POORNIMA
COLLEGE OF ENGINEERING

Department of Electronics & Communication Engineering

CURRICULUM DELIVERY PLAN (CDP)
Even Sem. 2023-24

ISI-6, RIICO Institutional Area, Sitapura, Jaipur-302022 (Rajasthan)
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1 The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of Continuous Internal Assessment (CIA)

PCE is affiliated to RTU, Kota and follows the planned and prescribed curriculum of University. The Internal Quality Assurance Cell (IQAC) of PCE takes the responsibility of monitoring the effective delivery of the curriculum through a well-planned and documented process. To ensure effective curriculum delivery, a Curriculum Delivery Plan (CDP) is prepared by all PAC's of the respective departments. A CDP includes detailed planning for preparation, verification, execution and adherence to all documents related to academic delivery of all courses. As per the directions received from IQAC, the Examination cell plans for the Continuous Internal Assessment. Examination cell then circulate CIA planning to the PAC. Examination cell sends all the CIE Data to Director's Office for the final approval before its submission to RTU. Detail outlines are as follows.

1. Director Office, PCE receives the curriculum from RTU, Kota through university website.
2. IQAC prepares institute academic calendar aligned with RTU academic calendar considering input received in last GC meeting and other stakeholders. IQAC forwards the Institute Academic Calendar to PAC (Program Assessment Committee) for identifying curriculum gaps and examination cell for CIE. PACs then prepares CDPs after consolidating the course specific planning received from the respective faculty members.
3. A CDP includes activities for gap abridgement which are proposed to be carried out by the faculty members.
4. IQAC also instructs PACs to prepare the department activity calendar. PACs receives approval of department activity calendars and CDPs from DABs before its final approval from IQAC.
5. IQAC also reviews the CDPs approved by DABs and gives suggestions/ approvals periodically. All the activities (SPL, Industrial visit, workshop etc.) planned are taken into consideration for the Department activity calendar after the approval from DABs.
6. Subject wise Course files are prepared by respective faculty, comprising of Syllabus, ABC analysis, Blown-Up, Deployment, Lecture notes, Zero Lecture, Tutorial and Assignment sheets, COs Statements, and Mapping with POs and PSOs.
7. Faculty frequently use ICT tools for more effective content delivery using PPTs, video lectures etc.
8. Student attendance is monitored by tutors and chief proctor office with help of SHARP ERP software. Attendance defaulters are regularly counseled through their tutors for improving their attendance.
9. Institute also conducts Annual Internal Academic Audit for the effectiveness of teaching-learning methodologies and the necessary actions are taken as suggested by the audit team.
10. Conferences, seminars, webinars, workshops, expert lectures, STTPs, and FDPs are organized throughout the year on the recent advances in the field of Engineering.
11. Continuous Internal Assessment process includes Midterm exam, Tutorials, Assignments, Quizzes, presentation, Class Test, viva-voce etc.
12. As per the RTU examination scheme, mid semester examinations are conducted centrally by examination cell as per the planning & academic calendar and other assessments are conducted at departmental level.
13. All the evaluations are carried out by the faculty members which include COs-POs attainment, Gap identification & action taken for the fulfillment of gap.
14. Student feedback and attainment of COs-POs are reviewed by the PAC for any revision in planning & Delivery.
15. End term semester examinations are conducted by the RTU, Kota.

2 Vision & Mission Statements

2.1 Vision &Mission Statements of the Institute

Vision of Institution

To create knowledge based society with scientific temper, team spirit and dignity of labor to face the global competitive challenges

Mission of Institution

To evolve and develop skill based systems for effective delivery of knowledge so as to equip young professionals with dedication & commitment to excellence in all spheres of life

2.2 Vision & Mission Statements of the Programme B. Tech. (Electronics & Communication Engineering)

2.2.1 Vision of Department

- To establish an acknowledged Department of academics in the field of Electronics and Communication Engineering.

2.2.2 Mission of Department

- 1. To equip the students with strong foundations to enable them for continuing education in the field of Electronics and Communication Engineering.
- 2. To provide quality education & to make the students entrepreneur and employable.
- 3. To undertake research and development in the field of Electronics and Communication Engineering.

2.2.3 PEO of the Department

Program Educational Objectives (PEOs

- PEO1: The graduates will be competent enough to apply knowledge and skills to solve the real time problem.
- PEO2: Graduates will work as a team in diverse field and gradually move into leadership position.
- PEO3: Graduates will understand current professional issues, apply latest technologies and come out with innovative solutions for the betterment of the society.

2.2.4 Program Specific Outcome (PSOs)

- PSO1: Graduates possesses the ability to understand and apply basic knowledge of core Electronics & Communication Engineering for the benefit of society.
- PSO2: Graduates will be proficient to apply electronic modern IT tools for the design and analysis of complex electronic systems in furtherance to research activities.
- PSO3: The ability to be adaptable to the multidisciplinary nature at workplace, develop excellent Interpersonal Skills & Leadership qualities that benefits the individual & organization.

2.3 Program Outcomes (PO)

Engineering Graduates will be able to:

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, Engineering fundamentals, and an Engineering specialization to the solution of complex Engineering problems.

PO 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.

PO 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.

PO 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.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern Engineering and IT tools prediction and modeling to complex Engineering activities with an understanding of the limitations.

PO 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.

PO 7: Environment and sustainability: Understand the impact of the professional Engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and the need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the Engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 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 receive clear instructions.

PO 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 team, to manage projects and in multidisciplinary environments.

PO 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.

3 Department Academic & Administrative Bodies - Structure & Functions

3.1 Department Advisory Board (DAB)

3.1.1 Primary Objective

Department Advisory Board (DAB) of Department of Electronics & Communication Engineering, PCE, Jaipur is formed to provide necessary suggestions for developing a structured approach for continuous improvement in curriculum delivery, planning and incorporation of Curricular, Extra and Co-Curricular activities needed to abridge the pre-identified curriculum gaps.

3.1.2 Roles & Responsibilities

1. Suggest improvement in academic plans and recommend standard practices/system for attainment of Program Educational Objectives, Program Outcomes, Program Specific Outcomes and Course Outcomes.
2. Provide guidelines for industry-institute interactions to bridge up curriculum/industry gap and suggest quality improvement initiatives to enhance employability.
3. Develop a structured Curriculum Delivery Plan, Department Academic Calendar and seek approval for them from Internal Quality Assurance Cell.
4. Incorporate suggestions received from Program Assessment Committee (PAC) by including proposed activities for bridging curricular gaps identified.
5. To identify and suggest thrust areas to conduct various activities (final year projects, training courses and additional experiments to meet PEOs, and propose necessary action plan for skill development of students, required for entrepreneurship development and quality improvement.

3.1.3 Department-Wise Composition

S. No.	Category	Nominated by	Name of Members	Address
1	Chairman, DAB-ECE	Chairman, IQAC	Dr. Mahesh Bundele, (Principal & Director, PCE)	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
2	Member Secretary	Chairman, DAB-ECE	Dr. Garima Mathur (Head, Department of ECE)	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur

3	Faculty representative-1	Chairman, DAB-ECE	Dr. Rajesh Kumar Bathija Prof, ECE	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
4	Faculty representative-2	Chairman, DAB-ECE	Dr. Nitesh Mudgal, Associate Prof, ECE	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
5	Faculty representative-3	Chairman, DAB-ECE	Dr. Meetu Nag, Associate Prof, ECE	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
6	Faculty representative-5	Chairman, DAB-ECE	Mr. Durgesh Kumar, Assistant Prof, ECE	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
7	Special Invitee	Chairman, DAB-ECE	Dr. Rekha Nair, Dean	Poornima College of Engineering, ISI-6, RIICO Inst. Area, Sitapura, Jaipur
8	Alumni Representative-1	Chairman, DAB-ECE	Mr. Manish Jangid	Research Scholar, MNIT Jaipur
9	Alumni Representative-2	Chairman, DAB-ECE	Mr. Rahul Chouhan	Entrepreneur, Jaipur
10	Student Representative	Chairman, DAB-ECE	Mr. Hitesh Parihar	Final Year Student ECE
11	Industry Representative	Chairman, DAB-ECE	Mr. Sumit Gupta	Director, iQuanta Jaipur
12	Parents Representative-1	Chairman, DAB-ECE	Mr. Mukesh Saxena	Jaipur
13	Parents Representative-2	Chairman, DAB-ECE	Ms. Sunita Chippa	Jaipur

3.1.4 Meeting Frequency & Objectives

Meeting No.	Meeting Code	Meeting Month-Week	Meeting Objective
1.	DAB-1	July First Week	● Consideration of gaps and proposed activities by PAC last meeting to be implemented in DAC and CDP. ● Prepares final draft of CDP and DAC to be proposed in upcoming IQAC meeting
2.	DAB-2	September Second Week	● Approval / Suggestions of proposals from last PAC meeting. ● Revision of DAB Drafts for being proposed in upcoming GC
3	DAB-3	December First Week	● Draft preparation for DAC and CDP for upcoming semester after considering inputs from PAC. ● Review Semester closure draft from PAC.
4.	DAB-4	April Last Week / May First Week	● Draft of PCE Academic Calendar and CDP proposed ● Previous session closure with gaps and feedback. ● Completion of ATR-2 for current semester based on last GC sessions and compiling it with ATR-1

3.2 Program Assessment Committee

3.2.1 Primary Objective

The primary objective of Program Assessment Committee (PAC) is to identify, bridge and assess the gaps in Program's Curriculum received from University through attainment calculation.

3.2.2 Roles & Responsibilities

1. Identify gaps in curriculum laid down by University and propose activities for bridging identified gaps.

2. Implement academic plans and standard practices/system for attainment of Program Educational Objectives, Program Outcomes, Program Specific Outcomes and Course Outcomes.

3. Regular Monitoring of curriculum gap abridgement and course deployment practices through pre-defined methods.

4. Execute Industry-Institute Interactions to enhance the employability thereby meeting the industry standards and requirements.

5. Implement Curriculum Delivery Plan & Department Academic Calendar.

3.2.3 Department-Wise Composition

S. No.	Category	Nominated by	Name of Members	Address
1	Chairman, PAC-ECE	Chairman, IQAC / Head of Institution	Dr. Garima Mathur (Head, Department of ECE)	Poornima College of Engineering
2	Member Secretary	Chairman, DAB-ECE	Dr. Rajesh Bhatija Professor, ECE)	Poornima College of Engineering
3	Faculty representative-1	Chairman, DAB-ECE	Dr. Shuchi Dave Professor, ECE	Poornima College of Engineering
4	Faculty representative-2	Chairman, DAB-ECE	Dr. Nitesh Mudgal, Associate Prof, ECE	Poornima College of Engineering
5	Faculty representative-3	Chairman, DAB-ECE	Dr. Meetu Naag, Associate Prof, ECE	Poornima College of Engineering
6	Faculty representative-4	Chairman, DAB-ECE	Mr. Durgesh Kumar, Assistant Prof, ECE	Poornima College of Engineering

3.2.4 Meeting Frequency & Objectives

Meeting No.	Meeting Code	Meeting Month-Week	Meeting Objective
1.	PAC-1	July Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
2.	PAC-2	August Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
3.	PAC-3	September Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of academics gaps as previous attainment ● Assessment of activities required for being proposed in upcoming GC ● Submit report to Governing Council about previous semester & planning of next semester.
4.	PAC-4	November Third Week	● Inclusion of suggestions for revising gaps ● Execution of Academic, Extra and Co-Curricular activities according to suggestions in GC ● Regular calculation of attainments ● Revision of academics gaps as previous attainment ● Regular assessment of Academic, Extra and Co-Curricular activities ● Identification and proposal of gaps and activities to be considered by DAB to prepare Department Academic Calendar and CDP for upcoming semester. ● Semester closure report draft to be prepared ● Elective proposals/CBCS
5.	PAC-5	January Last Week	● Incorporation of suggestions from IQAC and DAB meetings in execution of Semester activities ● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
6.	PAC-6	March Last Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps
7.	PAC-7	April Second Week	● Execution of Academic, Extra and Co-Curricular activities ● Regular assessment of Academic, Extra and Co-Curricular activities ● Regular calculation of attainments ● Revision of Academics gaps ● Prepared regular report of program for all assessment, attainment & gaps ● Draft preparation of Semester closure

8.	PAC-8	June Last Week	● Report submission of Semester closure ● Identification and proposal of gaps and activities to be considered by DAB to prepare Department Academic Calendar and CDP for upcoming semester. ● Feedback of last IQAC and suggestions for new semester to be implemented in CDP and DAC ● Elective proposals/CBCS

4 List of Faculty Members & Technical Staff

1	4961	Dr. Garima Mathur	drg.mathur@poornima.org	Professor
2	3420	Dr. Shuchi Dave	shuchi.dave@poornima.org	Professor
3	1195	Dr. Nitesh Mudgal	Nitesh.mudgal @poornima.org	Associate Professor
4	1165	Dr. Meetu Nag	meetu.nag@poornima.org	Associate Professor
5	3612	Dr. Devendra Somwanshi	devendra.Somwanshi@poornima.org	Associate Professor
6	1131	Mr.Durgesh Kumar	durgesh86@poornima.org	Asst. Professor
7	1300	Mr. Avinash Sharma	avinashsharma@poornima.org	Asst. Professor
8	1195	Mr.Rajveer Marwal	Rajveer.marwal@poornima.org	Asst. Professor
9	1133	Miss Garima Mathur	Garima.mathur@poornima.org	Asst. Professor

5 Institute Academic Calendar

JANUARY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

MARCH 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

APRIL 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JUNE 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

JULY 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

POORNIMA
COLLEGE OF ENGINEERING

Affiliated to RTU, Kota • Approved by AICTE & UGC under 2(f) • NAAC A+ Accredited

ACADEMIC CALENDAR 2023-24*#

EVEN SEMESTER

January 2024

Monday, 8	First Day, B. Tech. VIII Sem.
Thursday, 26	Republic Day Celebration
	RTU THEORY EXAMINATION FOR III & V SEMESTER [ODD SEMESTER 2023-24]

February 2024

Monday, 19	First Day, B. Tech. IV & VI Sem.
	RTU THEORY EXAMINATION FOR I SEMESTER [ODD SEMESTER 2023-24]
Monday, 26	First Day, B. Tech. II Sem.

March 2024

Monday, 04 to Wednesday, 06	First Mid Term Examination for B.Tech VIII Sem
Thursday, 14 to Saturday 16	Aarohan - 2024
During Second/Third Week	Wise Activity

April 2024

Monday, 15 to Saturday, 20	First Mid Term Examination for B.Tech IV & VI Sem
Wednesday, 24	Last Teaching Day for B.Tech VIII Sem
Thursday, 25 to Saturday, 27	Second Mid-Term Examination for B.Tech VIII Sem
Monday, 29 to Wednesday 01 (May)	End-Term Practical Exams for B. Tech VIII Sem
Monday, 29 to Saturday, 04 (May)	First Mid Term Examination for B.Tech II Sem
	Farewell Function Batch 2020-24

May 2024

As Per RTU Schedule	End-Term Theory Exams for B.Tech VIII Sem
Saturday, 25 to Sunday, 26	Students' Council Meet

June 2024

Saturday, 8	Last Teaching Day for B.Tech IV & VI Sem
Monday, 10 to Saturday, 15	Second Mid-Term Examination for B.Tech IV & VI Sem
Monday, 17 to Wednesday 19	End-Term Practical Examination for B. Tech IV & VI Sem
As Per RTU Schedule	End-Term Theory Examination for B. Tech IV & VI Sem
Friday, 21	Last Teaching Day for B.Tech II Sem
Monday, 24 to Saturday, 29	Second Mid-Term Examination for B.Tech II Sem

July 2024

Monday, 01 to Wednesday 03	End-Term Practical Examination for B. Tech II Sem
As Per RTU Schedule	End-Term Theory Examination for B. Tech II Sem

HOLIDAYS IN EVEN SEMESTER

➢ New Year	-	01 January, Monday - 02 January, Tuesday
➢ Makar Sakranti	-	14 January, Sunday, 2024
➢ Republic Day Celebration	-	26 January, Friday - 27 January, Saturday, 2024
➢ Holi	-	23 March, Saturday - 26 March, Tuesday, 2024
➢ Eid-ul-Fiter	-	11 April, Thursday - 13 April, Saturday, 2024
➢ Ambedkar Jayanti	-	13 April, Saturday - 14 April, Sunday, 2024
➢ Eid-al-Adha	-	15 June, Saturday - 17 June, Monday, 2024

*Subject to revision as per RTU notifications
#Annual Alumni Meet in December 28, 2024

6 Department Activity Calendar

Poornima College of Engineering, Jaipur

Calendar for Electronics & Communication Engineering : Even Semester - Session 2023-24

S. N	Activity/ Process	B.Tech. II Sem.	B.Tech. IV Sem.	B.Tech. VI Sem.	B.Tech. VIII Sem.
	(A) Academic Processes				
1	Date of Registration & start of regular classes for students	Monday, 26 February, 2024	Monday, 19 February, 2024	Monday, 19 February, 2024	Monday, 8 January, 2024
2	Orientation programme	Monday, 26 February, 2024	Monday, 19 February, 2024	Monday, 19 February, 2024	Monday, 8 January, 2024
3	Date of submission of question papers by faculty members to secrecy for 1st Mid-term				
4	I Mid Term Theory & Practical Exam	Monday, 29 to Saturday, 04 May 2024	Friday, 15 to Wednesday 20 April 2024	Friday, 15 to Wednesday 20 April	Monday, 04 to Wednesday, 06 March 2024
5	II Mid Term Theory & Practical Exam	Monday, 24 to Saturday, 29 June 2024	Monday, 10 to Saturday, 15 June 2024	Monday, 10 to Saturday, 15 June 2024	Thursday, 25 to Saturday, 27 April 2024
6	End-Term Practical Exams	To be declared later according to RTU Exam Schedule			
7	Revision classes				
8	Last Teaching Day*	Friday, 21 June 2024	Saturday, 8 June 2024	Saturday, 8 June 2024	Wednesday, 24 April 2024
	(B) Events and Activities				
9	Workshop on Implementations of optical systems using optisystem 17		Wednesday, 1 May 2024	Wednesday, 1 May 2024	
10	Workshop onVLSI implementation of multiplication		Wednesday, 3 Apr 2024	Wednesday, 3 Apr 2024	Wednesday, 3 Apr 2024
11	Webinar On Advanced Nanomaterials and Devices towards Electronics Applications		Wednesday, 8 May 2024	Wednesday, 8 May 2024	
12	Webinar On Research Paper Writing using Latex		Thursday, 22 Feb 2024	Thursday, 22 Feb 2024	Thursday, 22 Feb 2024
13	Aarohan -2024	Thursday, 14 to Saturday 16 March 2024			
14	Wise Activity	During Second/Third Week (March 2024)			
15	Republic Day Celebration	Thursday, 26 January, 2023			
	(C) Holidays				
16	New Year	01 January, Monday - 02 January, Tuesday, 2024			
17	Makar Sankranti	14 January, Sunday, 2024			
18	Republic Day	26 January, Friday - 27 January, Saturday, 2024			
19	Maha Shivaratri				
20	Holi	23 March, Saturday - 26 March, Tuesday, 2024			
21	Mahaveer Jayanti				
22	Eid-ul-Fitar	11 April, Thursday - 13 April, Saturday, 2024			
23	Ambedkar Jayanti	13 April, Saturday - 14 April, Sunday, 2024			
24	Eid-al-Adha	15 June, Saturday - 17 June, Monday, 2024			
25	Summer Break	01 June, Monday - 15 June, Monday, 2024			

"स्वच्छ भारत.. सम्पन्न भारत.."

***Subject to change as per RTU Exam Schedule**

7 .Teaching Scheme

7.1 RTU Teaching Scheme

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Teaching & Examination Scheme
B.Tech. : Electronics & Communication Engineering
2nd Year - IV Semester

THEORY											
SN	**Category**	**Course**		**Contact hrs/week**			**Marks**				**Cr**
		Code	**Title**	**L**	**T**	**P**	**Exm Hrs**	**IA**	**ETE**	**Total**	
1	BSC	4EC2-01	Advanced Engineering Mathematics-II	3	0	0	3	30	70	**100**	**3**
2	HSMC	4EC1-03/ 4EC1-02	Managerial Economics and Financial Accounting/ Technical Communication	2	0	0	2	30	70	**100**	**2**
3	PCC	4EC4-04	Analog Circuits	3	0	0	3	30	70	**100**	**3**
4		4EC4-05	Microcontrollers	3	0	0	3	30	70	**100**	**3**
5	ESC	4EC3-06	Electronics Measurement & Instrumentation	3	0	0	3	30	70	**100**	**3**
6	PCC	4EC4-07	Analog and Digital Communication	3	0	0	3	30	70	**100**	**3**
			Sub Total	17	0	0					**17**
PRACTICAL & SESSIONAL											
8	PCC	4EC4-21	Analog and Digital Communication Lab	0	0	3		60	40	**100**	**1.5**
9		4EC4-22	Analog Circuits Lab	0	0	3		60	40	**100**	**1.5**
10		4EC4-23	Microcontrollers Lab	0	0	3		60	40	**100**	**1.5**
11		4EC4-24	Electronics Measurement & Instrumentation Lab	0	0	3		60	40	**100**	**1.5**
12	SODECA	4EC18-00	Social Outreach, Discipline & Extra Curricular Activities							**100**	**0.5**
			Sub- Total	0	0	12					**6.5**
			TOTAL OF IV SEMEESTER	17	0	12					**23.5**

L: *Lecture,* ***T:*** *Tutorial,* ***P:*** *Practical,* ***Cr:*** *Credits*

ETE: *End Term Exam,* ***IA:*** *Internal Assessment*

RAJASTHAN TECHNICAL UNIVERSITY,KOTA

Teaching & Examination Scheme
B. Tech.: Electronics &Communication
Engineering 3rd Year – VI Semester

THEORY												
SN	Category	Course		Contact hrs/week			Marks				Cr
		Code	Title	L	T	P	Exam Hrs	IA	ETE	Total	
1	ESC	6EC 3-01	Power Electronics	2	0	0	3	30	70	100	**2**
2	PCC/ PEC	6EC 4-02	Computer Network	3	0	0	3	30	70	100	**3**
3		6EC 4-03	Fiber Optics Communications	3	0	0	3	30	70	100	**3**
4		6EC 4-04	Antennas and Propagation	3	0	0	3	30	70	100	**3**
5		6EC 4-05	5G Communication	3	0	0	3	30	70	100	**3**
6		Professional Elective II (any one)		3	0	0	3	30	70	100	**3**
		6EC 5-11	Introduction to MEMS								
		6EC 5-12	Nano Electronics								
		6EC 5-13	Neural Network And Fuzzy Logic Control								
		6EC 5-14	HighSpeed Electronics								
		Sub Total		**17**	**0**	**0**		**180**	**420**	**600**	**17**
PRACTICAL & SESSIONAL											
7	PCC	6EC 4-21	Computer Network Lab	0	0	4	2	60	40	100	**2**
8		6EC 4-22	Antenna and wave propagation Lab	0	0	2	2	60	40	100	**1**
9		6EC 4-23	Electronics Design Lab	0	0	4	2	60	40	100	**2**
10		6EC 4-24	Power Electronics Lab	0	0	2	2	60	40	100	**1**
11	SODECA	6EC 8-00	Social Outreach, Discipline & Extra Curricular Activities	0	0	0		60	40	100	**0.5**
		Sub- Total		0	0	12		**300**	**200**	**500**	**6.5**
		TOTAL OF VI SEMESTER		**17**	**0**	**12**		**480**	**620**	**1100**	**23.5**

L: Lecture, T: Tutorial, P: Practical, Cr: Credits

ETE: End Term Exam, IA: Internal Assessment

Office of Dean Academic Affairs
Rajasthan Technical University, Kota

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Scheme & Syllabus

IV Year- VII & VIII Semester: B. Tech. (Electronics & Communication Engineering)

Teaching & Examination Scheme

B.Tech. : Electronics & Communication Engineering

4th Year - VIII Semester

SN	Category	Course Code	Course Title	Contact hrs/week			Marks				Cr
				L	T	P	Exm Hrs	IA	ETE	Total	
THEORY											
			Program Elective								
1	PEC	8EC5-11	Artificial Intelligence And Expert Systems	3	0	0	3	30	120	**150**	**3**
		8EC5-12	Digital Image and Video Processing								
		8EC5-13	Adaptive Signal Processing								
2	OE		Open Elective-II	3	0	0	3	30	120	**150**	**3**
			Sub Total	**6**	**0**	**0**		**60**	**240**	**300**	**6**
PRACTICAL & SESSIONAL											
3	PCC	8EC4-21	Internet of Things (IOT) Lab	0	0	2	2	30	20	**50**	**1**
4		8EC4-22	Skill Development Lab	0	0	2	2	30	20	**50**	**1**
5	PSIT	8EC7-50	Project	3	0	0		210	140	**350**	**7**
6	SODECA	8EC8-00	Social Outreach, Discipline & Extra Curricular Activities						25	**25**	**0.5**
			Sub Total	**3**	**0**	**4**		**270**	**205**	**475**	**9.5**
			TOTAL of VIII SEMESTER	**9**	**0**	**4**		**330**	**445**	**775**	**15.5**

L: *Lecture,* ***T:*** *Tutorial,* ***P:*** *Practical,* ***Cr:*** *Credits*

ETE: *End Term Exam,* ***IA:*** *Internal Assessment*

8.PCE Teaching Scheme

		Mid Term Exam			Attn & Performance			End Term Exam			Max.
Code	SUBJECT	Exp.	Viva	Total	Attn.	Perf.	Total	Exp.	Viva	Total	Marks
2FY2-21	Engineering Chemistry Lab	30	10	40	10	30	40	30	10	40	100
2FY2-20	Engineering Physics Lab	30	10	40	10	30	40	30	10	40	100
2FY1-23	Human Values Activities and Sports	30	10	40	10	30	40	30	10	40	100
2FY1-22	Language Lab	30	10	40	10	30	40	30	10	40	100
2FY3-25	Manufacturing Practices Workshop	30	10	40	10	30	40	30	10	40	100
2FY3-24	Computer Programming Lab	30	10	40	10	30	40	30	10	40	100
2FY3-27	Basic Civil Engineering Lab	30	10	40	10	30	40	30	10	40	100
2FY3-26	Basic Electrical Engineering Lab	30	10	40	10	30	40	30	10	40	100
2FY3-29	Computer Aided Machine Drawing	30	10	40	10	30	40	30	10	40	100
2FY3-28	Computer Aided Engineering Graphics	30	10	40	10	30	40	30	10	40	100
4CE4-21	Material Testing Lab	30	10	40	10	30	40	30	10	40	100
4CE4-22	Hydraulics Engineering Lab	30	10	40	10	30	40	30	10	40	100
4CE4-23	Building Drawing	30	10	40	10	30	40	30	10	40	100
4CE4-24	Advanced Surveying Lab	30	10	40	10	30	40	30	10	40	100
4CE4-25	Concrete Lab	30	10	40	10	30	40	30	10	40	100
4CS4-21	Microprocessor & Interfaces Lab	30	10	40	10	30	40	30	10	40	100
4CS4-22	Database Management System Lab	30	10	40	10	30	40	30	10	40	100
4CS4-23	Network Programming Lab	30	10	40	10	30	40	30	10	40	100
4CS4-24	Linux Shell Programming Lab	30	10	40	10	30	40	30	10	40	100
4CS4-25	Java Lab	30	10	40	10	30	40	30	10	40	100
4EC4-21	Analog and Digital Communication Lab	30	10	40	10	30	40	30	10	40	100
4EC4-22	Analog Circuits Lab	30	10	40	10	30	40	30	10	40	100
4EC4-23	Microcontrollers Lab	30	10	40	10	30	40	30	10	40	100
4EC4-24	Electronics Measurement & Instrumentation	30	10	40	10	30	40	30	10	40	100
4EE4-21	Electrical Machine - II Lab	30	10	40	10	30	40	30	10	40	100
4EE4-22	Power Electronics Lab	30	10	40	10	30	40	30	10	40	100
4EE4-23	Digital Electronics Lab	30	10	40	10	30	40	30	10	40	100
4EE4-24	Measurement Lab	30	10	40	10	30	40	30	10	40	100
4IT4-21	Linux Shell Programming Lab	30	10	40	10	30	40	30	10	40	100
4IT4-22	Database Management System Lab	30	10	40	10	30	40	30	10	40	100
4IT4-23	Network Programming Lab	30	10	40	10	30	40	30	10	40	100
4IT4-21	Java Lab	30	10	40	10	30	40	30	10	40	100
4IT4-25	Web Technology Lab	30	10	40	10	30	40	30	10	40	100
4ME3-21	Digital Electronics lab	30	10	40	10	30	40	30	10	40	100
4ME4-22	Fluid Mechanics lab	30	10	40	10	30	40	30	10	40	100
4ME4-23	Production practice lab	30	10	40	10	30	40	30	10	40	100
4ME4-24	Theory of machines Lab	30	10	40	10	30	40	30	10	40	100
6CE4-21	Environmental Engineering Design and Lab	22	8	30	8	22	30	22	8	30	75
6CE4-22	Steel Structure Design	22	8	30	8	22	30	22	8	30	75
6CE4-23	Quantity Surveying and Valuation	15	5	20	5	15	20	15	5	20	50
6CE4-24	Water and Earth Retaining Structures Design	15	5	20	5	15	20	15	5	20	50
6CE4-25	Foundation Design	15	5	20	5	15	20	15	5	20	50
6CS4-21	Digital Image Processing Lab	22	8	30	8	22	30	22	8	30	75
6CS4-22	Machine Learning Lab	22	8	30	8	22	30	22	8	30	75
6CS4-23	Python Lab	22	8	30	8	22	30	22	8	30	75
6CS4-24	Mobile Application Development Lab	22	8	30	8	22	30	22	8	30	75
6EC4-21	Computer Network Lab	30	10	40	10	30	40	30	10	40	100
6EC4-22	Antenna and wave propagation Lab	15	5	20	5	15	20	15	5	20	50
6EC4-23	Electronics Design Lab	30	10	40	10	30	40	30	10	40	100
6EC4-24	Power Electronics Lab	15	5	20	5	15	20	15	5	20	50
6EE4-21	Power System - II Lab	30	10	40	10	30	40	30	10	40	100
6EE4-22	Electric Drives Lab	30	10	40	10	30	40	30	10	40	100
6EE4-23	Power System Protection Lab	15	5	20	5	15	20	15	5	20	50
6EE4-24	Modelling and simulation lab	15	5	20	5	15	20	15	5	20	50
6IT4-21	Digital Image Processing Lab	22	8	30	8	22	30	22	8	30	75
6IT4-22	Machine Learning Lab	22	8	30	8	22	30	22	8	30	75
6IT4-23	Python Lab	22	8	30	8	22	30	22	8	30	75
6IT4-24	Mobile Application Development Lab	22	8	30	8	22	30	22	8	30	75
6ME4-21	CIMS Lab	22	8	30	8	22	30	22	8	30	75
6ME4-22	Vibration Lab	22	8	30	8	22	30	22	8	30	75
6ME4-23	Machine Design Practice II	22	8	30	8	22	30	22	8	30	75
6ME4-24	Thermal Engineering Lab I	22	8	30	8	22	30	22	8	30	75
8CE4-21	Project Planning & Construction	15	5	20	5	15	20	15	5	20	50
8CE4-22	Pavement Design	15	5	20	5	15	20	15	5	20	50
8CE7-50	Project			210					140		350
8CS4-21	Big Data Analytics Lab	15	5	20	5	15	20	15	5	20	50
8CS4-22	Software Testing and Validation Lab	15	5	20	5	15	20	15	5	20	50
8CS7-50	Project			270					180		450
8EC4-21	Internet of Things (IOT) Lab	15	5	20	5	15	20	15	5	20	50
8EC4-22	Skill Development Lab	15	5	20	5	15	20	15	5	20	50
8EC7-50	Project			210					140		350
8EE4-21	Energy Systems Lab	30	10	40	10	30	40	30	10	40	100
8EE7-50	Project			210					140		350
8IT4-21	Internet of Things Lab	15	5	20	5	15	20	15	5	20	50
8IT4-22	Software Testing and Validation Lab	15	5	20	5	15	20	15	5	20	50
8IT7-50	Project			210					140		350
8ME4-21	Industrial Engineering Lab	15	5	20	5	15	20	15	5	20	50
8ME4-22	Metrology Lab	15	5	20	5	15	20	15	5	20	50
8ME7-50	Project			210					140		350

NOTE: - (1) In Attendance & Performance marks should be given on the basis of student overall performance in semester i. e. continuous evaluation.
(2) In Common Pool marks should be given by HOD on the basis of student Assignment,Non Syllabus Activity,Online Exam Exam,Application/Survey / Case Study based Learning, Pre-Placement Activity, Department Level Career Oriented Activities through out the semester.

9 Department Load Allocation

Poornima College of Engineering, Jaipur
Department of Electronics & Communication Engineering
Load for Even Semester 2023-24

S. NO.	FACULTY NAME	CODE	SUBJECT	L	T	P	LOAD
1	Dr. Garima Mathur	8EC5-11	Artificial Intelligence And Expert Systems	4	0	0	**8**
		8EC7-50	Project	0	0	4	
2	Dr. Shuchi Dave	4EC2-01	Advanced Engineering Mathematics-II	3	1	0	**4**
3	Dr Shalini Shah	4EC1-02	Technical Communication	2	0	0	2
4	Dr Veena Yadav	6EC 4-02	Computer Network	3	1	0	6
		6EC 4-21	Computer Network Lab	0	0	2	
5	Dr. Nitesh Mudgal	4EC4-04	Analog Circuits	3	1	0	13
		8EC6-60.1	Industrial and Biomedical applications of RF Energy	3	0	0	
		4EC3-06	Electronics Measurement & Instrumentation	3	1	0	
		6EC 4-23	Electronics Design Lab	0	0	2	
6	Durgesh Kumar	4EC4-24	Electronics Measurement & Instrumentation Lab	0	0	2	14
		4EC4-21	Analog and Digital Communication Lab	0	0	2	
		6EC 4-03	Fiber Optics Communications	3	1	0	
		4EC4-07	Analog and Digital Communication	4	0	0	
		4EC4-23	Microcontrollers Lab	0	0	2	
7	Dr Meetu Nag	6EC 4-24	Power Electronics Lab	0	0	2	13
		6EC 5-11	Introduction to MEMS	3	0	0	
		8EC6-60.2	Robotics and control	3	0	0	
		8EC4-22	Skill Development Lab	0	0	2	
		6EC 3-01	Power Electronics	3	0	0	

8	Mr. Mukesh Chand	8EC4-21	Internet of Things (IOT) Lab	0	0	2	14
		4EC4-05	Microcontrollers	3	1	0	
		6EC 4-04	Antennas and Propagation	3	1	0	
		6EC 4-05	5G	3	1	0	
9	Garima Mathur	6EC 4-22	Antenna and wave propagation Lab	0	0	2	2
10	Rajveer Marwal	4EC4-22	Analog Circuits Lab	0	0	2	2

Time Table

a. Orientation Time Table

POORNIMA COLLEGE OF ENGINEERING
ORIENTATION TIME -TABLE FOR EVEN SEM 2023-2024

Dept.: Electronics & Communication			**Venue: 1303**				**Class: IV**
DAY & DATE/ TIME	**8:30-9:30**	**9:30-10:30**	**10:30-11:30**	**11:30-12:20**	**12:20-01:20**	**01:20-2:20**	**2:20-3:20**
08.01.2024 MONDAY	**Dr. Meetu Nag Tutor**	**Dr. Garima Mathur HOD**	**Mr.Avinash Sharma Skill Enhancement**	**LUNCH**	**Dr. Nitesh Mudgal GATE**	**Dr. Meetu Nag Sensenut Software**	**Mr. Durgesh Kumar Industrial Interaction**
09.01.2024 TUESDAY	**Durgesh Kumar NPTEL Guidelines**	**Dr. Meetu Nag (Placement Coordinator)**	**MOOC Guidelines Durgesh Kumar**		**Durgesh Kumar Project Guidelines**	**Mr.Rajveer Marwal Add on Courses**	**Dr.Garima Mathur Paper Writing Skills and Literature Review**

b. Academic Time Table: - EVEN SEM

POORNIMA COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION,2023-24 II Year IV SEM

Minha Escola

	1 8:00 - 9:00	2 9:00 - 10:00	3 10:00 - 11:00	LUNCH 11:00 - 11:50	4 11:50 - 12:50	5 12:50 - 1:50	6 1:50 - 2:50
Monday	EM&I 2303 Nag Meetu	Microcontrollers 2303 Shegokar Sheetal	AEM-II 2303 Dave Shuchi		ACL 2308(A) Mudgal Nitesh		ADC 2303 Kumar Durgesh
Tuesday	Microcontrollers 2303 Shegokar Sheetal	AEM-II 2303 Dave Shuchi	AC 2303 Mudgal Nitesh		ADC 2303 Kumar Durgesh	EM&I 2303 Nag Meetu	TC 2303 Shah Shalini
Wednesday	ADC 2303 Kumar Durgesh	TC 2303 Shah Shalini	AEM-II 2303 Dave Shuchi		AC 2303 Mudgal Nitesh	EM&I 2303 Nag Meetu	Microcontrollers 2303 Shegokar Sheetal
Thursday	AC 2303 Mudgal Nitesh	ML 2308(C) Shegokar Sheetal			EM&IL 2308(C) Nag Meetu		AEM-II 2303 Dave Shuchi
Friday	AC 2303 Mudgal Nitesh	EM&I 2303 Nag Meetu	ADC 2303 Kumar Durgesh		Microcontrollers 2303 Shegokar Sheetal	ADCL 2308 Marwal Rajveer	
Saturday							

Timetable generated:29-05-2024

aSc Timetables

POORNIMA COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION,2023-24 III Year VI SEM

Minha Escola

	1 8:00 - 9:00	2 9:00 - 10:00	3 10:00 - 11:00	LUNCH 11:00 - 11:50	4 11:50 - 12:50	5 12:50 - 1:50	6 1:50 - 2:50
Monday	CN 2304 Yadav Veena	FOC 2304 Kumar Durgesh	AP 2304 Mudgal Nitesh		PEL 2308(C) Nag Meetu		MEMS 2304 Nag Meetu
Tuesday	5G 2304 Chand Mukesh	AP 2304 Mudgal Nitesh	CN 2304 Yadav Veena		AP 2304 Mudgal Nitesh	FOC 2304 Kumar Durgesh	MEMS 2304 Nag Meetu
Wednesday	5G 2304 Chand Mukesh	CN 2304 Yadav Veena	PE 2304 Shegokar Sheetal		MEMS 2304 Nag Meetu	PE 2304 Shegokar Sheetal	AP 2304 Mudgal Nitesh
Thursday	CNL 1301 (B) Yadav Veena		5G 2304 Chand Mukesh		AWPL 2309(F) Mudgal Nitesh		FOC 2304 Kumar Durgesh
Friday	CN 2304 Yadav Veena	FOC 2304 Kumar Durgesh	PE 2304 Shegokar Sheetal		5G 2304 Chand Mukesh	EDL 2308(A) Shegokar Sheetal	
Saturday							

Timetable generated:29-05-2024

aSc Timetables

POORNIMA COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION,2023-24 IV YEAR VIII SEM

Minha Escola

	1 8:00 - 9:00	2 9:00 - 10:00	3 10:00 - 11:00	LUNCH 11:00 - 11:50	4 11:50 - 12:50	5 12:50 - 1:50	6 1:50 - 2:50
Monday	I & B RF Energy (Group 1) 1303 Mathur Garima Robotics and c2309 (Group 2) Marwal Rajveer	Skill Development Lab 1301 (B) Mathur Garima			Project 2309 GM / DK		AI & ES 1303 Mathur Dr.Garima
Tuesday	I & B RF Energy (Group 1) 1303 Mathur Garima Robotics and c2309 (Group 2) Marwal Rajveer	AI & ES 1303 Mathur Dr.Garima	P 2309 DK / GM		AI & ES 1303 Mathur Dr.Garima	IOT Lab 1301 (B) Mathur Garima	
Wednesday	I & B RF Energy (Group 1) 1303 Mathur Garima Robotics and c2309 (Group 2) Marwal Rajveer	Project 2309 GM / DK			Project 2309 GM / DK		AI & ES 1303 Mathur Dr.Garima
Thursday							
Friday							
Saturday							

Timetable generated:29-05-2024

aSc Timetables

9. Course Outcome Attainment Process:

a. Course Outcome Attainment Process

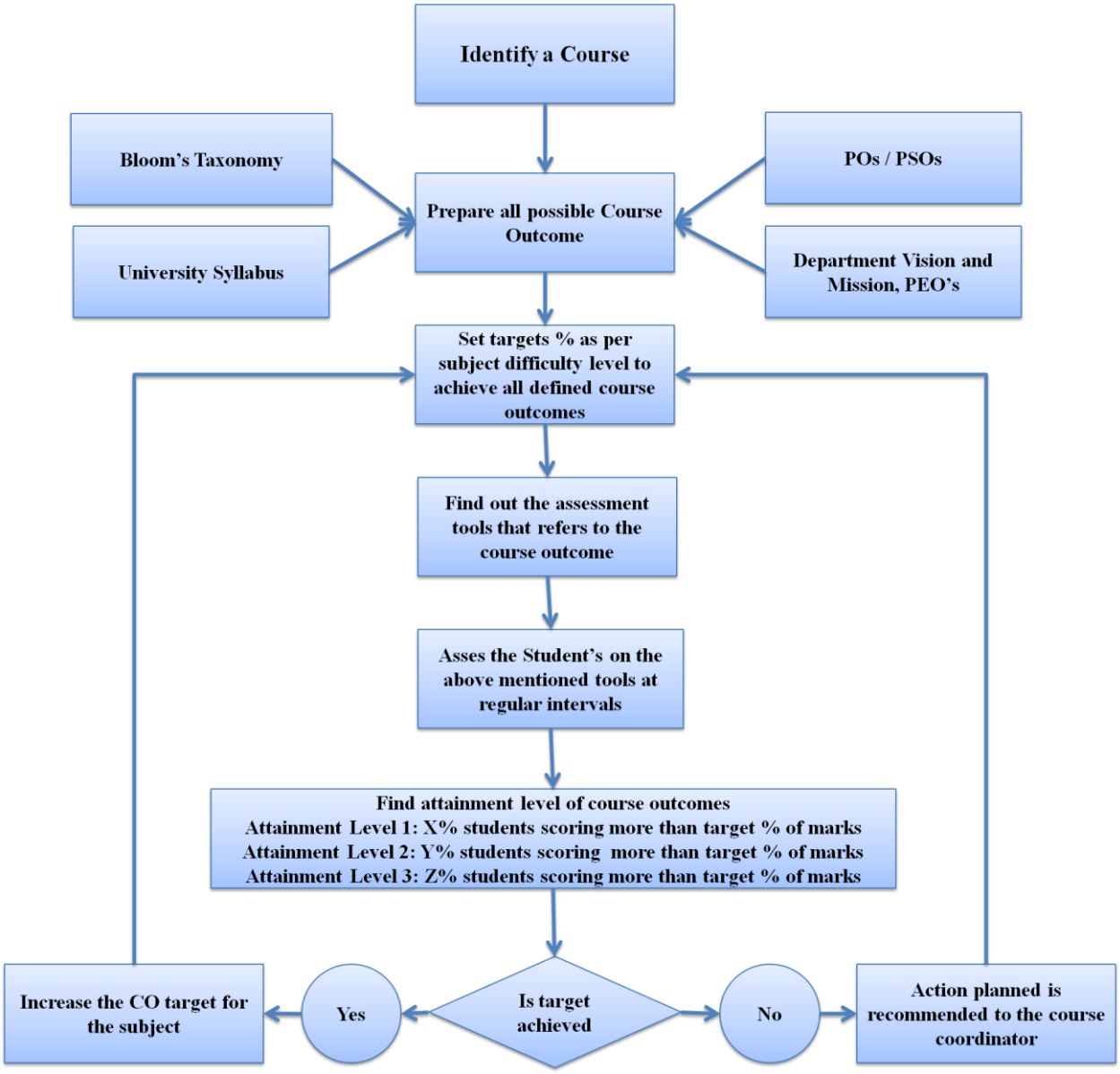

Figure. Course Outcome Attainment Process

b. List of CO & CO mapping with PO

POORNIMA COLLEGE OF ENGINEERING, JAIPUR
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
B.Tech. (Electronics and Communciation Engineering)
Session 2020-21
MAPPING OF COURSE OUTCOMES WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Course Code	Course Name	CO No	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1-	PSO2-	PSO3-.
4EC2-01	Advanced Engineering Mathematics-II	CO-1	Define properties of complex numbers , special function and linear algebra and can apply this knowledge to the solution of complex engineering problems like in signal processing which has applications to telecommunications (cellular phone), radar(which assists the navigation of airplanes), and even biology(in the analysis of firing events from neurons in the brain).	1											1	2		1
		CO-2	Classify complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various forms.	2											1	2		1
		CO-3	Identified different techniques to solve the	3											1	2		1

			differential equations of higher order like Bessel's and Legendre and their application in the solution of hydrodynamics, theory of elasticity and loading of electrical transmission lines in Electronics & Communication Engineering .															
		CO-4	Analyzed a variety of numerical Problems and solve them by using appropriate technology, and Compare the viability of different approaches to the numerical solution of problems.(Analyze)		3										1	2		1
				2	3										1	2		1
4EC 1-02	Technical Communication	CO-1	Define the process of technical communication in terms of LSRW.	-	-	-	-	-	--	-	-	-	3	-	3			
		CO-2	Examine the concept of Technical Materials/Texts in various technical documents.	-	-	-	-	-	--	-	-	-	3	-	3			
		CO-3	Apply various professional corresponding documents and knowledge of basics of grammar	-	-	-	-	-	--	-	-	-	3	-	3			
		CO-4	Analyze the basic concepts of Technical Reports, articles	-	-	-	-	-	--	-	-	-	3	-	3			

			and their formats.															
													3		3			
4EC 4-04	Analog Circuits	CO-1	Explain the Analog Circuits related to transistor amplifiers such as BJT, FET, etc. and oscillators such as Phase Shift, Harley, etc.	2										-		3	-	2
		CO-2	Apply mathematical equations for transistor amplifiers and oscillators in various domains.		2											3	-	2
		CO-3	Analyze BJT, FET, OP-AMP amplifiers and oscillators such as Phase Shift, Hartley, etc. Their characteristics.		2											2	-	2
		CO-4	Design transistor amplifiers and oscillators for different applications through numerical problems.	2	2								3		3	2.667		2
				2														
4EC 4-05	Microcontrollers	CO-1	Explain basics of Microprocessors and Microcontrollers	1	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO-2	Illustrate interfacing of peripheral devices with basic and advanced microprocessors and microcontrollers	2	1	-	-	-	-	-	-	-	-	-	-	3	3	-
		CO-3	Design embedded system for solving industry	-	3		-		-	-	-	-	-	-	-	-	2	-

			problems using basic and advanced microprocessors and microcontrollers															
		CO-4	Analysis for optimization of hardware created for industry problems	-	-	2	-		-	-	-	-	-	-	-	-	2	-
				1.5	2	2										2.5	2.333	
4EC 3-06	Electronics Measurement & Instrumentation	CO-1	Describe and explain various concept of Errors, Electronic Instruments, Meters, Oscilloscope, Signal Generators, and Analyzers & Transducers. [Understanding]	3	3	-	-	-	-	-	-	-	-	-	2	3	-	3
		CO-2	Apply the knowledge of Electronic meters, Oscilloscope, Q- Meters, Different types of errors, Signal generators, Wave Analyzers & Selection of transducers. [Applying ,Understanding]	3	3	-	-	-	-	-	-	-	-	-	2	3	-	3
		CO-3	Compare the operation of different instruments with usability & reference to parameters. [Analyzing]	3		3	-	-	-	-	-	-	-	-	-	3	-	3
		CO-4	Evaluate the different parameters of different Instruments & Transducers. Selection to the Instruments & transducers	3	2	3	-	-	-	-	-	-	-	-	-	3	-	3

			according to application. [Analyzing, Design]															
				3	2.6667	3									2	3		3
4EC 4-07	Analog and Digital Communication	CO-1	Demonstrate understanding of various analog and digital modulation and demodulation techniques	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO-2	Apply the knowledge to calculate different parameters of modulation and demodulation schemes.	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO-3	Analyze the performance of modulation and demodulation techniques in various transmission environments.	-	3	-	2	-	-	-	-	-	-	-	-	-	2	-
		CO-4	Design the transmitter and receiver for analog and digital communication like Viterbi receiver etc.	-	-	3	-		-	-	-	-	-	-	-	-	2	-
				3	3	3	2									2	2	
4EC 4-21	Analog and Digital Communication Lab	LO-1	Understand different analog modulation schemes for their efficiency and bandwidth.	3	2							3						
		LO-2	Analyze the behavior of a communication system in presence of noise.	3	2							3						
		LO-3	Investigate pulse modulation system and analyze their system performance.	3	2							3						
		LO-4	Analyze different digital	3	2	3						3						

			modulation schemes and can compute the bit error performance.															
		LO-5	Design a communication system comprised of both analog and digital modulation techniques.	3	3	3	3					3						
				3	2.25	3	3					3						
4EC 4-22	Analog Circuits Lab	LO-1	Explain transistor amplifiers and oscillators for experimental evaluation of their characteristics in different dimensions	2												3	-	2
		LO-2	Apply circuit diagrams for experimental evaluations of these transistors and oscillators		2											3	-	2
		LO-3	Perform experiment in appropriate manner for experimental data generation			2										3	-	2
		LO-4	Analyze experimental data for the characteristic profiles of these transistors and oscillators			2										3	-	2
				2	2	2										3		2
4EC 4-23	Microcontrollers Lab	LO-1	Recall basic concept of digital fundamentals to Microprocessor and microcontroller.	3												3		
		LO-2	Develop various systems related to assembly level programming of microprocessors and microcontroller.		3											3		

		LO-3	Distinguish/Analyze the properties of Microprocessors & Microcontrollers.				3										3	
		LO-4	Interpret the basic knowledge of microprocessor and microcontroller interfacing, delay generation, waveform generation and Interrupts.			3											3	
				3	3	3	3									3	3	
4EC 4-24	Electronics Measurement & Instrumentation Lab	LO-1	Understanding of the fundamentals of Electronic Instrumentation. Explain and identify measuring instruments	3	3											3		2
		LO-2	Apply the knowledge to measure resistance, inductance and capacitance by various methods.	3	3											3		2
		LO-3	Analysis the instrumentation system that meets desired specifications, requirements & results.	3	3											3		2
		LO-4	Evaluate the different parameters with different-different measuring instruments & transducers	3	3											3		2
				3	3											3		2
6EC 3-01	Power Electronics	CO-1	Describe Basic operation and compare performance of various Power	3	2		2								3	3	3	

			Semiconductor Devices, passive components and switching circuits.															
		CO-2	Apply the basic operational characteristic of power semiconductor devices to understand the working of step up and step down Choppers, power supplies and Buck Boost converters.	2	3		2		-	-	-	-	2		3	3		2
		CO-3	Derive typical alternative solutions and select suitable power converters to control electrical motors and other industry grade apparatus.	2	3	2		2	-	2	-	-			3	3	2	
		CO-4	Design and analyze single phase and three Phase Controlled Converters , Voltage and current source Inverters		3	2			-		-	-	2		3	2	3	
				2.3333	2.75	2	2	2		2			2		3	2.75	2.667	2
6EC 4-02	Computer Network	CO-1	Able to learn and analyze the principles of layered protocol architecture; be able to identify and describe the system functions in the correct protocol layer and further describe how the layers interact.	3	3	-	-	-	-	-	-	2	3	-	3	3	-	-
		CO-2	Apply and solve mathematical problems for data-link and	3	3	-	-	-	-	-	-	2	3	-	2	3	2	-

			network protocols.															
		CO-3	To apply network layer protocols and calculate number of subnets required for a network.	3	3	2	-	2	-	-	-	2	3	-	3	3	2	-
		CO-4	To evaluate the reliability of data transfer over transport layer by loss channel bit errors problem.	3	3	-	3	2	-	-	-	2	3	-	3	3	3	3
		CO-5	Demonstrate and describe for common services, system services, such as name and address lookups, and communications applications.	-	-	-	3	-		-	-	3	3	-	3	3	3	3
				3	3	2	3	2				2.25	3		2.75	3	2.5	3
6EC 4-03	Fiber Optics Communications	CO-1	Understanding the basic concepts and principles of Fiber Optics Communication.	3	2											3		
		CO-2	Apply the knowledge of Fiber Optics Communication to implements the optical measurement system and determine all parameters like numerical aperture, dispersion, attenuation, refractive index profile.	3	2	3	3									3	3	
		CO-3	Analyze the structure of different types of optical source and receivers for implementation of optical link.	2	3	3	3									3	3	

		CO-4	Design the WDM and DWDM systems and also characterize the performance of optical active and passive components. .	2	3	3	3	3							3	3	
				2.5	2.5	3	3	3							3	3	
6EC 4-04	Antennas & Propagation	CO-1	Explain the fundamental concept of antenna and its applications.	3											3		
		CO-2	Apply the concept of electromagnetic waves to calculate radiation pattern of different antennas.		3										3	3	
		CO-3	Analyze the radiation pattern of various antennas.				3								2	3	
		CO-4	Design Smart Antenna system for Real Time applications			3									3	2	
		CO-5		3	3	3	3								2.75	2.667	
6EC 4-05	Information Theory & Coding	CO-1	Explain fundamental of information theory like uncertainty, information, entropy, channel capacity and need of coding	3													
		CO-2	Apply coding techniques for source and channel like Huffman, Lempel-Ziv, Block codes etc.	3													
		CO-3	Analyze different coding & Decoding techniques for various applications like Compression,		3												

			Data Transmission etc.															
		CO-4	Design efficient codes for error detection and correction Techniques			3												
		CO-5		3	3	3												
6EC 5-11	Introduction to MEMS (Elective-1)	CO-1	Understand the fundamental principles, structure, fabrication, properties and approach of MEMS/NEMS including Micro devices, Micro systems and Micromachining techniques.	3											3			
		CO-2	Apply the appropriate MEMS fabrication techniques for Micromachining.	3	3	2									3	3		
		CO-3	Analyze the Scaling effect of Micro/Nano Sensors for specific application.	3	3		2								3		3	
		CO-4	Design and Develop Micro/Nano devices, Micro/Nano systems for solving the real life problems			3	3	3							3	3	2	
		CO-5		3	3	2.5	2.5	3							3	3	2.5	
6EC 5-12	Nano Electronics (Elective-2)	CO-1	Explain and understand the Schrodinger equation, CMOS Scaling, the Nano scale MOSFET, Funfest, Vertical MOSFETs, Resonant Tunneling Diode, Coulomb dots, Quantum blockade, Single	2	2	2				3					3			

			electron transistors, Carbon nanotube electronics.															
		CO-2	Apply different technical methods to obtain energy, wave function, propagation constant, channel length in MOSFET and CMOS.	3											3	3		
		CO-3	Analyze and identify the changes in the parameters like inter-atomic distance, 2D and 3D structure, Scaling of CMOS.	2	3										3	3		
		CO-4	Synthesis the structure of CMOS, Fine, Vertical MOSFET and Carbon Nano tubes.			3								3	2		3	
		CO-5		2.3333	2.5	2.5				3				3	2.75	3	3	
6EC 4-21	Computer Network Lab	LO-1	Understand the concept of TCP/IP PROTOCOLS, LAYERED STRUCTURE, LAN, and MAN, WAN.	3	2	1								3	3		1	
		LO-2	Use of Data Structures in Networking using the concept of Weighted and Unweight Graph.	3	2	1								3	3		1	
		LO-3	Describe the simulation of Queuing Theory.	3	2	1								3	3		1	
		LO-4	Design LAN Training Kit using the concept of CSMA/CD/CA.	3	2	1								3	3		1	
6EC 4-22	Antenna &	LO-1	Understand the basic concept of	3														

	Wave Propagation Lab		antenna radiation mechanism used in wireless communication.														
		LO-2	Apply the different mode of communication used in different application as mobile, satellite.	3													
		LO-3	Analyze and identify the problems in MOS and CMOS devices (like estimate of gate delay, transistor sizing, power dissipation, over pressure and temperature).		3		2								3		
		LO-4	Analyze the behavior of different type of antenna based on its fundamental parameters.			3	3	3						3		3	2	
		LO-5		3	3	3	2.5	3						3		3	2	
6EC 4-23	Electronics Design Lab	LO-1	Understand the basic concepts and applications of Op-amp IC (741), 555 timer IC, CRO, bread board and function generator	3												3		
		LO-2	Apply the different designing methods on bread board using IC-741 and IC- 555 for different applications.	3										3		3	2	
		LO-3	Analyze the behavior of different type of circuits using IC-741 and IC-555 in different application for different inputs		3		2											
		LO-4	Design the circuit diagram			3	3	3										

			on bread board using IC-741 and IC-555 for different applications.															
		LO-5		3	3	3	2.5	3						3		3	2	
6EC 4-24	Power Electronics Lab	LO-1	Understand the characteristics of SCR and its triggering using RC and UJT triggering circuits.	3	2			3							3	3		
		LO-2	Understand AC voltage regulators using TRIAC, anti-parallel thermistors, TRIAC and DIAC as well as pulse generation using DSP/FPGA platform	3	3	2	2	3							3	3		2
		LO-3	Study single-phase bridge converter, single-phase cycloconverter and single-phase dual converter along with dc motor speed control	3			3								3	3	2	
		LO-4	Perform experiment on single phase PWM inverter, buck, and boost and buck-boost regulators.	2	3			3							3	2	3	
		LO-5	Perform speed control of DC motor using a chopper and induction motors using single phase AC voltage regulator along with open loop & closed loop motor control.	3		3		3							3	2	3	
				2.75	3	2.5	2.5	3							3	2.5	2.667	2
																3	3	3

8EC 5-11	Artificial Intelligence And Expert Systems	CO-1	Demonstrate fundamental understanding of artificial intelligence (AI) and expert systems.	3		2		-	2	-	-	-	-	-	2	3		
		CO-2	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning	2	3	2	3	-	2	-	-	-	-	-	2	3	3	
		CO-3	Demonstrate proficiency in applying scientific method to models of machine learning.	3	3	2	1	-	3	-	-	-	-	-	2	3		3
		CO-4	Discuss the basics of ANN and different optimizations techniques.	3	3	2	-	-	2	-	-	-	-	-	2	3	3	2
				2.75	3	2	2		2.25						2			
8EC 5-12	Digital Image and Video Processing	CO-1	Understand image formation and the role of different color formats.	3												3	3	2.5
		CO-2	Compute the effect of intensity transformations on an image and apply the spatial and frequency domain filtering.	3	3	3										3		3
		CO-3	Describe the techniques for image enhancement and image restoration in a degraded environment.	3	3	2	2									3		3
		CO-4	Analyze the effect and requirement of morphological operations for an image and its applications.	3	3	3	3									3	2	3

				3	3	2.667	2.5									3	2	3
8ME6-60.2	Simulation Modeling and Analysis	8ME6-60.2.1	Define the simulation modeling and analyze the practical situations in organizations	3	-	-	-	-	-	-	-	-	-	-	-	2	-	1
		8ME6-60.2.2	Examine the random numbers and random variants approach in different applications	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		8ME6-60.2.3	Investigate the sensitivity of simulation solutions for realistic problems	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
		8ME6-60.2.4	Interpret the model and apply the results to solve critical issues of a realististic problem		3	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.50	3.00	-	-	-	-	-	-	-	-	-	-	2	-	1
8ME6-60.1	Operations Research	8ME6-60.1.1	Generate mathematical models of complex engineering problems	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		8ME6-60.1.2	Analyze the various optimization techniques with the appropriate tools	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		8ME6-60.1.3	Identify suitable optimization techniques to solve industrial and societal problems	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
		8ME6-60.1.4	Interpret the solution and apply the results to solve complex engineering problems	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-
				2.50	3.00	3.00	-	-	-	-	-	-	-	-	-	2	-	-

8EE 6-60.1	Energy Audit and Demand side Management	CO 1	Understand the current Energy Scenarios in India.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Understand the energy auditing of motors, lighting system and building, by appropriate analysis methods through survey instrumentations.	3	3	-	-	-	-	-	-	-	-	-	-	2	3	3
		CO 3	Understand the Electrical-Load Management and Demand side Management.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO 4	Apply the Energy Conservation in transport, agriculture, household and commercial sectors.	3	2	2	1	-	-	-	-	-	-	-	-	1	1	1
				3.00	2.33	2.00	1.00	-	-	-	-	-	-	-	-	1.67	2.00	2.00
8EE 6-60.2	Soft Computing	CO1	Learn about soft computing techniques and their applications.	2	2	3	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Analyze various neural network architectures.	2	2	3	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	Define the fuzzy systems	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Understand the genetic algorithm concepts and their applications	3	2	3	-	-	-	-	-	-	-	-	-	-	-	-
		CO5	Identify and select a suitable Soft Computing technology to solve the problem.	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
				2.50	2.25	3.00	-	-	-	-	-	-	-	-	-	-	-	-
8CE 6-60.1	Composite Materi	CO1	Explain the basics of composites, its	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-

	als (CM)		structure and its properties															
		CO2	Compute the physic-mechanical properties of composites from tests	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-
		CO3	Assessment of engineering properties of composite materials	1	2	1	-	-	-	-	-	-	-	-	-	-	2	-
		CO4	Analyze the failure and maintenance of composite materials	1	-	1	1	1	-	-	-	-	-	-	-	1	1	-
				1.50	1.50	1.00	1.00	1.00	-	-	-	-	-	-	-	1.00	1.25	-
8CE6-60.2	Fire and Safety Engineering (F&SE)	CO1	Explain the fundamentals of Fire Engineering	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-
		CO2	Apply the learned principles in planning, designing and management of fire safe buildings	2	1	1	-	1	1	-	-	-	-	1	-	1	1	-
		CO3	Assess firefighting installations, control technologies and hazardous materials	1	2	1	-	1	1	-	-	-	-	-	-	1	1	-
		CO4	Design of fire safety building for fire resistant construction by following safety legislation	1	-	1	1	1	1	-	1	-	-	-	-	-	1	-
				1.50	1.50	1.00	1.00	1.00	1.00	-	1.00	-	-	1.00	-	1.00	1.00	-
8CS6-60.1	Big Data Analytics (Open Elective-II)	CO1	Understanding of Big Data and their needs in Industry	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO2	Designing of Hardtop and Google File System	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-

		CO3	Analysis of Map Reduce and their basic programs map reduce.	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Design a Hive Data system.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
				3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	-	1.00	-	-
8CS6-60.2	IPR, Copyright and Cyber Law of India (Open Elective-II)	CO1	To Determine and analyze the domain name system (DNS) in internet and various cybercrime offence in cyber space.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	To understand the concept of Intellectual Property and Intellectual Property Rights with special reference to India and abroad.	-	-	-	-	-	-	-	3	-	-	-	-	-	1	-
		CO3	To Apply intellectual property law principles including the copyright law, patents law, designs and trademarks, to real problems and analyze the social impact of intellectual property law and policy.	-	-	-	-	-	3	-	-	-	-	-	-	-	1	-
		CO4	To Study the Jurisdiction Issues in Cyber Space and Competition Law in India	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				3.00	2.00	-	-	-	3.00	-	3.00	-	-	-	-	-	1.00	-
8EC4-22	Skill Development Lab	LO1	Comprehend various modern engineering tools/software's.	3												3	2	3
		LO2	Identify current requirements of industries.	3	2	2										1.803	1.4	2.222

																	03	
		LO3	Implement various tools/software's using different design patterns.		3	2										3		3
		LO4	Select Startup for innovation/ entrepreneurship.			3										3	3	3
		LO5	Develop projects to provide solution for different real-life problems.													3		3
				3	2.5	2.333										3	3	3
8EC 7-50	Project	LO1	Acquire documentation, project management and Problem solving skills.	3												3		2
		LO2	Identify, analyze and solve real-life problems.		2	2										3		
		LO3	Develop Professionalism, team work ability.	3		2	2									3	2	2
		LO4	Develop oral as well as written presentation skills.			2	2									3		2
		LO5	Make comprehensive use of the technical knowledge gained from previous courses.		2	2										3		
				3	2	2	2											
8EC 4-21	Internet of Things (IOT) Lab	LO1	Understand the concept of Internet of Things	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LO2	Implement interfacing of various sensors with Arduino/Raspberry Pi.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		LO3	Demonstrate the ability to transmit data	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-

			wirelessly between different devices.															
		LO4	Show an ability to upload/download sensor data on cloud and server.	1	2	1	-	1	1	-	-	-	-	-	-	-	1	-
		LO5	Examine various SQL queries from MySQL database.	-	2	2	1	2	1	-	-	-	-	-	-	-	1	-
				1.3333	1.75	1.333												

10.Course File Sample

Outcome Based Process Implementation Guidelines for Faculty

a. Labelling your course file

- **Name of faculty:**
- **Class- SEM:**
- **Branch:**
- **Course Code:**
- **Course Name:**
- **Session:**

b. List of Documents:

1. Vision & Mission Statements of the Institute
2. Vision &Mission Statements of the Department
3. List of PEO, PSO and PO of department
4. Personal Time Table
5. RTU Syllabus

11. **Document as per point no. 1-4 in guidelines**

12. **Course Plan**

13. **Document as per point no 6-12 in guidelines**

14. **Document for CO AssessmentStage1: As per point no13, up to 13.2.5**

15. **Document for CO Assessment Stage2: As per point no13, upto13.2.5, with comparison to previous**

16. **Document for CO Assessment Stage3: As per point no13, upto13.2.5, with comparison to previous**

17. **Document for CO Attainment through RTU Component: Previous RTU Result: point no. 13.3 upto13.3.2**

18. **Document for PO attainment through RTU Component: Previous RTU Result: point no. 13.4 upto13.4.2**

19. **Document for Overall Attainment of PO through CO: As per point no13.5**

20. **Document for last years (Repeat process from6-14 above): Comparative data should be included in course file**

21. **Lecture Notes**

22. **Copy of Assignments questions given from time to time**

23. **Copy of Tutorial Sheets given (if applicable)**

24. **RTU Question Papers with answer**

25. **Internal Assessment Question Papers with answer from time to time**

26. **Topics covered beyond syllabus-References**

27. **Details of any other activity and its assessment through rubric be included**

28. **Mapping department level/focus activities with your COs**

29.Outcome Based Process Implementation Guidelines for Faculty

Course CO-PO, Preparation, Assessment Formats

Academic Session: 2023-2024 **Class:** **Semester:**

Name of the Faculty:

Subject: **Subject Code:**

This document is meant as guidelines for implementing Outcome based education system as per to NBA process.

1. **Vision & Mission of Department: Statement and Mapping with Institute Mission Here you have to include department mission& vision statements and show mapping of keywords with institute mission.**
2. **Program Educational Objectives (PEOs): Statement and Mapping with Department Vision &Mission**
   Here you have to include department PEO statements and show mapping of keywords with department vision &mission.
3. **Program Specific Outcome (PSOs): Statement and Mapping with Department Vision & Mission**
   Here you have to include department PSO statements and show mapping of keywords with department vision & mission.
4. **Program Outcome (POs): Statement and Mapping with PEO and PSO**
   Here you have to include PO statements and show mapping of keywords with department PEOs &PSOs.
5. **Course Plan (Deployment):**

(Please write how you intend to cover the contents: i.e., coverage of Units by lectures, guest lectures, design exercises, solving numerical problems, demonstration of models, model preparation, or by assignments, etc.), **for example**

Coverage of Units by lectures
Design exercises
Demonstration of models
By assignments

ExampleT1: Principles of Machine, By P.S.Bhimra, Khanna Publication, Edition 2019

6. **Course Outcomes:** Look for strong mapping of course with specific PO (2-3). Define Generic Course Outcomes (max.) using Blooms Taxonomy. (In case of Lab Course define generic Lab Outcomes LO and refer CO as LO in this document).

7. **CO-PO-PSO Mapping: Mapping Levels: 1- Low, 2- Moderate, 3-Strong**
   First try to find out 2-3 PO the strongly related to your subject contents. Go through the contents and try to formulate 4-5 Course Outcome as per bloom taxonomy. Map each CO with PO and PSO as above. While mapping please rethink if you map any PO with 3, it means you are planning to deliver the contents of that level and you will also examine the students at that level.

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2															
CO3															
CO4															
CO5															

7.1 PO Strongly Mapped: (Example):

O **PO2: Write full statement with keywords highlighted** o **PO3: Write full statement with keywords highlighted** o **PO4: Write full statement with keywords highlighted**

7.2 PO Moderately Mapped: (Example)

O **PO1: Write full statement with keywords highlighted**

O **PO11: Write full statement with keywords highlighted**

7.3 PO Low Mapped: (Example)

O **PO12: Write full statement with keywords highlighted**

7.4 PSO Strongly Mapped: (Example)

O **PSO 1: Write full statement with keywords highlighted**

7.5 P S O Moderately Mapped: (Example)

O **PSO 2: Write full statement with keywords highlighted**

6.6 PSO Low Mapped: (Example)

O **PSO 3: Write full statement with keywords highlighted**

8. **Rules for CO/LO Attainment Levels: (Targets)**

All the courses of your department should be divided into the ECE categories A-Most Difficult course, B-Medium level of Difficulty, C- Low level of Difficulty – (Easy)
According to difficulty level, you can decide specific range for CO attainment targets for Continuous assessment from the following table.
Remember that targets for internal assessment should be higher.

Course Category	Level 3	Level 2	Level 1
A	**60 % of students getting > 60% marks**	**50-60 % of students getting > 60% marks**	**40-50 % of students getting > 60% marks**
B	**80 % of students getting > 60% marks**	**60-80 % of students getting > 60% marks**	**40-60 % of students getting > 60% marks**
C	**90 % of students getting > 60% marks**	**70-90 % of students getting > 60% marks**	**40-70 % of students getting > 60% marks**

9. End Term RTU Component: CO Attainment Levels

All the courses of your department should be divided into the ECE categories A-Most Difficult course, B-Medium level of Difficulty, C- Low level of Difficulty – (Easy)
According to difficulty level and the results of past 3-5 years, you can decide specific range for CO attainment targets for RTU component from the following table.

Course Category	Level 3	Level 2	Level 1
A	**50 % of students getting > 60% marks**	**40-50 % of students getting > 60% marks**	**30-40 % of students getting > 60% marks**
B	**60 % of students getting > 60% marks**	**40-60 % of students getting > 60% marks**	**30-40 % of students getting > 60% marks**
C	**80 % of students getting > 60% marks**	**60-80 % of students getting > 60% marks**	**40-60 % of students getting > 60% marks**

For the specific CO/LO attainment levels of your respective course please use the above tables as reference according your subject difficulty level and prepare following table.

S. No.	Course Type	Attainment Level=1	Attainment Level=2	Attainment Level=3
1	**Theory Courses** Mid Semester Exams			
2	**Theory Courses** University Exam			
4	**Practical Courses** – Internal Exams			
5	**Practical Courses** - University Exam			
6	**Assignments/Unit Test**			
7.	**Any other**			

10. CO wise Assessment Activities (as Mentioned in Session Plan):
You can plan for each CO, activities/ assessment tools to be conducted/ used for its achievement.
Use X to those you select for specific CO. Remove all unused columns.

	Activities															
CO	Pre Mid I Test	Post Mid I Test	Quiz 1	Quiz 2	Pre Mid II Test	Post Mid II Test	Assignment 1	Assignment 2	Workshop	Seminar	Project	Training	Discussion	Mid 1	Mid 2	Ind. visit
CO1																
CO2																
CO3																
CO4																
CO5																
CO6																

In case of Lab course some activities are as follows:

LO	Internal Practical exams	Laboratory Tests	Viva	Records	Project Presentation	Project Evaluation	External practical exams
LO1							
LO2							
LO3							
LO4							

11. CO wise Assessment Activities:
Based on CO-PO mapping, determine targets for each CO as average of targets of all relevant POs.

CO	PO												Avg.	PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	CO Targets	PSO1	PSO2	PSO3
CO1																
CO2																
CO3																
CO4																
CO5																

12. Activity wise Assessment Tools:

This gives you generalized view of different direct and indirect tools those can be used for assessment / achievement of CO/PO. (Decide which tools are required for assessing a particular CO/LO and in reference to Course A, B, C difficulty level).

Sr. No.	Activity	Assessment Method	Tools	Weightage Marks	Recommendation
1.	Pre-Mid Term 1	Direct	Marks	10	For CO
2.	Post-Mid Term 1	Direct	Marks	10	For CO
3.	Quiz 1	Direct	Marks	10	For CO
4.	Quiz 2	Direct	Marks	10	For CO
5.	Pre Mid Term 2	Direct	Marks	10	For CO
6.	Post Mid Term 2	Direct	Marks	10	For CO
7.	Mid Term 1	Direct	Marks	20	For CO
8.	Mid Term 2	Direct	Marks	20	For CO
9.	Assignment 1	Direct	Marks	10	For CO
10.	Assignment 2	Direct	Marks	10	For CO
11.	Workshop	Indirect	Rubrics	5	For LO
12.	Seminar/ SPL	Indirect	Rubrics	5	For CO/LO
13.	Project (Mini or NSP)	Indirect	Rubrics	20	For LO
14.	Discussion	Indirect	Rubrics	5	For LO
15.	Training	Indirect	Rubrics	20	For LO
16.	Industrial Visit	Indirect	Rubrics	20	For LO
17.	Or any other activity	Direct/ Indirect	Marks/ Rubrics	any	For LO
18.					
Note that for every rubrics you need to decide assessment criteria, range of marks or weightage – above values are indicative					

13. CO Assessment Process:

After every activity (Ideally as per above table): (Frequency of Assessment- Can be taken as monthly). So the assessment can be for all activities held during the month. Do the following.

13.1 Attainment of COs

13.1.1 Attainment Table for CO1: 3ECEA101.1

CO1: 4ECEA101.1: Attainment Table (Columns) As Applicable CO wise-Monthly									
Student	**Pre Mid I Test 10**	**Quiz 1 10**	**Assignment 10**	**Quiz 1 10**	**WS 10**	**Training 10**	**Total (60)**	**% 0f Marks**	**Level of Attainment**
Name1									**3**
Name2									**2**
Name 3									**1**
Name 4									**2**
Name 5									**1**
Name 6									**2**
----									**--**
------									**--**
	No. of Students attained level 3=					**% of Students Attained Level 3=**			
	No. of Students attained level 2=					**% of Students Attained Level 2=**			
	No. of Students attained level 1=					**% of Students Attained Level 1=**			
	Target Achieved= ? (Check Level 3 % attainment -If No Find Gap)								
	Mark X for absent- Take avg. of all present								

(Repeat it for all other COs, (CO2 – CO5))

13.1.2 CO-Gap Identifications

COs	CO 1	CO 2	CO 3	CO4	CO5
Target					
Achieved					
Gap					

13.1.3 Gaps Identified:

Describe what the reasons for gaps are

i.

ii.

Overall CO Attainment Table: Example

COs	CO 1	CO 2	CO 3	CO4	CO5	Co6
Attainment level as per rules set	3	1	3	3	3	3
Average CO attainment through internal assessment	**2.67**					

13.1.4: Activities Decided to bridge the gap

Please do analyze whether you could get improvement through activities decided and conducted for improvements. Reason should be noted why / how it is improved or not.

13.2 Attainment of POs & PSO:

13.2.1 Target-Expected Attainment of PO by attainment of CO- Put all mappings of 3, 2 and 1. Based on CO-PO mapping, determine targets for each PO as average of targets of all relevant COs.

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
4ECEA101.1															
4ECEA101.2															
4ECEA101.3															
4ECEA101.4															
4ECEA101.5															
Obtain Average-PO/PSO Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets	Targets

13.2.2 Attainment of POs & PSO through CO as Continuous Evaluation:

Put all attainment values of CO as per mappings with 3, 2, 1 as evaluated in 13.1.1 (Frequency- Monthly)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
4ECEA101.1															
4ECEA101.2															
4ECEA101.3															
4ECEA101.4															
4ECEA101.5															
Obtain Avg. PO/PSO Attainment	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved

13.2.3 PO Gap Identification:

	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Targets															
Achieved															
Gap															

13.2.4 Gaps Identified:

Describe what the reasons for gap (for PO) are.

i.
ii.

13.2.5 Activities Decided to bridge the gap

Please do analyze whether you could get improvement through activities decided and conducted for improvements. Reason should be noted why / how it is improved or not.

Repeat whole process after one month, Two months, and three months. Plot bar chart for improvement in CO, PO & PSO. (Every month)

13.3 Attainment of CO through RTU Exam:
This may be possible for previous semester results so overall attainment. If faculty is changed, data will be evaluated by concerned faculty who taught and handed over to current faculty. If faculty not available, then current faculty will do the same.

Attainment of CO: 3ECEA101: Subject:			
Student	**RTU Marks (80)**	**% 0f Marks**	**Level of Attainment**
Name1			**3**
Name2			**2**
Name 3			**1**
Name 4			**2**
Name 5			**1**
Name 6			**2**
----			**--**
------			**--**
No. of Students attained level 3=		**% of Students Attained Level 3=**	
No. of Students attained level 2=		**% of Students Attained Level 2=**	
No. of Students attained level 1=		**% of Students Attained Level 1=**	
CO Attainment = ? (Check Level 3 % attainment -If No Find Gap)			
Mark X for absent- Take avg. of all present			

13.3.1 Attainment of CO through RTU Component:

CO: Course Code: Course Name					
Target					
Achieved					
Gap					

13.3.1 Gaps for CO attainment through RTU Component:
Analyze RTU Question paper with respect to COs formulated, contents delivered and students examined, find out reasons for gaps

i.
ii.

13.3.2 Action to be taken:
Prepare recommendations for improvement in planning & teaching for gaps identified.

13.4 Attainment of PO through CO (RTU) Component
Put RTU Results as per target achieved only and mapping level, in following table

Attainment of PO through CO (RTU) Component															
CO	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
4ECEA101															

Attainment of PO through CO (RTU) Component															
4ECEA101	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
Targets															
Achieved															
Gap															

13.4.1 Gaps in PO through CO from RTU component:
Analyze RTU Question paper with respect to COs formulated & mapped, contents delivered and students examined, find out reasons for gaps
Describe what are the reasons for gap

i.
ii.

13.4.2 Action to be taken:
Prepare recommendations for improvement in planning & teaching for gaps identified.

13.5 Overall Attainment of PO & PSO: Through Continuous Assessment & RTU

While combining attainment through Continuous evaluation and RTU component, following weightage be considered.

1. **Internal Assessment – Total weightage- 40 %**
2. **RTU Component ------- Weightage – 60 %**

Put all attainments in the following table and compute.

13.5.1: Table 1

	RTU Component			Internal Assessment				
Student	**RTU Marks (80)**	**% of Marks**	**60% Weightage X6/100 (A)**	**Overall CO (-----)**	**% of Marks**	**Weightage X4/100 (B)**	**Total (A+B)**	**Level of Attainment**
Name1								**3**
Name2								**2**
Name 3								**1**
Name 4								**2**
Name 5								**1**
Name 6								**2**
----								**--**
------								**--**
No. of Students attained level 3=					**% of Students Attained Level 3=**			
No. of Students attained level 2=					**% of Students Attained Level 2=**			
No. of Students attained level 1=					**% of Students Attained Level 1=**			
PO Attainment = ? (Check Level 3 % attainment -If No Find Gap)								
Mark X for absent- Take avg. of all present								

OR

13.5.2: Table 2

	RTU			Internal CO1/ Activity 1 (Weightage %)			Internal CO2/ Activity 2 (Weightage			Internal CO3/ Activity 3 (Weightage %)				
Student	**RTU Marks (80)**	**% 0f Marks**	**60% Weight age X----- /100 A**	**Overall CO (-----)**	**% 0f Marks**	**Weightage X-- /100 B**	**Overall CO (-----)**	**% 0f Marks**	**Weightage X-- /100 C**	**Overall CO (-----)**	**% 0f Marks**	**Weightage X--/100 D**	**Total (A+B+ C+ D)**	**Level of Attainments**
Name1														**3**
Name2														**2**
Name 3														**1**
Name 4														**2**
Name 5														**1**
Name 6														**2**
----														**--**
------														**--**

No. of Students attained level 3= Attained Level 3=	**% of Students**
No. of Students attained level 2= Attained Level 2=	**% of Students**
No. of Students attained level 1= Attained Level 1=	**% of Students**
PO Attainment = ? (Check Level 3 % attainment -If No Find Gap)	
Mark X for absent- Take avg. of all present	

13.5.3: Overall PO & PSO Attainment through Course:
Put Overall PO & PSO attainment as per mapping 3, 2, and 1 above:

Attainment of Overall PO for Session 2021-2022															
CO	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
4ECEA101															
PO Attainment															

13.5.4: Overall Gaps for Attainment of PO and PSO from the Course
Put Overall PO & PSO targets & attainment as per mapping 3, 2, and 1 above:

Attainment & Gap of Overall PO Session ----------															
4ECEA101	**PO**												**PSO**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
Targets															
Achieved															
Gap															

13.5.5. Overall Gaps for Course taught:
Go through all gaps identified above and summarize. Describe what the reasons are.
i.
ii.

13.5.6 Action to be taken:
Prepare recommendations for improvement in planning & teaching (Internal & RTU) for gaps identified. Decide Activities to be conducted to bridge the gaps in COs.

Repeat whole process after One year before, Two year before, and thee year before. Plot bar charts for Continuous improvements check in CO, PO & PSO. (Every Year).

30.File Formats

a. List of File Formats

i. Front Page of Course File
ii. ABC Analysis Format
iii. Blown-up Format
iv. Deployment Format
v. Zero Lecture Format
vi. Tutorial Format
vii. Assignment Format
viii. Lecture Note Format
ix. Mid Term Question Paper Format
x. Mid Term Practical Exam Format
xi. Evaluation Sheets Format
xii. Activity Report Format

b. Front Page of Course File

POORNIMA
COLLEGE OF ENGINEERING

TEACHING MANUAL

COURSE: _____

SEMESTER: _____

SUBJECT: _____

SUB. CODE: _____

CONTENT: PGC Syllabus, Blown-up, Deployment, Zero Lectures, Detailed lecture notes with cover page, Tutorial/Home-Assignment Sheets

_____

SESSION: 20___-___

NAME OF FACULTY: _____

DEPARTMENT: _____

CAMPUS: _____

c. ABC Analysis Format

POORNIMA
COLLEGE OF ENGINEERING

Department of Electronics and Communication Engineering

Even Semester- 2023-24

ABC ANALYSIS

Campus: PCE **Course: B.Tech** **Class:3rd year** **Date:**

Name of Faculty: **Name of Subject: Introduction to MEMS** **Code: 6EC5-11**

Unit no.	Category-A (Hard Topic)	Category-B (Topics with average hardness level Topic)	Category-C (Easy to understands Topic)	Preparation of "A" Category topic
1	Mechanics of Solids, Stress in Solids, Strain, Derivation of Gauge Factor	Thermal Expansion Phenomena of Bending	Hook`s Law, Poisson Ratio, Relation Between Poisson Ratio and Gauge Factor	**PPT and Notes**
2	Designing of Process sequence in Fabrication, Oxidation Types of Oxidation	Process sequence of Lithography Process Introduction to Photo resist. Positive and Negative Photo Resist	Dry and Wet Etching	**Special Lecture**
3	Role of Sacrificial Layer during fabrication Method of deposition of Sacrificial Layer	Bulk Micromachining Process flow of Micromachining	Metallization, Wafer-bonding and Process of Metallization	**PPT**
4	Role of Sacrificial Layer during fabrication	Surface and Bulk Micromachining	Role of Sacrificial Layer during fabrication	**Special Lecture and notes**

d. Blown-up Format

POORNIMA
COLLEGE OF ENGINEERING

BLOWN UP SYLLABUS

Campus: PCE	**Course: B.Tech**	**Class:3rd year**	**Date:**
Name of Faculty:		**Name of Subject: Introduction to MEMS**	**Code: 6EC5-11**

S.No.	Topic as per Syllabus	BLOWN UP TOPICS
1)	**Unit-I Basics of MEMS** **(1.1) Introduction and Historical Background.** **(1.2) Mechanics of solids in MEMS/NEMS: Stresses, Strain** **(1.3) Hookes's law, Poisson effect,** **(1.4) Linear Thermal Expansion, Bending; Energy methods** **(1.5) Overview of Finite Element Method, Modeling of Coupled Electromechanical Systems** **Conclusion** **UNIT-II Micro and Nano Sensors Overview** **(2.1) Introduction** **(2.2) Scaling Effects. Micro/Nano Sensors, Actuators and Systems overview: Case studies.**	(1.1.1) Micro and Nano Scale (1.1.2) Micro Systems (1.1.3) Smart Technologies (1.1.4) Smart Materials (1.1.5) Micro Technology (1.1.6) Applications (1.1.7) Scope and outcome of the course (1.2.1)Mechanics of Solids (1.2.2)Stress in Solids (1.2.3)Strain (1.2.4)Derivation of Gauge Factor (1.2.5) Modulus of rigidity (1.3.1)Introduction (1.3.2)Hook`s Law (1.3.3) Poisson Ratio (1.3.4) Relation Between Poisson Ratio and Gauge Factor (1.4.1)Introduction (1.4.2) Thermal Expansion (1.4.3) Phenomena of Bending (1.4.4)Strain Energy (1.4.5) Different types of Energy Methods
2)	**(2.3) Review of Basic MEMS fabrication modules: Oxidation, Deposition Techniques**	(1.5.1) Introduction (1.5.2) Finite Element Method (1.5.3)Types of Coupling (1.5.4) Modeling of Coupled Electromechanical Systems

	(2.4) Lithography (LIGA)	
		(2.1.1) Basic Introduction about Micro and Nano Devices
	(2.5) Etching	
3)	**Conclusion**	(2.2.1)Introduction of Scaling (2.2.2) Scaling in Micro Sensors with Examples (2.2.3) Scaling in Nano Sensor with Examples (2.2.4)Advantages and limitations (2.2.5)Case Studies
	UNIT-III Micromachining Introduction **(3.1) Surface Micromachining, sacrificial layer processes**	
	(3.2) Bulk Micromachining, Isotropic Etching and Anisotropic Etching, Wafer Bonding.	(2.3.1)Introduction (2.3.2)Clean Room Basics (2.3.3) Designing of Process sequence in Fabrication (2.3.4)Oxidation (2.3.5) Types of Oxidation (2.3.6) Deposition (2.3.7) Types of Deposition with advantages and Limitations
	Conclusion	(2.4.1) Introduction to Lithography (2.4.2)Types of Lithography (2.4.3)Process sequence of Lithography Process (2.4.4)Introduction to Photo resist (2.4.5)Positive and Negative Photo Resist (2.4.6)Hard and Soft Bake during Lithography (2.5.1)Introduction to Etching Process during Fabrication (2.5.2) Dry and Wet Etching (2.5.3) Advantages and limitations

		(3.1.1) Introduction (3.1.2) Surface and Bulk Micromachining (3.1.3) Silicon wafer processing (3.1.3.1) Crystal Orientation (3.1.3.2) Preparation of Silicon Wafer (3.1.3.3) Precaution in preparation (3.1.3.4) Checking of Precious Wafer (3.1.4) Role of Sacrificial Layer during fabrication (3.1.5) Method of deposition of Sacrificial Layer (3.2.1) Bulk Micromachining (3.2.1.1) Process flow of Micromachining (3.2.2) Etching (3.2.2.1) Isotropic Etching (3.2.2.2) Anisotropic Etching (3.2.3) Metallization (3.2.4) Wafer-bonding and Process of Metallization (3.2.5) Molding Process

e. Deployment Format

POORNIMA
COLLEGE OF ENGINEERING

DEPLOYMENT

Campus: PCE Course: B. Tech. Class/Section: 3rd Year Date: 16/02/2024 Name of Faculty: Dr. Meetu Nag Name of Subject: Introduction to MEMS Code: 6EC5-11						
S. No.	**TOPIC AS PER BLOWNUP SYLLABUS**	**Lecture No.**	**Target Date of Coverage**	**Actual Date of Coverage**	**Reason For Deviation**	**Ref. Book**
1	**Zero lecture**	L0				
2	**(1.1) Introduction and Historical Background.** (1.1.1) Micro and Nano Scale (1.1.2) Micro Systems (1.1.3) Smart Technologies (1.1.4) Smart Materials (1.1.5) Micro Technology (1.1.6) Applications (1.1.7) Scope and outcome of the course **(1.2) Mechanics of solids in MEMS/NEMS: Stresses, Strain** (1.2.1)Mechanics of Solids (1.2.2)Stress in Solids (1.2.3)Strain (1.2.4)Derivation of Gauge Factor (1.2.5) Modulus of rigidity **(1.3) Hookes's law, Poisson effect** (1.3.1)Introduction (1.3.2)Hook`s Law (1.3.3) Poisson Ratio (1.3.4) Relation Between Poisson Ratio and Gauge Factor **(1.4) Linear Thermal Expansion, Bending; Energy methods** (1.4.1)Introduction	L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14				

	(1.4.2) Thermal Expansion (1.4.3) Phenomena of Bending (1.4.4)Strain Energy (1.4.5) Different types of Energy Methods **(1.5) Overview of Finite Element Method, Modeling of Coupled Electromechanical Systems** (1.5.1) Introduction (1.5.2) Finite Element Method (1.5.3)Types of Coupling (1.5.4) Modeling of Coupled Electromechanical Systems **(2.1) Introduction** (2.1.1) Basic Introduction about Micro and Nano Devices. **(2.2) Scaling Effects. Micro/Nano Sensors, Actuators and Systems overview: Case studies.** (2.2.1)Introduction of Scaling (2.2.2) Scaling in Micro Sensors with Examples (2.2.3) Scaling in Nano Sensor with Examples (2.2.4)Advantages and limitations (2.2.5)Case Studies **(2.3) Review of Basic MEMS fabrication modules: Oxidation, Deposition Techniques** (2.3.1)Introduction (2.3.2)Clean Room Basics (2.3.3) Designing of Process sequence in Fabrication (2.3.4)Oxidation (2.3.5) Types of Oxidation (2.3.6) Deposition (2.3.7) Types of Deposition with advantages and Limitations	L15 L16 L17 L18 L19 L20 L21 L22 L23 L24 L25 L26 L27, L28 L29 L30 L31 L32 L33 L34 L35 L36 L37 L38 L39 L40				

	(2.4) Lithography (LIGA) (2.4.1) Introduction to Lithography (2.4.2)Types of Lithography (2.4.3)Process sequence of Lithography Process (2.4.4)Introduction to Photo resist (2.4.5)Positive and Negative Photo Resist (2.4.6)Hard and Soft Bake during Lithography **(2.5) Etching** (2.5.1)Introduction to Etching Process during Fabrication (2.5.2) Dry and Wet Etching (2.5.3) Advantages and limitations **(3.1) Surface Micromachining, sacrificial layer processes** (3.1.1) Introduction (3.1.2) Surface and Bulk Micromachining (3.1.3) Silicon wafer processing (3.1.3.1) Crystal Orientation (3.1.3.2) Preparation of Silicon Wafer (3.1.3.3)Checking of Precious Wafer (3.1.4) Role of Sacrificial Layer during fabrication (3.1.5) Method of deposition of Sacrificial Layer **(3.2) Bulk Micromachining, Isotropic Etching and Anisotropic Etching, Wafer Bonding.** (3.2.1) Bulk Micromachining (3.2.1.1) Process flow of Micromachining (3.2.2) Etching					

	(3.2.2.1) Isotropic Etching (3.2.2.2) Anisotropic Etching (3.2.3) Metallization (3.2.4) Wafer-bonding and Process of Metallization (3.2.5) Molding Process					

f. Zero Lecture Format

POORNIMA
COLLEGE OF ENGINEERING

ZERO LECTURE

Session: 20 - (Sem.)

Campus: ……..…… Course: ……..…. Class/Section: ……..……

Name of Faculty: ……..

Zero Lecture

1). Name of Subject: …….. Code: ……

2). Self-Introduction:

a). Name:
b). Qualification:
c). Designation:
d). Research Area:
e). E-mail Id: ……..@poornima.org
f). Other details: Information about areas of proficiency/ expertise such as subject taught, laboratory taken, Member of Professional body, Academic Proficiency, Book Authored, Paper published in National and International Conference/Journals etc.

3). Introduction of Students:

a*). Records of students in 12th*

Sr. No.	Average result of 12th	Name of student scored highest marks	Marks 60% above (No. of students)	Marks between 40%-60% (No. of students)	English Medium Students (No.)	Hindi Medium Students (No.)	No. of Hostellers	No. of Day Scholar

b*). Name of 05 best students based on previous results: ……, ……, ……, ……, ……*

4). Instructional Language: - ……%English; ……..% Hindi (English not less than 60%)

5). Introduction to subject: - (Pl. separate out subject specific matter and general matter valid for all subjects and group/place them appropriately)

a). Relevance to Branch:
b). Relevance to Society:
c). Relevance to Self:
d). Relation with laboratory:
e). Connection with previous year and next year:

6). Syllabus of Poornima Group of Colleges, Jaipur

a). Unit Name:
b). ABC analysis (RGB method) of unit & topics

7). Books/ Website/Journals & Handbooks/ Association & Institution:

a). Recommended Text & Reference Books and Websites:

S. No.	Title of Book	Authors	Publisher	Cost (Rs.)	No. of books in Library
Text Books					
T1					
T2					
T3					
Reference Books					
R1					
R2					
R3					
Websites related to subject					
1					
2					

b). Journals & Handbooks: - To give information about different Journals & Handbooks available in library related to the subject and branch.

c). Associations and Institutions: - To give information about different Associations and Institutions related to the subject and branch.

8). Syllabus Deployment: -

a). Total weeks available for academics (excluding holidays) as per Poornima Foundation calendar-

Semester	
No. of Working days available(Approx.)	
No. of Weeks (Approx.)	

- Total weeks available for special activities (as mentioned below)- 02 weeks (Approx.)

Note: Individual faculty must calculate the exact no. of lectures available according to time table etc. after consultation with HOD.

b). Special Activities (To be approved by HOD & Dean & must be mentioned in deployment):

- Open Book Test- Once in a semester
- Quiz - Once in a semester
- Special Lectures (SPL)- Minimum 10% of total no. of lectures including following
  - i. Smart Class by the faculty, who is teaching the subject
  - ii. SPL by expert faculty at PGC level
  - iii. SPL by expert from industry/academia (other institution)
- Revision classes (Solving Important Question Bank):- 1 class before Mid Term and 2 classes before End Term Exam

c). Lecture schedule per week

i). University scheme (L+T+P) = ...+....+.....

Sr. No.	Name of Unit	No. of lectures	Broad Area	Degree of difficulty (High/Medium/Low)	Text/ Reference books
1.					
2.					
3.					
4.					
5.					

d). Introduction & Conclusion: Each subject, unit and topic shall start with introduction & close with conclusion. In case of the subject, it is Zero lecture.

e). Time Distribution in lecture class: - Time allotted: 60 min.

i. First 5 min. should be utilized for paying attention towards students who were absent for last lecture or continuously absent for many days + taking attendance by calling the names of the students and also sharing any new/relevant information.

ii. Actual lecture delivery should be of 50 min.
iii. Last 5 min. should be utilized by recapping/ conclusion of the topic. Providing brief introduction of the coming up lecture and suggesting portion to read.
iv. After completion of any Unit/Chapter a short quiz should be organized.
v. During lecture student should be encouraged to ask questions.

Note: Pl. ensure that each student is having Lecture Note Book. Also, write on the black board day and date, name of the teacher, name of subject with code, unit and lecture no. and topics to be covered at the beginning of each lecture and ensure that students write in lecture note book. Ask students to leave 4/5 pages blank for copying the note from fellow students in case of their absenteeism.

9). Tutorial: - An essential component of Teaching- Learning process in Professional Education.

Objective: - To enhance the recall mechanism.
To promote logical reasoning and thinking of the students.
To interact personally to the students for improve numerical solving ability.

a). *Tutorial processing:* - Tutorial sheet shall be provided to each students

Ist Phase: - It is consisting of questions to be solved in the class assignment session in test mode on perforated sheet given in tutorial notebook and to be collected & kept by respective faculty for review & analysis (20 minutes).

IInd Phase: - Indicating/Initializing the weak issues/ drawback and Evaluating and providing the grade. Making a group with good student for assisting the weak students to explain/solve questions by every student on plain papers given in tutorial note book (20 minutes).

IIIrd Phase: - Solving/ explaining difficulties of lecture class and providing the new home assignment (20 minutes). To be done in tutorial note book.

b). *Home assignment shall comprise of two parts:*

Part (i) Minimum essential questions, which are to be solved and submitted by all with in specified due date.

Part (ii) Other important questions, which may also be solved and submitted for examining and guidance by teacher.

10). Examination Systems:

A. FOR ALL THEORY COURSES:-

a. Continuous Internal Evaluation (CIE)	**20%**
-Assignment / Project / Papers / Essays / Class Participation	10%
-Quiz / Class Test (Announced / Unannounced)	5%
- Attendance and Discipline	5%
b. Mid Semester Exams (MSE) – Two	**20%**
c. End Semester Exam (ESE) - One	**60%**
TOTAL	**100 %**

B. FOR ALL PRACTICAL (LABORATORY) COURSES:-

a. Continuous Internal Evaluation (CIE)	**40%**
-Performance (Lab Record, Viva,)	30%
-Attendance and Participation in laboratory work	10%
b. Mid Semester Exam (MSE)– Two	**20 %**
c. End Semester Exam (ESE) - One	**40%**
TOTAL	**100 %**

11). Any other important point:

Place & Date: Name of Faculty with Designation

g. Lecture Note Front page Format

POORNIMA
COLLEGE OF ENGINEERING

LECTURE NOTES

Campus: ……..…. Course: ……..…….. Class/Section: ……..… Date: ……..……..

Name of Faculty: ……..…….. Name of Subject: …….…… Code: ……..…

Date (Prep.): ……..…….. Date (Del.): ……..……Unit No.:……..…..…..Lect. No: ……..…..……..

OBJECTIVE: To be written before taking the lecture (Pl. write in bullet points the main topics/concepts etc., which will be taught in this lecture)

_____

_____

_____

_____

IMPORTANT & RELEVANT QUESTIONS:

_____

_____

_____

_____

FEED BACK QUESTIONS (AFTER 20 MINUTES):

_____

_____

_____

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_____

OUTCOME OF THE DELIVERED LECTURE: To be written after taking the lecture (Pl. write in bullet points about students' feedback on this lecture, level of understanding of this lecture by students etc.)

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_____

REFERENCES: Text/Ref. Book with Page No. and relevant Internet Websites:

_____

_____

i. Detailed Lecture Note Format-1

POORNIMA
COLLEGE OF ENGINEERING

DETAILED LECTURE NOTES

Campus: ……. Course: ……..		**Class/Section: ……**	**Date: ……**
Name of Faculty: ……		**Name of Subject: ……**	**Code: ……**

ii. Detailed Lecture Note Format-2

POORNIMA
COLLEGE OF ENGINEERING
DETAILED LECTURE NOTES

PAGE NO. .....

h. Assignment Format

POORNIMA
COLLEGE OF ENGINEERING

ASSIGNMENT SHEET

Campus: PCE **Course: B.Tech.** **Class/Section: 2nd year** **Date: ……**

Name of Faculty: **Name of Subject: Signal & Systems** **Code: 3EC4-03**

Date of Preparation: **Scheduled Date of Submission:**

Q. NO.	QUESTIONS	COs	POs	PSOs
1	Determine whether or not the following signal is Energy or Power Signals $x(n)=\left(\frac{1}{3}\right)^n u(n)$	1	1	1
2	Determine whether or not the following signal is periodic. If it is periodic determine the fundamental period. (i) $x(n) = Cos(2\pi n/5) + Sin(2\pi n/7)$ (ii) $x(t) = Cos\frac{\pi}{3}t + Sin\frac{\pi}{4}t$	1	2	2
3	Determine the following system as linear or non-linear. (i) $y(n)= x(n^2)$ (ii) $y(n)= x^2(n)$	2	1	1
4	Determine the convolution of the given signal. (i) X(t)= u(t-1) and $h(t)=e^{-2t}u(t)$ (ii) X(t) = u[n] and $h[n]= 2^n u(n)$	1	1	1
5	Check the following systems is: Linear, Causal, Time-invariant and stable Y(t)=sin [x(t+2)]	3	2	2
6	Given a discrete time signal x(n) = {1,0.5,1,2,1} ↑ Sketch x[n] and x[n].u[n-2]	2	2	1
7	Find and sketch the Even and Odd components of following: $X[n] = \begin{cases} t, & 0 \le t \le 1 \\ 2-t, & 1 \le t \le 2 \end{cases}$	2	3	1
8	For given x(t) sketch the following: (i) X(-t) (ii) X(t+2) (iii) X(2t+2) (iv) X(1-3t) 	2	3	1

i. Tutorial Format

POORNIMA
COLLEGE OF ENGINEERING

TUTORIAL SHEET

TUTORIAL SHEET SHEET No.....

Campus: ..... Course: ..... Class/Section: ..... Date: .....

Name of Faculty: ..... Name of Subject: ..... Code: .....

Date of Tut. Sheet Preparation:..... Scheduled Date of Tut.:.....Actual Date of Tut. :.....

Name of Student:.....Scheduled & Actual Date of H.A. Submission:.....&.....

	Questions	CO	PO
FIRST 20 MT. CLASS QUESTIONS			
2 HRS. SOLVABLE HOME ASSIGNMENT (H.A.) QUESTIONS			
OTHER IMPORTANT QUESTIONS			

j. Mid Term/ End Term Practical Question Paper Format

Poornima College of Engineering
FRIST MID TERM PRACTICAL EXAM-23-24
8EC4-21: IOT Lab, RTU Lab exam 2023-24
(Department of Electronics and Communication)

Max Marks 30+10(Viva) =40

SET-I

Question No	LO	PO	Questions	Marks

k. Mid Term/ End Term Practical Question Paper Format

Poornima College of Engineering
FRIST MID TERM PRACTICAL EXAM-23-24
8EC4-21: IOT Lab, RTU Lab exam 2023-24
(Department of Electronics and Communication)

Max Marks 30+10(Viva) =40

SET-II

Question No	LO	PO	Questions	Marks

l. Mid Term Theory Question Paper Format

POORNIMA COLLEGE OF ENGINEERING, JAIPUR

II B.TECH. (III Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2022-23

Code: SEC4-06 Category: PCC Subject Name– Signal & Systems

(BRANCH – ELECTRONICS AND COMMUNICATION ENGINEERING)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

At the end of the course the student should be able to:

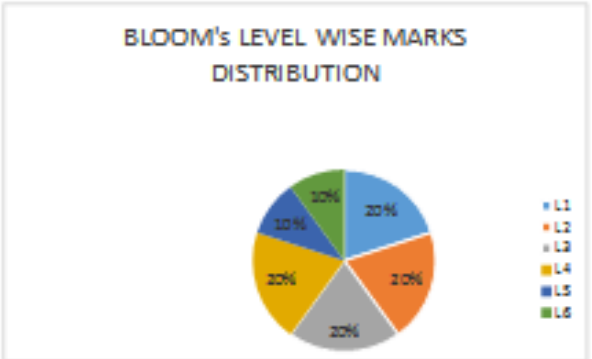
CO1:

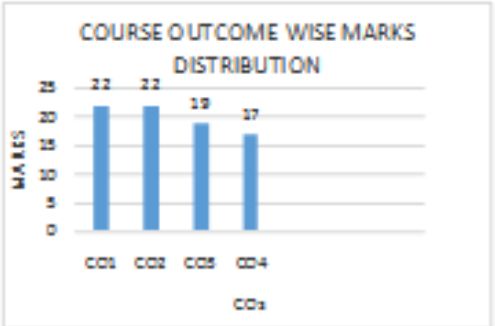
CO2:

CO3:

CO4:

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1					
Q.2					
Q.3					
Q.4					
Q.5					
	PART - B: (Attempt 4 questions out of 8) Max. Marks (20)				
Q.6					
Q.7					
Q.8					
Q.9					
Q.10					
Q.11					
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12					
Q.13					
Q.14					
Q. 15					





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating) CO – Course Outcomes; PO – Program Outcomes

13. List of Important Links

List of Important Links		
Sr. No.	**Link**	**Particulars**
1	https://www.rtu.ac.in/index/	Rajasthan Technical University
2	http://www.pce.poornima.org	Institute Website
3	http://www.pce.poornima.org/Downloads.html	Format of Students & Employee
4	https://www.turnitin.com/login_page.asp?lang=en_us	Plagiarism Checker
5	http://pcelibrary.poornima.org/	PCE Digital Library
6	https://ndl.iitkgp.ac.in/	National Digital Library of India (NDLI)
7	https://swayam.gov.in/	SWAYAM MOOCs platform
8	https://www.vlab.co.in/	Virtual Labs
9	https://spoken-tutorial.org/	Spoken Tutorial
10	https://fossECE.in/	FOSSECE (Free/Library and Open Source Software for Education)
11	https://www.sih.gov.in/	Smart India Hackathon
12	https://www.swayamprabha.gov.in/	32 high quality educational channels through DTH on 24X7 basis.
13	https://iECECExplore.iECECE.org/Xplore/home.jsp.You	IECECE All Society Periodicals Package
14	https://booksc.org/	Link for Free for book and articles
15	https://jgateplus.com/home/	J-gate Plus (JOURNALS -GATE) subscriptions
16	http://www.delnet.nic.in/	Developing Library Network
17	https://dst.rajasthan.gov.in/content/dst-gov/en/home.html	Department of Science & Technology, Government of Rajasthan
18	https://ipindia.gov.in/index.htm	Official website of Intellectual Property India
19	http://pce.poornima.org/Downloads.html	Academic Formats Word File
Note:- Required Credentials can be taken from Respective Department Heads		