analyze laboratory data.		
CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.		
CO4	Access,process and analyze scientific information		
CO5	Solve problems individually and collaboratively		

CO's-PO's&PSO'sMAPPING

CO's	PO's												PSO's	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	3	3	3	3	1	3	3	3	3	3	3	3	-	-
2	3	3	3	3	1	3	3	3	3	3	3	3	-	-
3	3	3	3	3	1	3	3	3	3	3	3	3	-	-
4	3	3	3	3	1	3	3	3	3	3	3	3	-	-
5	3	3	3	3	1	3	3	3	3	3	3	3	-	-
AVg.	3	3	3	3	1	3	3	3	3	3	3	3	-	-

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Subject Code	HS3252	Semester	II
	Professional English - II		
CO	**Course Outcome Statement**		
CO1	To compare and contrast products and ideas in technical text. **CO3:**		
CO2	To identify and report cause and effects in events, industrial processes through technical texts		
CO3	To analyse problems in order to arrive at feasible solutions and communicate them in thewritten format.		
CO4	To present their ideas and opinions in a planned and logical manner		
CO5	To draft effective resumes in the context of job search		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	3	3	3	3	2	3	3	3	-	-	-
2	3	3	3	3	3	3	3	3	2	3	3	3	-	-	-
3	3	3	3	3	3	3	3	3	2	3	3	3	-	-	-
4	3	3	3	3	2	3	3	3	2	3	3	3	-	-	-
5	-	-	-	-	-	-	-	-	3	3	3	3	-	-	-
AVg.	**3**	**3**	**3**	**3**	**2.75**	**3**	**3**	**3**	**2.2**	**3**	**3**	**3**	**-**	**-**	**-**

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Subject Code	MA3251	Semester	II
	Statistics and Numerical Methods		
CO	**Course Outcome Statement**		
CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.		
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.		
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems		
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
CO2	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
CO3	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
CO4	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
CO5	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
Avg	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-

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Subject Code	BE3254	Semester	II
	Electrical and InstrumentationEngineering		
CO	**Course Outcome Statement**		
CO1	Explain the working principle of electrical machines		
CO2	Analyze the output characterizes of electrical machines		
CO3	Choose the appropriate electrical machines for various applications		
CO4	Explain the types and operating principles of measuring instruments		
CO5	Explain the basic power system structure and protection schemes		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	1	-	-	-	-	1	-	-	-	-	-	-	-
2	2	1	1	-	-	-	-	1	-	-	-	-	-	-	-
3	2	1	1	-	-	-	-	1	-	-	-	-	-	-	-
4	2	1	1	-	-	-	-	1	-	-	-	-	-	-	-
5	2	1	1	-	-	-	-	1	-	-	-	-	-	-	-
CO	**2**	**1**	**1**	-	-	-	-	**1**	-	-	-	-	-	-	-

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Subject Code	PH3254	Semester	II
	Physics for ElectronicsEngineering		
CO	**Course Outcome Statement**		
CO1	know basics of crystallography and its importance for varied materials properties		
CO2	gain knowledge on the electrical and magnetic properties of materials and their applications		
CO3	understand clearly of semiconductor physics and functioning of semiconductor devices		
CO4	understand the optical properties of materials and working principles of various optical devices		
CO5	appreciate the importance of nanotechnology and nanodevices.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-
2	3	2	1	2	-	2	-	-	-	-	-	-	-	-	-
3	3	2	2	-	2	-	-	-	-	-	-	-	-	-	-
4	3	-	1	-	3	2	3	-	-	-	-	1	-	-	-
5	3	-	2	1	-	2	-	-	-	-	-	1	-	-	-
AVG	3	2	1.4	1.5	2.5	2	3					1			

Subject Code	GE3251	Semester	II
		Engineering Graphics	

CO	Course Outcome Statement
CO1	Use BIS conventions and specifications for engineering drawing.
CO2	Construct the conic curves, involutes and cycloid.
CO3	Solve practical problems involving projection of lines
CO4	Draw the orthographic, isometric and perspective projections of simple solids.
CO5	Draw the development of simple solids.

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
2	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
3	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
4	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
5	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
CO	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-

Subject Code	EC3251	Semester	II
		Circuit Analysis	
CO		**Course Outcome Statement**	
CO1	Apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh current and node voltage method for analysis of DC and AC circuits.		
CO2	Apply suitable network theorems and analyze AC and DC circuits		
CO3	Analyze steady state response of any R, L and C circuits		
CO4	Analyze the transient response for any RC, RL and RLC circuits and frequency responseof parallel and series resonance circuits.		
CO5	Analyze the coupled circuits and network topologies		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	1		1	-	-	-	-	-
2	3	3	2	2	-	-	-	1		1	-	-	-	-	-
3	3	3	3	3	-	-	-	1		1	-	-	-	-	-
4	3	3	3	3	-	-	-	1		1	-	-	-	-	-
5	3	3	3	2	-	-	-	1		1	-	-	-	-	-
CO	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**1**		**1**	**-**	**-**	**-**	**-**	**-**

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Subject Code	GE3271	Semester	II
	Engineering Practices Laboratory		
CO	**Course Outcome Statement**		
CO1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbingwork; Saw; plan; make joints in wood materials used in common household wood work.:		
CO2	Wire various electrical joints in common household electrical wire work.		
CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
2	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
3	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
CO	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1

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Subject Code	EC3271	Semester	II
	Circuits Analysis Laboratory		
CO	Course Outcome Statement		
CO1	Design RL and RC circuits.		
CO2	Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	1	-	1	-	-	-	-	-
2	3	3	2	2	-	-	-	1	-	1	-	-	-	-	-
3	3	3	3	3	-	-	-	1	-	1	-	-	-	-	-
4	3	3	3	3	-	-	-	1	-	1	-	-	-	-	-
5	3	3	3	2	-	-	-	1	-	1	-	-	-	-	-
CO	3	3	3	2	-	-	-	1	-	1	-	-	-	-	-

Subject Code	GE3272	Semester	II
	Communication Laboratory		
CO	**Course Outcome Statement**		
CO1	Speak effectively in group discussions held in formal/semi formal contexts.		
CO2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions		
CO3	Write emails, letters and effective job applications.		
CO4	Write critical reports to convey data and information with clarity and precision		
CO5	Give appropriate instructions and recommendations for safe execution of tasks		

CO'sPO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	3	3	3	1	3	3	3	3	3	3	3	-	-	-
2	2	3	3	3	1	3	3	3	3	3	3	3	-	-	-
3	2	2	3	3	1	3	3	3	3	3	3	3	-	-	-
4	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-
5	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-
AVg.	2.4	2.8	3	3	1.8	3	3	3	3	3	3	3	-	-	-

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Subject Code	MA3355	Semester	III
		RANDOM PROCESSES AND LINEAR ALGEBRA	
CO		**Course Outcome Statement**	
CO1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.		
CO2	Demonstrate accurate and efficient use of advanced algebraic techniques.		
CO3	Apply the concept of random processes in engineering disciplines.		
CO4	Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon.		
CO5	Understand the basic concept sof one and two dimensional random variables and apply them to model engineering problems.		

CO's-PO's & PSO'S mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
CO2	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
CO3	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
CO4	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
CO5	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
CO6	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-

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Subject Code	CS3362	Semester	III
	CPROGRAMMINGANDDATASTRUCTURES LABORATORY		
CO	**Course Outcome Statement**		
CO1	Use different constructs of C and develop applications		
CO2	Writefunctionstoimplementlinearandnon-lineardatastructureoperations		
CO3	CO3:Suggestandusetheappropriatelinear/non-lineardatastructureoperationsforagiven problem		
CO4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval		
CO5	Implement Sorting and searching algorithms for a given application		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	3	1	2	2	1	1	-	1	2	1	3	2	1	3
2	1	2	1	2	2	-	-	-	1	1	1	2	2	2	2
3	2	3	1	2	3	-	-	-	1	1	1	2	2	1	2
4	2	1	-	1	1	-	-	-	2	1	1	2	2	3	1
5	1	2	1	2	2	1	1	-	1	2	1	3	2	2	3
Avg	2	2	1	2	2	1	1	-	1	1	1	2	2	2	2

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Subject Code	EC3354	Semester	III
		SIGNALS AND SYSTEMS	
CO		**Course Outcome Statement**	
CO1	Determine if a given system is linear/causal/stable		
CO2	determine the frequency components present in a deterministic signal		
CO3	Characterize continuous LTI systems in the time domain and frequency domain		
CO4	characterize discrete LTI systems in the time domain and frequency domain		
CO5	compute the output of an LTI system in the time and frequency domains		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	-	3	-	3	2	-	-	-	-	-	3	-	-	1
2	3	-	3	-	-	2	-	-	-	-	-	3	-	3	-
3	3	3	-	-	3	2	-	-	-	-	-	3	2	-	-
4	3	3	-	-	3	2	-	-	-	-	-	3	-	3	1
5	3	3	-	3	3	2	-	-	-	-	-	3	-	3	1
CO	3	3	3	3	3	2	-	-	-	-	-	3	2	3	1

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Subject Code	EC3353	Semester	III

	ELECTRONIC DEVICES AND CIRCUITS		
CO	Course Outcome Statement		
CO1	Explain the structure and working operation of basic electronic devices.		
CO2	Design and analyze amplifiers.		
CO3	Analyze frequency response of BJT and MOSFET amplifiers		
CO4	Design and analyze feedback amplifiers and oscillator principles.		
CO5	Design and analyze power amplifiers and supply circuits		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	2	1	-	-	-	-	-	1	2	1	1
2	3	2	2	3	2	2	-	-	-	-	-	1	2	1	1
3	3	3	3	2	1	2	-	-	-	-	-	1	2	1	1
4	3	3	2	3	2	2	-	-	-	-	-	1	2	1	1
5	3	2	3	2	2	1	-	-	-	-	-	1	2	1	1
CO	3	3	3	3	2	2	-	-	-	-	-	1	2	1	1

Subject Code	EC3351	Semester	III

	CONTROL SYSTEMS

CO	**Course Outcome Statement**
CO1	Compute the transfer function of different physical systems.
CO2	Analyse the time domain specification and calculate the steady state error.
CO3	Illustrate the frequency response characteristics of open loop and closed loop system response.
CO4	Analyse the stability using Rout hand root locus techniques.
CO5	Illustrate the state space model of a physical system and discuss the concepts of sampled data control system.

CO's-PO's&PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	2	2	2	-	-	-	-	2	3	3	3	3
2	3	3	3	3	2	3	-	-	-	-	2	2	3	3	3
3	3	2	3	3	2	2	-	-	-	-	2	3	3	2	3
4	3	3	3	2	2	2	-	-	-	-	2	2	3	3	3
5	2	2	3	3	2	3	-	-	-	-	2	3	2	2	3
CO	3	3	3	3	2	2	-	-	-	-	2	3	3	3	3

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Subject Code	EC3352	Semester	III

	DIGITAL SYSTEMS DESIGN

CO	Course Outcome Statement
CO1	Use Boolean algebra and simplification procedures relevant to digital logic.
CO2	Design various combinational digital circuits using logic gates.
CO3	Analyse and design synchronous sequential circuits.
CO4	Analyse and design asynchronous sequential circuits..
CO5	Build logic gates and use programmable devices

CO's-PO's&PSO'smapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	2	-	2	-	-	-	-	3	3	3	3	2
2	-	-	-	-	-	-	-	-	-	-	2	1	2	3	2
3	-	3	3	2	-	2	-	-	-	-	2	2	3	3	2
4	-	-	-	-	-	-	-	-	-	-	3	2	2	3	1
5	-	3	3	3	-	-	-	-	-	-	2	2	3	3	2
CO	3	2.6	2.6	2.3	-	2	-	-	-	-	2	2	3	3	2

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Subject Code	EC3361	Semester	III
	ELECTRONIC DEVICES AND CIRCUITS LABORATORY		
CO	**Course Outcome Statement**		
CO1	Characteristics of PN Junction Diode and Zener diode.		
CO2	Design and Testing of BJT and MOSFET amplifiers.		
CO3	Operation of power amplifiers		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	2	3	3	2	1	-	-	-	-	-	1	2	1	1
2	2	2	3	3	2	1	-	-	-	-	-	1	2	1	1
3	2		2		1	1	-	-	-	-	-	1	2	1	1
4	-	-	-	-	3	1	-	-	-	-	-	1	2	1	1
5	-	-	-	-	2	1	-	-	-	-	-	1	2	1	1
CO	**2**	**2**	2.6	**3**	**2**	1	-	-	-	-	-	**1**	**2**	**1**	**1**

Subject Code	**CS3362**	**Semester**	**III**
	CPROGRAMMINGANDDATASTRUCTURES LABORATORY		
CO	**Course Outcome Statement**		
CO1	Use different constructs of C and develop applications		
CO2	Writefunctionstoimplementlinearandnon-lineardatastructureoperations		
CO3	CO3:Suggestandusetheappropriatelinear/non-lineardatastructureoperationsforagiven problem		
CO4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval		
CO5	Implement Sorting and searching algorithms for a given application		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	3	1	2	2	1	1	-	1	2	1	3	2	1	3
2	1	2	1	2	2	-	-	-	1	1	1	2	2	2	2
3	2	3	1	2	3	-	-	-	1	1	1	2	2	1	2
4	2	1	-	1	1	-	-	-	2	1	1	2	2	3	1
5	1	2	1	2	2	1	1	-	1	2	1	3	2	2	3
Avg	2	2	1	2	2	1	1	-	1	1	1	2	2	2	2

Subject Code	EC3452	Semester	IV
	ELECTROMAGNETIC FIELDS		
CO	**Course Outcome Statement**		
CO1	Relate the fundamentals of vector, coordinate system to electromagnetic concepts		
CO2	Analyze the characteristics of Electrostatic field		
CO3	Interpret the concepts of Electric field in material space and solve the boundary conditions		
CO4	Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions.		
CO5	Determine the significance of time varying fields		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	2	1	1	1	-	2	1	-	-	1	-	2
2	2	2	3	3	2	2	2	-	-	1	1	2
3	2	2	3	2	2	2	1	-	-	1	1	2
4	2	2	3	2	2	2	1	-	-	1	1	2
5	2	2	2	2	2	2	1	-	-	2	2	1
CO	**2**	**2**	**2**	**2**	**2**	**2**	**1**	-	-	**1**	**1**	**2**

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(Approved by AICTE & Affiliated to Anna University, Chennai)

Madurai – Sivagangai Highway, Arasanoor, Thirumansolai Post, Sivagangai Dt. – 630 561, Tamilnadu
Mobile : 9842102628, 7373002628   Email: info@psyec.edu.in   Website : www.psyec.edu.in

City Office : 10, Pandian Saraswathi St, Sivagami Nagar, Narayanapuram, Madurai - 625 014. Telefax- 0452 2682338, Mobile : 98423-02628

Subject Code	EC3401	Semester	IV
	NETWORKS AND SECURITY		
CO	Course Outcome Statement		
CO1	Explain the Network Models, layers and functions. .		
CO2	Categorize and classify the routing protocols.		
CO3	List the functions of the transport and application layer.		
CO4	Evaluate and choose the net work security mechanisms.		
CO5	Discuss the hardware security attacks and counter measures		

CO's-PO's&PSO'sMAPPING

C	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO1	PO1	PO1	PSO	PSO	PSO
1	2	-	-	-	-	-	-	-	-	-	1	-	2	1	1
2	2	3	3	2	-	-	-	-	-	-	-	-	2	1	1
3	1	-	-	2	-		-	-	-	-	-	-	2	1	1
4	1	-	-	2	-	-	-	-	-	-	-	-	2	1	1
5	1	2	3	3	-	-	-	-	-	-	-	3	2	1	1
C	1.4	2.5	3	2.2	-	-	-	-	-	-	1	3	2	1	1

Subject Code	EC3492	Semester	IV
		DIGITAL SIGNAL PROCESSING	
CO		**Course Outcome Statement**	
CO1	Apply DFT for the analysis of digital signals and systems		
CO2	Design IIR and FIR filters		
CO3	Characterize the effects of finite precision representation on digital filters		
CO4	Design multirate filters		
CO5	Apply adaptive filters appropriately in communication systems		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	2	2	-	-	-	-	1	1	3	3	2
2	3	3	3	3	2	2	-	-	-	-	1	1	2	2	2
3	3	3	2	2	2	2	-	-	-	-	1	1	1	2	2
4	3	3	2	2	3	1	-	-	-	-	1	1	2	2	3
5	3	2	2	2	3	2	-	-	-	-	1	1	2	2	1
CO	3	3	2	2	2	2	-	-	-	-	1	1	2	2	2

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Subject Code	EC3491	Semester	IV

COMMUNICATION SYSTEMS	
CO	Course Outcome Statement
CO1	Gain knowledge in amplitude modulation techniques
CO2	Understand the concepts of Random Process to the design of communication systems
CO3	Gain knowledge in digital techniques
CO4	Gain knowledge in sampling and quantization
CO5	Understand the importance of demodulation t echniques

CO's-PO's&PSO'sMAPPING

CO	Pos											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	3	3	3	2	1	1	-	-	-	1	1
2	3	3	3	3	2	1	1	-	-	-	1	1
3	3	3	3	3	3	1	1	-	-	-	1	1
4	3	3	3	3	3	1	1	-	-	-	1	1
5	3	3	3	3	2	1	1	-	-	-	1	1
Avg	3	3	3	3	2.5	1	1	-	-	-	1	1

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Subject Code	GE3451	Semester	IV
	ENVIRONMENTALSCIENCESANDSUSTAINABILITY		
CO	Course Outcome Statement		
CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.		
CO2	To identify the causes, effects of environmental pollution and natural disasters and contributeto the preventive measures in the society.		
CO3	Toidentifyandapplytheunderstandingofrenewableandnon-renewableresourcesand contribute to the sustainable measures to preserve them for future generations.		
CO4	Torecognizethedifferentgoalsofsustainabledevelopmentandapplythemforsuitable technological advancement and societal development.		
CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization		

CO's-PO's&PSO'sMAPPING

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2	1	-	-	-	2	3	-	-	-	-	2	-	-	-
2	3	2	-	-	-	3	3	-	-	-	-	2	-	-	-
3	3	-	1	-	-	2	2	-	-	-	-	2	-	-	-
4	3	2	1	1	-	2	2	-	-	-	-	2	-	-	-
5	3	2	1	-	-	2	2	-	-	-	-	1	-	-	-
Avg.	2.8	1.8	1	1	-	2.2	2.4	-	-	-	-	1.8	-	-	-

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Subject Code	EC3461	Semester	IV
COMMUNICATIONSYSTEMSLABORATORY			

CO	Course Outcome Statement
CO1	Design AM, FM & Digital Modulators for specific applications.
CO2	Compute the sampling frequency for digital modulation.
CO3	Simulate&validatethevariousfunctionalmodulesofCommunicationsystem.
CO4	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes.
CO5	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of Communication system.

CO's-PO's&PSO'sMAPPING

CO	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	3	3	3	3	3	-	-	-	1	1	1
2	3	3	3	3	3	2	-	-	-	1	1	1
3	3	3	3	3	3	2	-	-	-	1	1	1
4	3	3	3	3	3	3	-	-	-	1	1	1
5	3	3	3	3	3	2	-	-	-	1	1	1
Avg	3	3	3	3	3	2.5	-	-	-	1	1	1

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Subject Code	EC3462	Semester	IV
	LINEAR INTEGRATED CIRCUITS LABORATORY		
CO	**Course Outcome Statement**		
CO1	Analyze various types of feedback amplifier		**B**
CO2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators		
CO3	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave- shaping circuits and multivibrators, filters using SPICE Tool.		
CO4	Design amplifiers,oscillators, D-Aconvertersusing operational amplifiers.		
CO5	Design filters using opamp and perform an experiment on frequency response		

CO's-PO's&PSO'sMAPPING

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

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Subject Code	EC8501	Semester	V
	Digital Communication		
CO	**Course Outcome Statement**		
CO1	Design PCM systems		
CO2	Design and implement base band transmission schemes		
CO3	Design and implement band pass signaling schemes		
CO4	Analyze the spectral characteristics of band pass signaling schemes and their noise performance		
CO5	Design error control coding schemes		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 2	2	2	2	1	-	-	-	-	-	-	-	-	2	-	-
CO 3	2	3	-	1	-	-	-	-	-	-	-	-	2	-	-
CO 4	3	2	2	2	-	-	-	-	-	-	-	-	2	-	-
CO 5	2	1	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 6	3	3	3	3	3	-	-	-	2	2	2	2	3	-	-
Avg	2.33	2.17	2.33	1.75	3.00	-	-	-	2.00	2.00	2.00	2.00	2.17	-	-

Subject Code	EC8553	Semester	V
	Discrete-Time Signal Processing		
CO	**Course Outcome Statement**		
CO1	Apply DFT for the analysis of digital signals and systems		
CO2	Design IIR and FIR filters		
CO3	Characterize the effects of finite precision representation on digital filters		
CO4	Design multirate filters		
CO5	Apply adaptive filters appropriately in communication systems		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	-	-	-	-	-	-	-	-	-	-	2	2	2	-
CO 2	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 3	3	2	-	2	-	-	-	-	-	-	-	-	3	-	-
CO 4	2	3	-	2	-	-	-	-	-	-	-	-	3	-	-
CO 5	2	2	3	2	-	-	-	-	-	-	-	-	3	-	-
CO 6	3	3	3	3	2	-	-	-	2	2	2	2	3	-	-
Avg	2.33	2.40	3.00	2.25	2.00	-	-	-	2.00	2.00	2.00	2.00	2.67	2.00	-

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Subject Code	EC8552	Semester	V
	Computer Architecture and Organization		
CO	**Course Outcome Statement**		
CO1	Describe data representation, instruction formats and the operation of a digital computer		
CO2	Illustrate the fixed point and floating-point arithmetic for ALU operation		
CO3	Discuss about implementation schemes of control unit and pipeline performance		
CO4	Explain the concept of various memories, interfacing and organization of multiple processors		
CO5	Discuss parallel processing technique and unconventional architectures		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	3	-	-	-	-	-	-	-	-	-	-	1	-	2	-
CO 2	3	2	-	2	-	-	-	-	-	-	-	-	-	2	-
CO 3	3	-	-		-	-	-	-	-	-	-	-	-	2	-
CO 4	2	2	-	2	-	-	-	-	-	-	-	2	-	3	-
CO 5	3	2	-	2	-	-	-	-	-	-	-	2	-	3	-
CO 6	3	2	-	-	-	-	-	-	-	-	-	1	-	3	-
Avg	2.83	2.00	-	2.00	-	-	-	-	-	-	-	1.50	-	2.50	-

Subject Code	EC8551	Semester	V
	Communication Networks		
CO	**Course Outcome Statement**		
CO1	Identify the components required to build different types of networks		
CO2	Choose the required functionality at each layer for given application		
CO3	Identify solution for each functionality at each layer		
CO4	Trace the flow of information from one node to another node in the network		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	3	-	-	-	-	-	-	-	-	-	-	-	3	2	-
CO 2	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO 3	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 4	2	3	2	-	-	-	-	-	-	-	-	-	2	2	-
CO 5	3	1	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 6	3	2	3	2	3	-	-	-	2	2	2	2	3	-	-
Avg	2.67	2.00	2.50	2.00	3.00	-	-	-	2.00	2.00	2.00	2.00	2.50	2.00	-

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Subject Code	CE8005	Semester	V
	AIR POLLUTION AND CONTROL ENGINEERING		
CO	**Course Outcome Statement**		
CO1	an understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management		
CO2	ability to identify, formulate and solve air and noise pollution problems		
CO3	ability to design stacks and particulate air pollution control devices to meet applicable standards		
CO4	Ability to select control equipment		
CO5	Ability to ensure quality, control and preventive measures		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1 L5	3	3	3	3	-	-	-	1	-	1	-	1			
2 L4	3	3	3	2	-	-	-	1	-	1	-	1			
3 L2	2	1	2	1	-	-	-	1	-	1	-	1			
4 L5	3	3	3	3	-	-	-	1	-	1	-	1			
5 L4	3	3	3	2	-	-	-	1	-	1	-	1			
6 L4	3	3	3	2	-	-	-	1	-	1	-	1			
AVg.	2.8	2.6	3	2.1	-	-	-	1	-	1	-	1			

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Subject Code	GE8077	Semester	V
	Total Quality Management		
CO	**Course Outcome Statement**		
CO1	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	-	3	-	-	-	-	-	-	-	-	-	3	2	-	3
2	-	-	-	-	-	3	-	-	-	-	-	3	-	2	-
3	--	-	-	-	3	-	-	-	3	-	-	-	-	2	3
4	-	2	-	-	3	2	3	2	-	-	-	3	3	2	-
5	-	-	3	-	-	3	3	2	-	-	-	-	-	-	-
AVg.	-	2.5	3	-	3	2.6	3	2	3	-	-	3	2.5	2	3

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Subject Code	EC8562	Semester	V
	Digital Signal Processing laboratory		
CO	**Course Outcome Statement**		
CO1	Carryout basic signal processing operations		
CO2	Demonstrate their abilities towards MATLAB based implementation of various DSP systems		
CO3	Analyze the architecture of a DSP Processor		
CO4	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals		
CO5	Design a DSP system for various applications of DSP		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	-	-	-	-	-	-	-	-	-	-	2	2	2	-
CO 2	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 3	3	2	-	2	-	-	-	-	-	-	-	-	3	-	-
CO 4	2	3	-	2	-	-	-	-	-	-	-	-	3	-	-
CO 5	2	2	3	2	-	-	-	-	-	-	-	-	3	-	-
CO 6	3	3	3	3	2	-	-	-	2	2	2	2	3	-	-
Avg	2.33	2.40	3.00	2.25	2.00	-	-	-	2.00	2.00	2.00	2.00	2.67	2.00	-

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Subject Code	EC8561	Semester	V
	Communication Systems Laboratory		
CO	**Course Outcome Statement**		
CO1	Simulate & validate the various functional modules of a communication system		
CO2	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes		
CO3	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system		
CO4	Simulate end-to-end communication Link		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	2	1	1	-	-	-	1	1	-	-	-
2	3	3	3	3	2	1	1	-	-	-	1	1	-	-	-
3	3	3	3	3	3	1	1	-	-	-	1	1	-	-	-
4	3	3	3	3	3	1	1	-	-	-	1	1	-	-	-
5	3	3	3	3	2	1	1	-	-	-	1	1	-	-	-
Avg	3	3	3	3	2.5	1	1	-	-	-	1	1	-	-	-

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Subject Code	EC8563	Semester	V
	Communication Networks Laboratory		
CO	**Course Outcome Statement**		
CO1	Communicate between two desktop computers Program using sockets.		
CO2	Implement the different protocols		
CO3	Program using sockets.		
CO4	Implement and compare the various routing algorithms		
CO5	Use the simulation tool.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	3	-	-	-	-	-	-	-	-	-	-	-	3	2	-
CO 2	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO 3	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 4	2	3	2	-	-	-	-	-	-	-	-	-	2	2	-
CO 5	3	1	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 6	3	2	3	2	3	-	-	-	2	2	2	2	3	-	-
Avg	2.67	2.00	2.50	2.00	3.00	-	-	-	2.00	2.00	2.00	2.00	2.50	2.00	-

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Subject Code	EC8691	Semester	VI
	Microprocessors and Microcontrollers		
CO	Course Outcome Statement		
CO1	Understand and execute programs based on 8086 microprocessor..		
CO2	Design Memory Interfacing circuits		
CO3	Design and interface I/O circuits.		
CO4	Design and implement 8051 microcontroller based systems		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	3		2	-	-	-	-	-	-	-	-	-	2	-
CO 2	2	2	3	2	-	-	-	-	-	-	-	-	-	2	-
CO 3	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO 4	2	3	3	2	2	-	-	-	-	-	-	-	-	2	-
CO 5	2	3	3	2	2	-	-	-	2	2	-	2	-	3	-
CO 6	3	3	3	3	3	-	-	-	2	2	2	2	-	3	-
Avg	2.33	2.67	3.00	2.20	2.33	-	-	-	2.00	2.00	2.00	2.00	-	2.33	-

Subject Code	EC8095	Semester	VI
	VLSI Design		
CO	**Course Outcome Statement**		
CO1	Realize the concepts of digital building blocks using MOS transistor.		
CO2	Design combinational MOS circuits and power strategies.		
CO3	Design and construct Sequential Circuits and Timing systems.		
CO4	Design arithmetic building blocks and memory subsystems.		
CO5	Apply and implement FPGA design flow and testing.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO 2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	3
CO 3	2	2	3	-	2	-	-	-	-	-	-	-	-	-	3
CO 4	2	1	3	-	-	-	-	-	-	-	-	-	-	-	3
CO 5	2	2	3	-	3	-	-	-	-	-	-	-	-	2	3
CO 6	2	2	3	3	3	-	-	-	2	2	2	2	-	-	3
Avg	2.17	2.00	3.00	3.00	2.67	-	-	-	2.00	2.00	2.00	2.00	-	2.00	3.00

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Subject Code	MG8591	Semester	VI
	Principles of Management		
CO	**Course Outcome Statement**		
CO1	Upon completion of the course, students will be able to have clear understanding		
CO2	Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3		-	-	-	1	-	-	-	-	-	-	2	1	1
2	-	1	1	-	-	-	-	-	-	-	-	-	2	1	-
3	1		-	2	-	-	1	-	2	-	1	1	-	-	2
4	-	1	1	1	2	-	-	1	2	-	-	-	1	1	1
5	1		-	-	1	1	-	-	-	3	-	1	1	-	1
AVg.	1.66	1	1	1.5	1.5	1	1	1	2	3	1	1	1.5	1	1.25

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Subject Code	EC8651	Semester	VI
	Transmission Lines and RF Systems		
CO	**Course Outcome Statement**		
CO1	Explain the characteristics of transmission lines and its losses		
CO2	Write about the standing wave ratio and input impedance in high frequency transmission lines		
CO3	Analyze impedance matching by stubs using smith charts		
CO4	Analyze the characteristics of TE and TM waves		
CO5	Design a RF transceiver system for wireless communication		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
2	3	2	2	3	2	1	-	-	-	1	-	1	2	1	1
3	3	3	3	2	1	2	-	-	-	1	-	1	2	1	1
4	3	3	2	3	2	1	-	-	-	1	-	1	2	1	1
5	3	2	3	2	2	1	-	-	-	1	-	1	2	1	1
Avg	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**-**	**1**	**-**	**1**	**2**	**1**	**1**

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Subject Code	EC8681	Semester	VI
	Microprocessors and Microcontrollers Laboratory		
CO	Course Outcome Statement		
CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations		
CO2	Interface different I/Os with processor		
CO3	Generate waveforms using Microprocessors		
CO4	Execute Programs in 8051		
CO5	Explain the difference between simulator and Emulator		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	3		2	-	-	-	-	-	-	-	-	-	2	-
CO 2	2	2	3	2	-	-	-	-	-	-	-	-	-	2	-
CO 3	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO 4	2	3	3	2	2	-	-	-	-	-	-	-	-	2	-
CO 5	2	3	3	2	2	-	-	-	2	2	-	2	-	3	-
CO 6	3	3	3	3	3	-	-	-	2	2	2	2	-	3	-
Avg	2.33	2.67	3.00	2.20	2.33	-	-	-	2.00	2.00	2.00	2.00	-	2.33	-

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Subject Code	EC8701	Semester	VII
	Antennas and Microwave Engineering		
CO	Course Outcome Statement		
CO1	Apply the basic principles and evaluate antenna parameters and link power budgets		
CO2	Design and assess the performance of various antennas		
CO3	Design a microwave system given the application specifications		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	3	2	1	-	2	-	-	-	-	-	-	-	3	-	-
CO 2	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO 3	3	2	1	-	2	-	-	-	-	-	-	-	3	-	-
CO 4	2	2	3	2	2	-	-	-	-	-	-	-	3	-	-
CO 5	3	2	2	2	2	-	-	-	-	-	-	2	3	-	-
CO 6	2	2	-	-	-	-	2	-	-	-	-	1	3	-	-
Avg	2.67	2.00	1.75	2.00	2.00	-	-	-	-	-	-	1.50	3.00	-	-

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Subject Code	EC8751	Semester	VII
	Optical Communication		
CO	Course Outcome Statement		
CO1	Realize basic elements in optical fibers, different modes and configurations.		
CO2	Analyze the transmission characteristics associated with dispersion and polarization techniques.		
CO3	Design optical sources and detectors with their use in optical communication system		
CO4	Construct fiber optic receiver systems, measurements and coupling techniques		
CO5	Design optical communication systems and its networks.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO 2	2	2	-	2	-	-	-	-	-	-	-	-	3	-	-
CO 3	2	3	-	1	-	-	-	-	-	-	-	-	2	-	-
CO 4	2	1	-	3	-	-	-	-	-	-	-	-	2	-	-
CO 5	3	2	-	1	-	-	-	-	-	-	-	-	1	-	-
CO 6	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Avg	2.50	2.00	-	1.75	-	-	-	-	-	-	-	-	2.00	-	-

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Subject Code	EC8791	Semester	VII
	Embedded and Real Time Systems		
CO	Course Outcome Statement		
CO1	Describe the architecture and programming of ARM processor		
CO2	Outline the concepts of embedded systems		
CO3	Explain the basic concepts of real time operating system design		
CO4	Model real-time applications using embedded-system concepts		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	2	2	-	-	-	-	-	-	-	3	2	1
2	3	3	3	2	2	-	-	-	-	-	-	-	3	2	1
3	3	3	2	2	2	-	-	-	-	-	-	-	2	1	1
4	3	3	2	2	2	-	-	-	-	-	-	-	3	3	2
5	3	3	2	3	3	-	-	-	-	-	-	-	3	3	2
Avg	3	3	2.6	2.2	2.2	-	-	-	-	-	-	-	2.8	2.2	1.4

Subject Code	EC8702	Semester	VII
	Ad hoc and Wireless Sensor Networks		
CO	**Course Outcome Statement**		
CO1	Know the basics of Ad hoc networks and Wireless Sensor Networks		
CO2	Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement		
CO3	Apply the knowledge to identify appropriate physical and MAC layer protocols		
CO4	Understand the transport layer and security issues possible in Ad hoc and sensor networks		
CO5	Be familiar with the OS used in Wireless Sensor Networks and build basic modules		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	2	2	1	-	-	-	-	2	2	3	1	1
2	3	3	2	2	2	1	-	-	-	-	-	2	3	2	2
3	3	3	3	2	2	1	-	-	-	-	-	3	3	2	2
4	3	3	3	3	2	2	-	-	-	-	-	2	2	1	2
5	2	-	1	1	3	2	-	-	-	-	-	2	2	2	1
CO	2.8	3	2.2	2	2.2	1.4	-	-	-	-	2	2.2	2.6	1.6	1.6

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Subject Code	OME754	Semester	VII
	Industrial Safety		
CO	**Course Outcome Statement**		
CO1	Students must be able to identify and prevent chemical,environmental mechanical,free hazard through analysis and apply proper safety techniques on safety engineering and management		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	1	1	3	2	2	3	3	1	3	3	3	3
2	2	3	2	2	1	3	2	3	3	2	1	3	3	3	3
3	2	2	2	2	1	2	2	2	3	2	1	2	3	3	3
4	3	3	3	2	2	3	2	2	3	2	1	3	3	3	3
5	3	2	3	2	2	3	2	2	3	2	2	3	3	3	3
CO	3	3	3	2	1	3	2	2	3	2	1	3	3	3	3

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Subject Code	EC8711	Semester	VII
	Embedded Laboratory		
CO	**Course Outcome Statement**		
CO1	Write programs in ARM for a specific Application		
CO2	Interface memory, A/D and D/A convertors with ARM system		
CO3	Analyze the performance of interrupt		
CO4	Write program for interfacing keyboard, display, motor and sensor.		
CO5	Formulate a mini project using embedded system		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	2	2	-	-	-	-	-	-	-	3	2	1
2	3	3	3	2	2	-	-	-	-	-	-	-	3	2	1
3	3	3	2	2	2	-	-	-	-	-	-	-	2	1	1
4	3	3	2	2	2	-	-	-	-	-	-	-	3	3	2
5	3	3	2	3	3	-	-	-	-	-	-	-	3	3	2
Avg	3	3	2.6	2.2	2.2	-	-	-	-	-	-	-	2.8	2.2	1.4

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Subject Code	EC8761	Semester	VII
	Advanced communication laboratory		
CO	**Course Outcome Statement**		
CO1	Analyze the performance of simple optical link by measurement of losses and Analyzing the mode characteristics of fiber		
CO2	Analyze the Eye Pattern, Pulse broadening of optical fiber and the impact on BER		
CO3	Estimate the Wireless Channel Characteristics and Analyze the performance of Wireless Communication System		
CO4	Understand the intricacies in Microwave System design		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	2	2	2	-	-	-	-	-	1	2	3	3
2	3	3	3	2	2	2	-	-	-	-	-	2	3	2	2
3	3	3	3	2	2	2	-	-	-	-	-	2	2	2	1
4	3	3	3	2	2	2	-	-	-	-	-	2	3	2	2
5	3	3	2	2	1	1	-	-	-	-	-	1	2	3	1
CO	3	3	3	2	2	2	-	-	-	-	-	2	3	2	2

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Subject Code	EC8094	Semester	VIII
	Satellite communication		
CO	Course Outcome Statement		
CO1	Analyze the satellite orbits		
CO2	Analyze the earth segment and space segment		
CO3	Analyze the satellite Link design		
CO4	Design various satellite applications		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	2	3	1	1	-	1	-	1	3	3	3
2	3	2	2	3	2	3	-	-	-	-	-	1	3	3	3
3	3	3	3	2	1	3	-	-	-	-	-	1	3	3	3
4	3	3	2	3	2	3	-	-	-	-	-	1	3	3	3
5	3	2	3	2	2	1	-	-	-	-	-	1	3	3	3
Avg	3	3	3	3	2	3	1	1	-	1	-	1	3	3	3

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Subject Code	GE8076	Semester	VIII
	Professional Ethics in Engineering		
CO	**Course Outcome Statement**		
CO1	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.		

CO's-PO's&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	2	-	-	-	-	-	-	-	1	-	-
3	-	-	-	-	2	-	-	-		-	-	-	-	2	-
4	-	-	-	1	1	-	-	-	1	-	-	-	-	1	-
5	-	-	-	1	1	-	-	-	1	-	-	-	-	1	-
AVg.	-	-	-	1	1.4	-	-	-	1	-	-	-	1	1.33	-

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