2.1.1 State the process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I. Also mention the identified curricular gaps, if any (10)

A. Process used to identify extent of compliance of University curriculum for attaining the POs and PSOs.

Following is the process used to identify extent of compliance of University curriculum for attaining the POs and PSOs.

Bonam Venkata Chalamayya Institute of Technology & Science is affiliated to Jawaharlal Nehru Technological University, Kakinada. So, our programme curriculum is as per the scheme and syllabus of affiliated university. Generally, program curriculum maintains the balance in the composition of basic and humanity sciences, professional courses and their distribution in core, elective and breadth offerings. If programme / course components, to attain CO – PO – PSOs are not included in the curriculum provided by the affiliated university then the department makes additional efforts to impart such knowledge through various co-curricular activities such as guest lectures, seminars / webinars, workshops etc.

Program Outcomes

PO #	Program Outcome (PO)
PO1	**ENGINEERING KNOWLEDGE**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**PROBLEM ANALYSIS**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3	**DESIGN/DEVELOPMENT OF SOLUTIONS**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs withappropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation ofdata, and synthesis of the information to provide valid conclusions.
PO5	**MODERN TOOL USAGE**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	**THE ENGINEER AND SOCIETY**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**ENVIRONMENT AND SUSTAINABILITY**:Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of,and need for sustainable development.
PO8	**ETHICS**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**INDIVIDUAL AND TEAM WORK**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**COMMUNICATION**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.
PO11	**PROJECT MANAGEMENT AND FINANCE**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**LIFE-LONG LEARNING**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes are framed by Department Advisory Committee (DAC)

PSO #	Program Specific Outcome (PSO)
PSO1	**Professional Skills:** An ability to design, analyze and implement Analog and Digital Electronics systems, Communication, Signal processing, VLSI, Embedded and IoT systems using hardwareand software.
PSO2	**Soft-Skills & Ethics:** Ability to communicate effectively and practice professional ethics for societal benefit.

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Table.2.1.1.1 Summary of Courses and % of Curriculum Content

Regulation (R16)			
Course Component	No. of Courses	Curriculum Content Credits	% of Curriculum content Credits
Basic Science Courses (BSC)	7	16	8.88
Humanity Science Courses (HSC)	7	19	10.55
Engineering Science Courses (ESC)	8	22	12.22
Professional Core Courses (PCC)	25	75	41.66
Laboratory Courses (LC)	12	24	13.33
Professional Electives (PE)	3	9	5
Open Electives (OE)	1	3	1.66
Seminar (SEM)	1	2	1.11
Mini / Major Project (PRJ)	1	10	5.55
Mandatory Courses (MC)	2	0	0
TOTAL	**67**	**180**	**100**

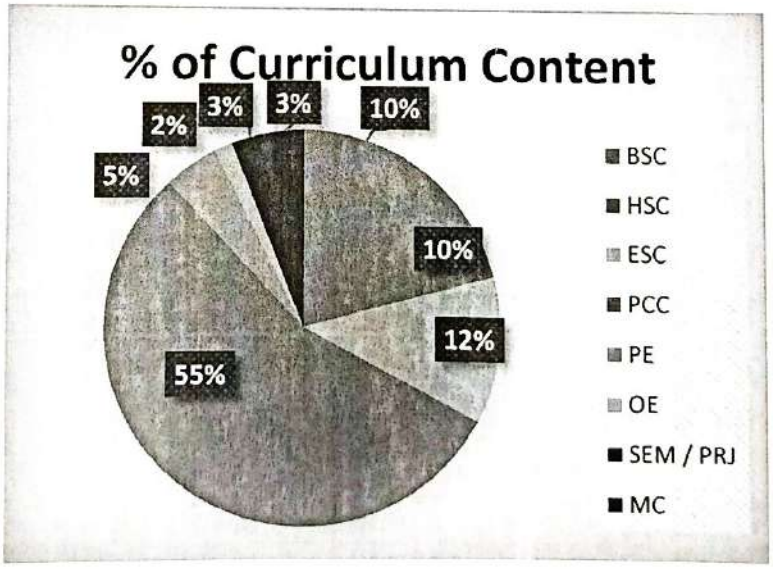

Figure 2.1.1.1 % of Curriculum Content

Table.2.1.1.2 R16 Regulation Course Structure with Course Codes

S. No	Course codes	Course Name	Course Category	Credits
1	**C111**	English I	HS	3
2	**C112**	Mathematics I	BS	3
3	**C113**	Mathematics II	ES	3
4	**C114**	Applied Physics	BS	3
5	**C115**	Computer Programming	ES	3
6	**C116**	Engineering Drawing	ES	3
7	**C117**	English - Communication Skills Lab I	HS	2
8	**C118**	Applied / Engineering Physics Lab	BS	2
9	**C119**	Applied / Engineering Physics –Virtual Labs - Assignments	BS	0
10	**C1110**	Engineering Workshop & IT Workshop	ES	2
11	**C121**	English II	HS	3
12	**C122**	Mathematics III	BS	3
13	**C123**	Applied Chemistry	BS	3
14	**C124**	Electrical and Mechanical Technology	ES	3
15	**C125**	Environmental Studies	HS	3
16	**C126**	Data Structures	ES	3
17	**C127**	Applied / Engineering Chemistry Lab	BS	2
18	**C128**	English Communications Skills Lab II	HS	2
19	**C129**	Computer Programming Lab	ES	2
20	**C211**	Electronic Devices and Circuits	PC	3
21	**C212**	Switching Theory and Logic Design	PC	3
22	**C213**	Signals and Systems	PC	3
23	**C214**	Network Analysis	ES	3
24	**C215**	Random Variables and Stochastic Process	PC	3
25	**C216**	Managerial Economics and Financial Analysis	HS	3
26	**C217**	Electronic Devices and Circuits Lab	LC	2
27	**C218**	Networks and Electrical Technology Lab	LC	2
28	**C221**	Electronic Circuit Analysis	PC	3
29	**C222**	Control Systems	PC	3
30	**C223**	Electromagnetic Waves and Transmission Lines	PC	3

31	**C224**	Analog Communications	PC	3
32	**C225**	Pulse and Digital Circuits	PC	3
33	**C226**	Management Science	HS	3
34	**C227**	Electronic Circuit Analysis Lab	LC	2
35	**C228**	Analog Communications Lab	LC	2
36	**C311**	Computer Architecture and Organization	PC	3
37	**C312**	Linear IC Applications	PC	3
38	**C313**	Digital IC Applications	PC	3
39	**C314**	Digital Communications	PC	3
40	**C315**	Antenna and Wave Propagation	PC	3
41	**C316**	Pulse and Digital Circuits Lab	LC	2
42	**C317**	Linear IC Applications Lab	LC	2
43	**C318**	Digital IC Applications Lab	LC	2
44	**C319**	Professional Ethics & Human Values	MC	0
45	**C321**	Microprocessors and Microcontrollers	PC	3
46	**C322**	Microwave Engineering	PC	3
47	**C323**	VLSI Design	PC	3
48	**C324**	Digital Signal Processing	PC	3
49	**C325**	**OPEN ELECTIVE** 1. OOPs through Java 2. Data Mining 3. Industrial Robotics 4. Power Electronics 5. Bio-Medical Engineering 6.Artificial Neural Networks	OE	3
50	**C326**	Microprocessors and Microcontrollers Lab	LC	2
51	**C327**	VLSI Design Lab	LC	2
52	**C328**	Digital Communications Lab	LC	2
53	**C329**	IPR & Patents	MC	0
54	**C411**	Radar Systems	PC	3
55	**C412**	Digital Image Processing	PC	3
56	**C413**	Computer Network	PC	3
57	**C414**	Optical Communications	PC	3
58	**C415**	Elective I 1. TV Engineering 2. Electronic Switching Systems	PE	3
		3. System Design through Verilog		

59	**C416**	Elective II 1.Embedded Systems 2. Analog IC Design 3.Network Security & Cryptography	PE	3
60	**C417**	Micro Wave Engineering & Optical Lab	LC	2
61	**C418**	Digital Signal Processing Lab	LC	2
62	**C421**	Cellular Mobile Communications	PC	3
63	**C422**	Electronic Measurements and Instrumentation	PC	3
64	**C423**	Satellite Communications	PC	3
65	**C424**	Elective III 1. Wireless Sensors and Networks 2. Digital IC Design 3. Operating Systems	PE	3
66	**C425**	Seminar	SEM	2
67	**C426**	Project	PRJ	10
Total Credits				**180**

Table.2.1.1.3 Summary of Courses and % of Curriculum Content

Regulation (R19)			
Course Component	No. of Courses	Curriculum Content Credits	% of Curriculum content Credits
Basic Science Courses (BSC)	7	18	11.25
Humanity Science Courses (HSC)	5	11.5	7.18
Engineering Science Courses (ESC)	9	21.5	13.43
Professional Core Courses (PCC)	19	57	35.62
Laboratory Courses (LC)	11	16.5	10.31
Professional Electives (PE)	5	15	9.37
Open Electives (OE)	2	6	3.75
Mini / Major Project (PRJ)	4	14.5	9.06
Mandatory Courses (MC)	4	0	0
TOTAL	**66**	**160**	**100**

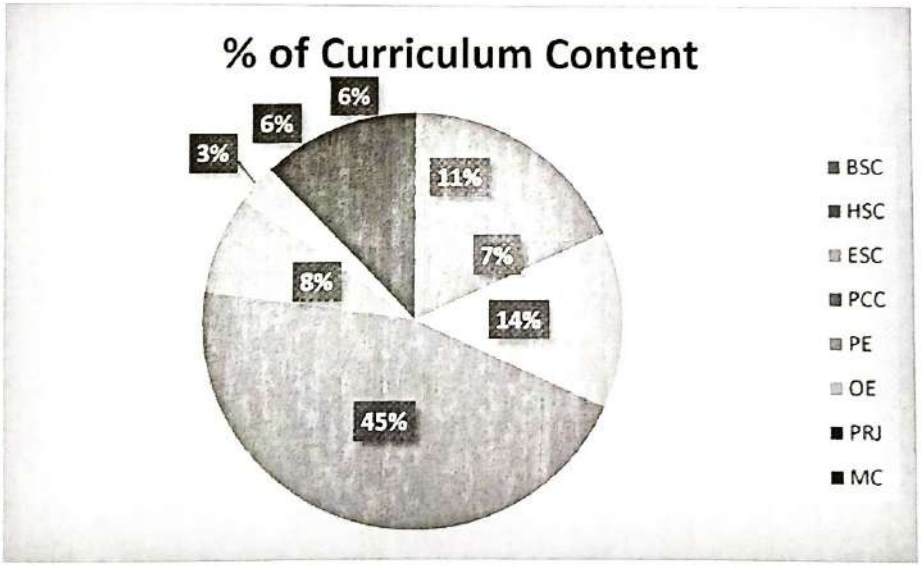

Figure 2.1.1.2 % of Curriculum Content

Table.2.1.1.4 R19 Regulation Course Structure with Course Codes

S.No	Course codes	Course Name	Course Category	Credits
1	C111	English	HS	3
2	C112	Mathematics - I	BS	3
3	C113	Applied Chemistry	BS	3
4	C114	Programming for Problem Solving Using C	ES	3
5	C115	Engineering Drawing	ES	2.5
6	C116	English Lab	HS	1.5
7	C117	Applied Chemistry Lab	BS	1.5
8	C118	Programming for Problem Solving Using C Lab	ES	1.5
9	C119	Environmental Science	MC	0
10	C121	Mathematics – II	BS	3
11	C122	Mathematics – III	BS	3
12	C123	Applied Physics	BS	3
13	C124	Network Analysis	ES	3
14	C125	Basic Electrical Engineering	ES	3
15	C126	Electronic workshop	ES	1
16	C127	Basic Electrical Engineering Lab	ES	1.5
17	C128	Applied Physics Lab	BS	1.5
18	C129	Communication Skills Lab	HS	1
19	C1210	Engineering Exploration Project	PRJ	1
20	C211	Electronic Devices and Circuits	PC	3
21	C212	Switching Theory and Logic Design	PC	3
22	C213	Signals and Systems	PC	3
23	C214	Random Variables and Stochastic Processes	PC	3
24	C215	Object Oriented Programming through Java	ES	3
25	C216	Managerial Economics & Financial Analysis	HS	3
26	C217	Electronic Devices and Circuits - Lab	LC	1.5
27	C218	Switching Theory and Logic Design - Lab	LC	1.5
28	C219	Constitution of India	MC	0
29	C221	Electronic Circuit Analysis	PC	3
30	C222	Linear Control Systems	PC	3
31	C223	Electromagnetic Waves and Transmission Lines	PC	3
32	C224	Analog Communications	PC	3
33	C225	Computer Architecture and Organization	ES	3
34	C226	Management and Organizational Behavior	HS	3
35	C227	Electronic Circuit Analysis - Lab	LC	1.5
36	C228	Analog Communications - Lab	LC	1.5
37	C311	Linear Integrated Circuits and Applications	PC	3

38	C312	Microprocessor and Microcontrollers	PC	3
39	C313	Digital Communications	PC	3
40	C314	Electronic Measurements & Instrumentation	PC	3
41	C315	Digital System Design using HDL (PE1)	PE	3
42	C316	Linear Integrated Circuits and Applications - Lab	LC	1.5
43	C317	Digital Communications Lab	LC	1.5
44	C318	Microprocessor and Microcontrollers - Lab	LC	1.5
45	C319	Mini Project with Hardware Development	PRJ	1.5
46	C3110	Essence of Indian Traditional Knowledge	MC	0
47	C321	Wired and Wireless Transmission Devices	PC	3
48	C322	VLSI Design	PC	3
49	C323	Digital Signal Processing	PC	3
50	C324	Cellular & Mobile Communication (PE2)	PE	3
51	C325	MEMS and its applications (OE1)	OE	3
52	C326	Internet of Things	PC	3
53	C327	VLSI Lab	LC	1.5
54	C328	Digital Signal Processing Lab	LC	1.5
55	C329	Intellectual Property Rights (IPR) & Patents	MC	0
56	C411	Microwave and Optical Communication Engineering	PC	3
57	C412	Data Communications & Computer networks	PC	3
58	C413	Digital Image and Video Processing	PC	3
59	C414	Communication Standards and Protocols (PE3)	PE	3
60	C415	Embedded Systems (PE4)	PE	3
61	C416	Internet of Things Lab	LC	1.5
62	C417	Microwave and Optical Communication Engineering LAB	LC	1.5
63	C418	Project - Part I	PRJ	3
64	C421	Wireless Communication (PE5)	PE	3
65	C422	Cyber Security &Cryptography (OE2)	OE	3
66	C423	Project - Part II	PRJ	9
Total Credits				**160**

Table.2.1.1.5. Summary of Courses and % of Curriculum Content

Regulation (R20)			
Course Component	No. of Courses	Curriculum Content Credits	% of Curriculum content Credits
Basic Science Courses (BSC)	7	21	13.13
Humanity Science Courses (HSC)	3	9	5.62
Engineering Science Courses (ESC)	5	15	9.37
Professional Core Courses (PCC)	12	36	22.5
Laboratory Courses (LC)	17	25.5	15.93
Professional Electives (PE)	5	15	9.37
Open Electives (OE)	4	12	7.5
Skill Oriented Courses (SC)	5	10	6.25
Summer Internship	1	1.5	0.93
Industrial / Research Internship	1	3	1.87
Mini / Major Project	1	12	7.5
Mandatory Courses	4	0	0
TOTAL	65	160	100

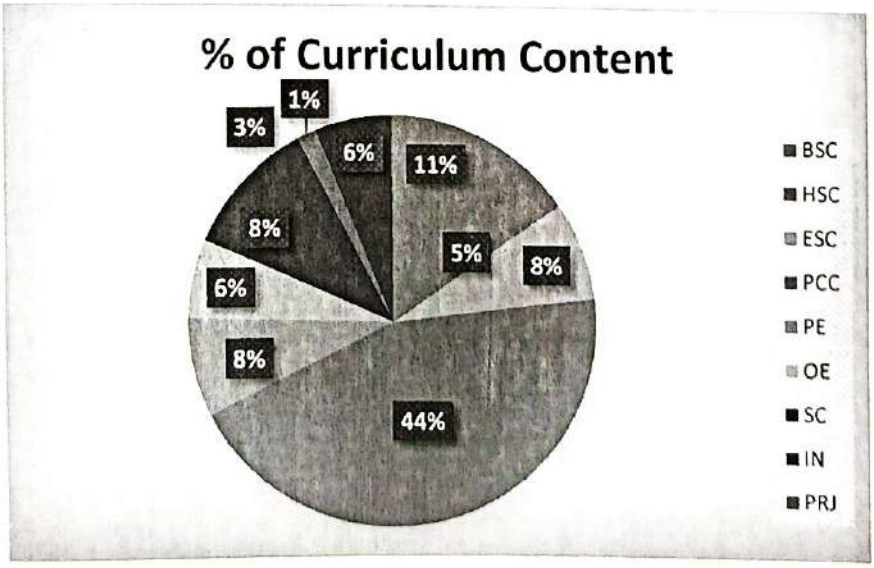

Figure 2.1.1.3 % of Curriculum Content

Table.2.1.1.6 R20 Regulation Course Structure with Course Codes

S. No	Course codes	Course Name	Course Category	Credits
1	C111	Communicative English	HS	3
2	C112	Mathematics –I(Calculus)	BS	3
3	C113	Applied Chemistry	BS	3
4	C114	Programming for Problem Solving Using C	ES	3
5	C115	Engineering Drawing	BS	3
6	C116	English Communication Skills Laboratory	LC	1.5
7	C117	Applied Chemistry Lab	LC	1.5
8	C118	Programming for Problem Solving Using C Lab	LC	1.5
9	C121	Mathematics –II (Linear Algebra and Numerical Methods)	BS	3
10	C122	Applied Physics	BS	3
11	C123	Object Oriented Programming through Java	ES	3
12	C124	Network Analysis	ES	3
13	C125	Basic Electrical Engineering	ES	3
14	C126	Electronic workshop Lab	LC	1.5
15	C127	Basic Electrical Engineering Lab	LC	1.5
16	C128	Applied Physics Lab	LC	1.5
17	C129	Environmental Science	MC	0
18	C211	Electronic Devices and Circuits	PC	3
19	C212	Switching Theory and Logic Design	PC	3
20	C213	Signals and Systems	PC	3
21	C214	Mathematics-III (Transforms and Vector Calculus)	BS	3
22	C215	Random Variables and Stochastic Processes	BS	3
23	C216	OOPS through Java Lab	LC	1.5
24	C217	Electronic Devices and Circuits -Lab	LC	1.5
25	C218	Switching Theory and Logic Design–Lab	LC	1.5
26	C219	Python Programming	SC	2
27	C221	Electronic Circuit Analysis	PC	3
28	C222	Digital IC Design	PC	3
29	C223	Analog Communications	PC	3
30	C224	Linear control Systems	ES	3
31	C225	Management and Organizational Behavior	HS	3
32	C226	Electronic Circuit Analysis Lab	LC	1.5
33	C227	Analog Communications Lab	LC	1.5
34	C228	Digital IC Design Lab	LC	1.5
35	C229	Soft Skills	SC	2

36	C2210	Constitution of India	MC	0
37	C311	Analog ICs and Applications	PC	3
38	C312	Electromagnetic Waves and Transmission Lines	PC	3
39	C313	Digital Communications	PC	3
40	C314	Computer Organization & Architecture (OE1)	OE	3
41	C315	Electronic Measurements and Instrumentation (PE1)	PE	3
42	C316	Analog ICs and Applications LAB	LC	1.5
43	C317	Digital Communications Lab	LC	1.5
44	C318	Data Structures using Java Lab	SC	2
45	C319	Indian Traditional Knowledge	MC	0
46	C3110	Summer Internship	SI	1.5
47	C321	Microprocessor and Microcontrollers	PC	3
48	C322	VLSI Design	PC	3
49	C323	Digital Signal Processing	PC	3
50	C324	Microwave Engineering (PE2)	PE	3
51	C325	Computer Networks (OE2)	OE	3
52	C326	Microprocessor and Microcontrollers - Lab	LC	1.5
53	C327	VLSI Design Lab	LC	1.5
54	C328	Digital Signal Processing Lab	LC	1.5
55	C329	ARM based/ Aurdino based Programming	SC	2
56	C3210	Research Methodology	MC	0
57	C411	Digital Image Processing (PE3)	PE	3
58	C412	Radar engineering (PE4)	PE	3
59	C413	Satellite Communications (PE5)	PE	3
60	C414	Introduction to Internet of Things (OE3)	OE	3
61	C415	Introduction to Machine Learning (OE4)	OE	3
62	C416	Humanities and Social Science Elective	HS	3
63	C417	Designer tools (HFSS, Microwave Studio CST. Cadence Virtuoso. Synopsys, Mentor Graphics, Xilinx.)	SC	2
64	C418	Industrial/Research Internship	IRI	3
65	C421	Major Project	PRJ	12
Total Credits				**160**

- Course outcomes and their mapping with POs and PSOs are prepared by the respective coursecoordinator and are approved by PAQIC for all courses.

Table.2.1.1.7. Course PO / PSO Mapping for 2018 admitted batch

SNO	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	C111	3	-	3	-	2	-	1	2	-	2	-	-	-	2
2	C112	2.17	2.33	1.5	1.5	-	-	-	-	-	-	-	-	-	-
3	C113	2.17	2.33	1.5	-	-	-	-	-	-	-	-	-	-	-
4	C114	3	2	1	-	-	-	-	-	-	1	-	-	-	1
5	C115	3	2.75	2.33	2	2.5	-	-	-	-	-	-	-	2	1.5
6	C116	2	2	1.83		1			1.83	1	2.17		1	2.33	2.5
7	C117	-	-	-	-	2	-	-	-	2	2.67	-	1.17	1	2
8	C118	3	2	-	-	2	-	-	-	-	-	-	-	-	1
9	C119	3	2	1	-	2	-	-	-	-	-	-	-	-	-
10	C1110	3	2.6	-	-	-	-	-	-	3	3	-	-	-	-
11	C121	2.5	-	-	-	3	1.75	2	-	2.5	2	-	2	-	3
12	C122	2.5	3	1.83	-	-	-	-	-	-	-	-	-	-	-
13	C123	1.83	1.33	1.75	1	1.5	1	1	-	-	-	-	-	-	-
14	C124	2.17	2.67	-	-	-	-	-	-	-	-	-	-	2	2
15	C125	1.5	2	2	-	-	2	2.17	3	-	-	-	-	-	1
16	C126	1.67	2.5	2.33	3	-	-	-	-	-	-	-	-	1	-
17	C127	2.67	2.67	-	-	3	-	-	-	-	-	-	-	-	-
18	C128	-	-	-	-	2	-	-	-	2	2.67	-	1	-	2
19	C129	3	3	2.5	-	3	-	-	-	-	-	-	-	2	-
20	C211	1.5	2.17	2.25	-	-	-	-	-	-	-	-	-	2	-
21	C212	1.6	3	2.2	1.8	2	-	-	-	-	-	-	1.5	1.67	-
22	C213	2.16	1.5	2.33	-	-	-	-	-	-	-	-	-	2	-
23	C214	3	1.33	-	-	-	-	-	-	-	-	-	-	2	-
24	C215	2.83	2.3	1.5	0.6	-	-	-	-	-	-	-	-	2	-
25	C216	2.5	2.33	3	-	-	-	-	1	-	-	2	-	-	-
26	C217	2.33	2.6	-	-	-	-	-	-	-	-	-	-	1	-
27	C218	2.6	2.2	-	-	-	-	-	-	2.6	2.6	-	-	-	-
28	C221	1.33	2.66	1	-	-	-	-	-	-	-	-	-	2	-
29	C222	2.33	2.33	2	-	-	-	-	-	-	-	-	-	2	-
30	C223	2.1	2.4	2.3	1.75	-	-	-	-	-	-	-	1	1	-
31	C224	1.83	2.83	1	-	2	-	-	-	-	-		1	2	
32	C225	2.16	2	1.83	-	2	-	-	-	-	-	-	-	2	-
33	C226	-	2.25	-	-	-	-	2	1	3	-	3	-	-	-

34	**C227**	1	3	2.25	-	2	-	-	-	-	-	-	-	1	-
35	**C228**	1.65	2.4	3	-	-	-	-	-	-	-	-	-	1	-
36	**C311**	3	2.67	2.67	2	2	1	-	-	-	-	-	-	1.5	2
37	**C312**	1.83	1.83	1.6		2								2	
38	**C313**	1	-	2.5	-	2.4	-	-	-	-	-	-	-	2	-
39	**C314**	1.83	2	2	2	2	-	-	-	-	-	-	-	2.16	-
40	**C315**	2.3	2.5	1.7	1	-	-	-	-	-	-	-	2	2	-
41	**C316**	1.2	1.38	1.55	1.37					2				1.52	
42	**C317**	2	2.17	2.17	1.67					2				1.5	
43	**C318**	1.67	2			2.5								2	
44	**C319**	-	-	-	-	-	-	-	3	-	2	-	-	-	-
45	**C321**	2.4	1.67	3	-	2	-	-	-	-	-	-	-	2	-
46	**C322**	2.16	1.83	2.33	-	-	-	-	-	-	-	-	-	2	-
47	**C323**	1.83	2	2.2	-	-	-	-	-	-	-	-	-	2	-
48	**C324**	1.75	2.6		1.25	3	-	-	-	-	-	-	-	2	-
49	**C325**	2.33	2.5	1	2.5		2		-	-	-	-	-	2	2
50	**C326**	2.8	1.75	1.5	-	1.4	-	-	-	2	1.5	-	-	2	-
51	**C327**	2	-	3	-	2	-	-	-	-	-	-	-	1	-
52	**C328**	1.5	2.5	3	-	1	-	-	-	-	-	-	-	1	-
53	**C329**	-	-	3	-	-	2	-	-	-	-	-	-	-	-
54	**C411**	1.3	2.3	2.5	-	-	-	-	-	-	-	-	-	2	-
55	**C412**	1.83	1.67	3										2	
56	**C413**	2.16	1.83	2	2.5		-	-	-	-	-	-	-	2.33	-
57	**C414**	2.4	2.75	2	-	2	-	-	-	-	-	-	2	2	-
58	**C415**	1.83	2	2.25	-	-	-	-	-	-	-	-	-	2	-
59	**C416**	1.67	2.5	2										2	
60	**C417**	1	3	-	-	2.2	-	-	-	-	-	-	-	2	-
61	**C418**	2.37	2.08	3	-	-	-	-	-	-	-	-	-	2	-
62	**C421**	2.4	2.2	2.5	2	2	-	-	-	-	-	-	-	2	-
63	**C422**	3	1	-	-	-	-	-	-	-	-	-	-	3	-
64	**C423**	2.4	2.67	2	-	1	-	-	-	-	-	-	2	2	-
65	**C424**	2.8	1	2.5	-	2.5		-	-	-	-	-	-	2	-
66	**C425**	-	3	-	3	3	3	3	3	-	3	-	3	3	3
67	**C426**	-	3	3	3	3	3	3	3	3	3	3	3	3	3

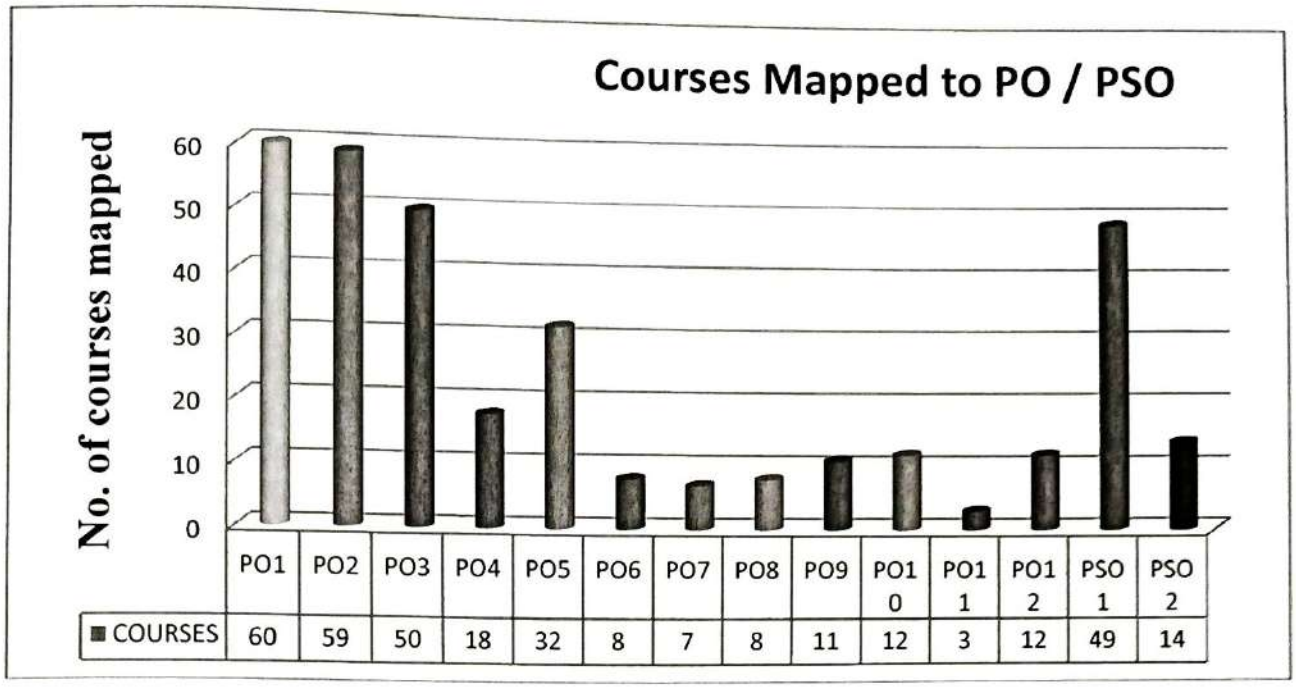

Figure 2.1.1.4 Courses mapped to PO / PSO

- Based on CO – PO – PSO mapping courses contribution to each PO / PSO is done.

Table.2.1.1.8 Analysis of Course PO / PSO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No-of mapped courses	60	59	50	18	32	8	7	8	11	12	3	12	49	14
Average PO/PSO	2.16	2.25	2.14	1.89	2.13	1.97	2.02	2.23	2.28	2.30	2.67	1.72	1.88	2.00
% of Courses Contributed to PO	89.55%	88.06%	74.63%	**26.87%**	**47.76%**	**11.94%**	**10.45%**	**11.94%**	**16.42%**	**17.91%**	**4.48%**	**17.91%**	73.13%	**20.90%**
	>50	>50	>50	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	**<50**	>50	**<50**

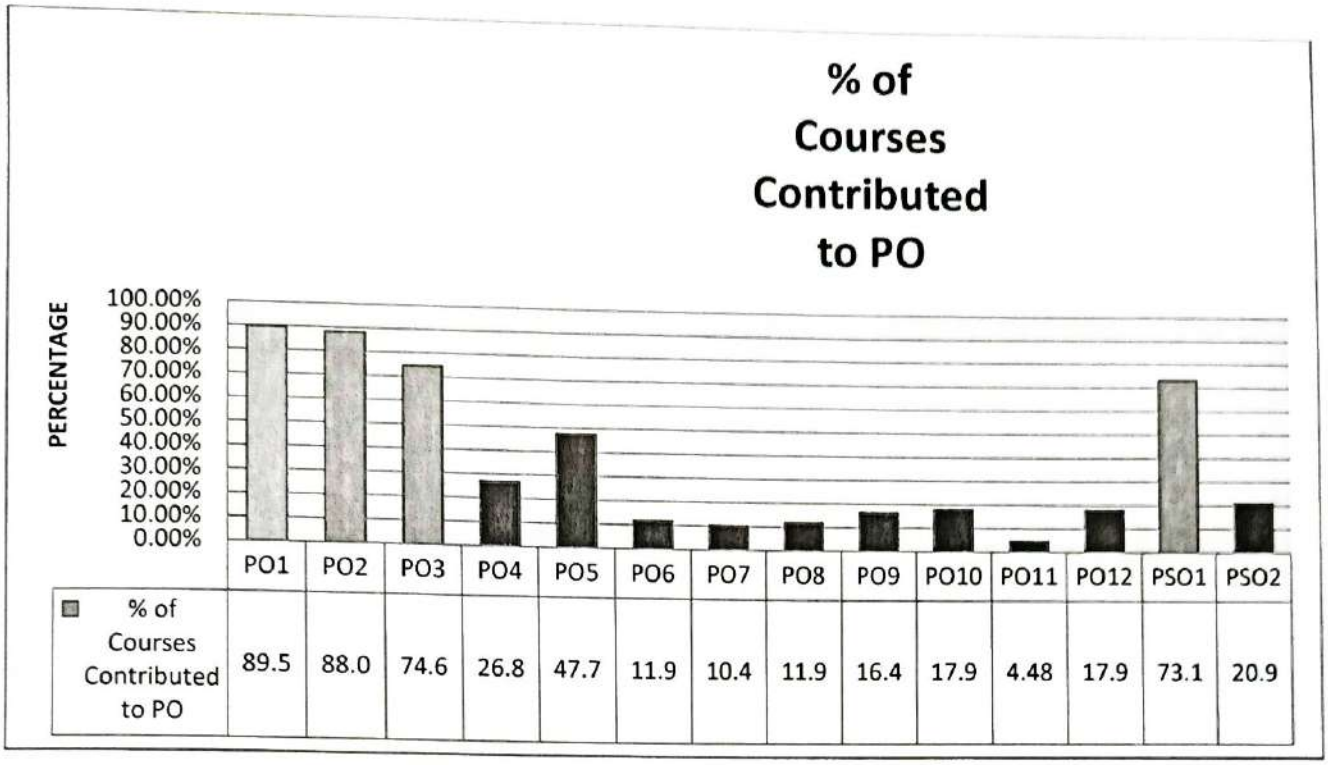

Figure 2.1.1.5 % of Courses contributed to PO

List of POs Identified with less than 50% of course contribution

S. No	POs & PSOs
1	PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO2

Table.2.1.1.9. Course PO / PSO Mapping for 2019 admitted batch

SNO	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	C111	-	-	-	-	2	2	2	-	2	2	-	2	-	2
2	C112	2	2.25	2	-	-	-	-	-	-	-	-	-	-	-
3	C113	2	1.6	-	-	-	-	-	-	-	-	-	-	-	-
4	C114	2.4	2.2	2	-	-	-	-	-	-	-	-	-	2	-
5	C115	2.6	1	2.5	-	-	-	-	-	-	2.4	-	1.2	2.4	2.4
6	C116	-	-	-	-	-	-	-	-	1	2	-	3	-	2
7	C117	2.6	2.67	-	-	3	-	-	-	-	-	-	-	-	-
8	C118	2.4	2.2	2	-	-	-	-	-	-	-	-	-	2	-
9	C119	1.5	2	2	-	-	2	2.17	3	-	-	-	-	-	-
10	C121	1.8	2.25	1.5	-	-	-	-	-	-	-	-	-	-	-
11	C122	2.4	2	2	-	-	-	-	-	-	-	-	-	-	-
12	C123	3	2												1
13	C124	2	1	-	-	-	-	-	-	-	-	-	-	2	-
14	C125	2.4	2.4	2.6	2	-	-	2	-	-	-	-	-	2	-
15	C126	2	-	2	-	3	-	-	-	-	-	-	-	1	-
16	C127	3	3	-	-	3	-	-	-	3	3	-	-	-	3
17	C128	3	2	-	-	2	-	-	-	-	-	-	-	-	1
18	C129	-	-	-	-	-	-	-	-	2	2.6	-	2	-	2
19	C1210	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20	C211	2.4	2.2	1.66	-	-	-	-	-	-	-	-	-	2	-
21	C212	3	2.2	-	1	-	-	-	-	-	-	-	-	2	-
22	C213	2.2	2	1.5	-	-	-	-	-	-	-	-	-	2	-
23	C214	2.4	2.2	-	2	-	-	-	-	-	-	-	-	2	-
24	C215	2	2	2	2	2	-	-	-	-	-	-	-	-	-
25	C216	2.5	2.33	3	-	-	-	-	1	-	-	2	-	-	-
26	C217	3	2	-	-	1	-	-	-	-	-	-	-	2	-
27	C218	3	2.2	-	1	-	-	-	-	-	-	-	-	2	-
28	C219	-	-	-	-	-	2	-	2	1	1	-	2	-	-
29	C221	1.6	2.4	2.25	-	-	-	-	-	-	-	-	-	2	-
30	C222	2.8	2.6	2.25	2	-	-	-	-	-	-	-	-	2	-
31	C223	2.2	2.2	2.6	1.6								1	1.2	-
32	C224	2.00	2.80	1.00	-	2.00	-	-	-	-	-	-	1.00	2.00	-
33	C225	2.2	2.33	2	-	-	-	-	-	-	-	-	-	2	-
34	C226	-	-	-	-	-	-	-	-	3	2.5	2.5	-	-	2
35	C227	1	3	2.75	-	2.25	-	-	-	-	-	-	-	2	-
36	C228	1.72	2.4	3	-	-	-	-	-	-	-	-	-	1	-
37	C311	2.2	2	1.8	-	2	-	-	-	-	-	-	-	2	-

38	C312	2.2	2	2	-	2.67	-	-	-	-	-	-	-	2	-
39	C313	2.00	2.00	1.67	2.00	2.00	-	-	-	-	-	-	-	2.00	-
40	C314	2.8	2.2	2.5	-	-	-	-	-	-	-	-	-	2	-
41	C315	1.4	-	2.25	-	2	-	-	-	-	-	-	-	1	-
42	C316	2.17	2.38	2.21	2	-	-	-	-	2	-	-	-	1.4	-
43	C317	1.2	3	3	1	1	-	-	-	-	-	-	-	1.2	-
44	C318	3.00		2.00		2.00							1.00	2.00	
45	C319	2.25	2.33	2	3	1.8	2.33	2.4	2.5	2.33	2.75	2.2	2.4	2.2	2.2
46	C3110	-	-	-	-	-	2.6	-	3	-	2.7	-	-	-	-
47	C321	2.60	2.00	1.50	2.00									2.00	
48	C322	2	2	2.2	-	2	-	-	-	-	-	-	-	2	-
49	C323	2.2	2	1	-	-	-	-	-	-	-	-	-	2	-
50	C324	2.5	2.75	2.33	2	-	-	-	-	-	-	-	-	2	-
51	C325	2.6	-	-	2.67	-	-	-	-	-	-	-	3	2	-
52	C326	2	-	1.8	1.75	2	1.5	-	-	-	-	2	-	2	-
53	C327	1	1	2	-	2	-	-	-	-	-	-	-	2	-
54	C328	3	2.4	3	-	2	-	-	-	-	-	-	-	2	-
55	C329	-	-	2	-	-	2	-	-	-	-	-	-	-	-
56	C411	2.4	2.4	2.33	2	-	-	2	-	-	-	-	-	2	-
57	C412	2.4	2		2	-	-	-	-	-	-	-	-	-	-
58	C413	2.2	2	2.2	1.6	2	1	-	-	-	-	2	-	1.8	-
59	C414	2	1.66	1	-	-	-	1	-	-	-	-	-	2	-
60	C415	2	2.5	2										2	
61	C416	2	1	2.3	1.6	2.5	1.5					2		2.25	
62	C416	1.07	3.00	-	-	2.27	-	-	-	-	-	-	-	2.00	-
63	C418	2	3	3		2.5		3	2.5	2.5	3	3	2.5	3	2.5
64	C421	2.4	1.5	1	-	-	-	-	-	-	-	-	-	2	-
65	C422	2.4	1.5	1	-	-	-	-	-	-	-	-	-	2	
66	C423	2.5	1	1	3	1.33	2.33	2	-	2	2.5	1.67	2.33	1.67	2

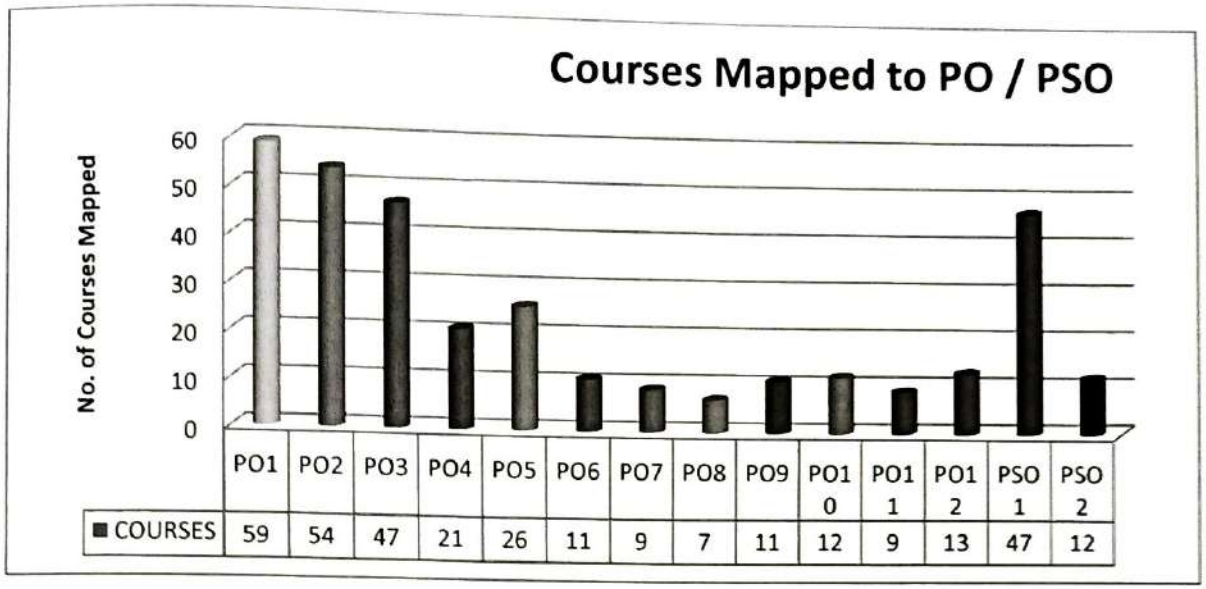

Figure 2.1.1.6 Courses mapped to PO / PSO

- Based on CO – PO – PSO mapping courses contribution to each PO / PSO is done.

Table.2.1.1.10 Analysis of Course PO / PSO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
No-of mapped courses	59	54	47	21	26	11	9	7	11	12	9	13	47	12
Average PO/PSO	2.23	2.13	2.04	1.92	2.09	1.93	2.06	2.29	2.08	2.37	2.15	1.96	1.92	2.01
% of Courses Contributed to PO	88.06%	80.60%	70.15%	31.34%	38.81%	16.42%	13.43%	10.45%	16.42%	17.91%	13.43%	19.40%	70.15%	17.91%
	>50	>50	>50	<50	<50	<50	<50	<50	<50	<50	<50	<50	>50	<50

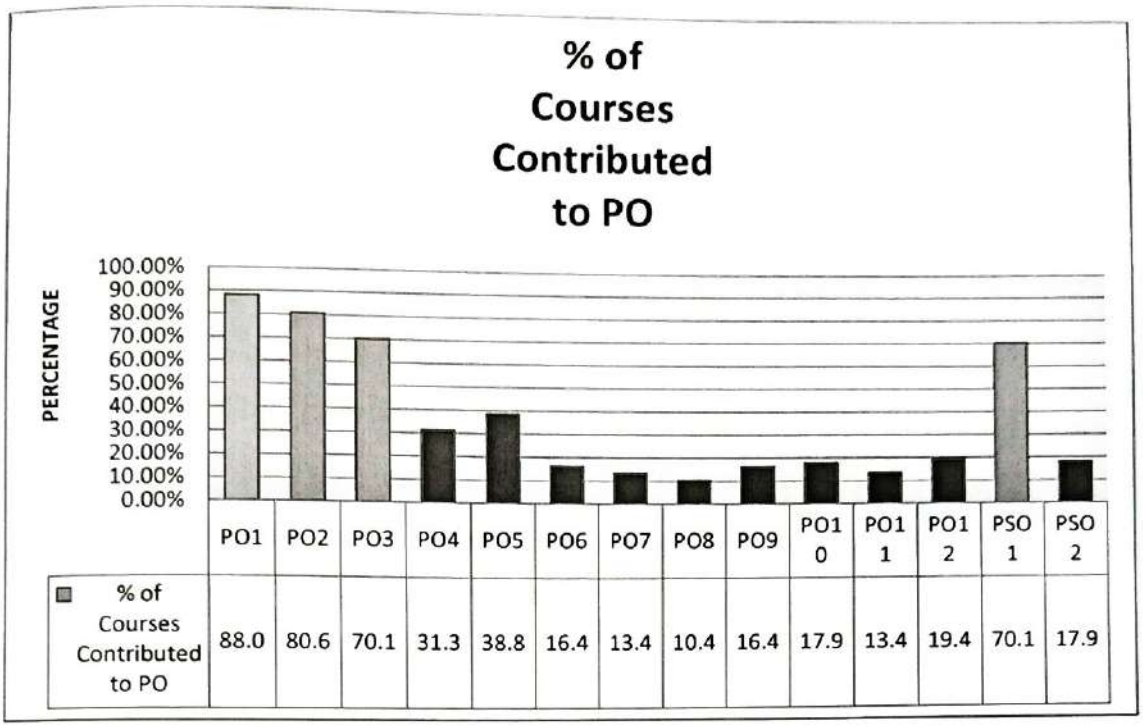

Figure 2.1.1.7 % of Courses contributed to PO

List of POs Identified with less than 50% of course contribution

S. No	POs & PSOs
1	PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO2

Process for Identifying Gaps

- JNTUK curriculum course outcomes of all courses are mapped with POs and PSOs by respectivecourse coordinator.
- Course contribution to each PO and PSO will be done and gaps are recommended for the coursewith less than 50% contribution in PO and PSO
- For better CO / PO attainment, individual course coordinator will identify curricular gap for thatcourse.
- The identified gaps are communicated to PAQIC and then forwarded to DAC.
- A letter was sent to the Board of Studies of JNTUK through Principal intimating the identifiedcurricular gaps for better attainment of POs and PSOs.
- DAC recommends the action plan to fill the gap.
- Activities recommended by DAC for gap fulfillment are included in the department academiccalendar / lesson plan for further implementation.
- After implementation of each activity to fulfill the gap, feedback is obtained from students for CO– PO – PSO attainment.

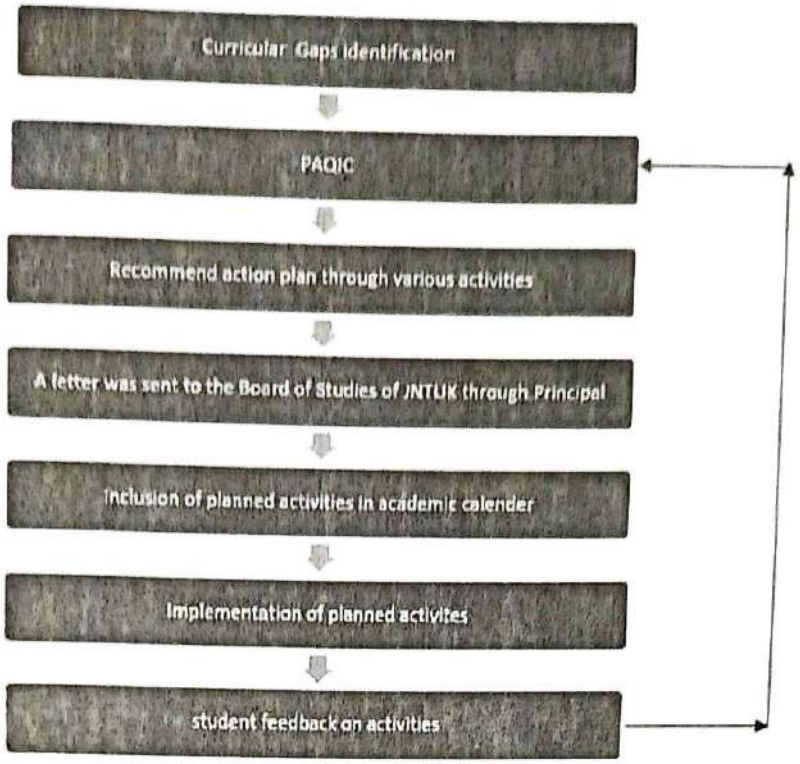

Figure.2.1.1.8. Procedure for identifying gaps

Department Advisory Committee (DAC)

Feature	Details
Functions	This is a core committee constitutes to help the decision-making process with respect to Academics, Infrastructure, Facilities and student support systems for all programs in the department. The committee also helps in the process of defining short- and long-range goals including Vision, Mission and PEOs.
Members (5)	HOD – Chairman, University Member, Senior Faculty Member/s, Industry Expert, Distinguished Alumni
Meeting Frequency	Twice a Year
Meetings sent to	Principal

Program Assessment and Quality Improvement Committee (PAQIC)

Feature	Details
Functions	To formulate COs and PSOs, continuous assessment of the Programme for attainment of POs and PSOs in each course, Course, Programme target setting, suggest steps to improve the quality of the program.
Members (5)	HOD, Assessment / NBA Coordinator, Senior Faculty members
Meeting Frequency	Once at the beginning of the semester
Meetings sent to	Principal

B. List the curricular gaps for the attainment of defined POs and PSOs

Identified curricular gaps are based on the following category:

Table. 2.1.1.11 Gap Category

Gap #	Gap Category	POs and PSOs Mapped
Gap 1	Advanced Technology trends	PO2, PO3, PO4, PO5, PSO1
Gap 2	Design oriented approach in Curriculum laboratory courses	PO2, PO3, PO4, PO5, PSO1
Gap 3	Effective Utilization of advanced engineering tools in Project / Product Design	PO4, PO5, PSO1
Gap 4	Adapting to the Latest technologies	PO3, PO4, PO5, PSO1
Gap 5	Aptitude and Soft Skills	PO1, P10, PSO2
Gap 6	Employability Skills	PO8, PO9, PO10, PO11
Gap 7	Professionalism and Ethical attitude	PO8, PSO2
Gap 8	Higher Education	PO1, PO2, PO3, PO12, PSO1
Gap 9	Social responsibility	PO6, PO7

Table 2.1.1.12 List of Curricular gaps identified by course Coordinator for Academic Year 2022-23

S.No	Course Name	Curricular Gap	Action Planned	Target Students
1	Electronic Devices and Circuits	Small Signal High Frequency Transistor Amplifier	PPT.	II-I
2	Switching Theory and Logic Design	Introduction to various logic families	PPT.	II-I
3	Signals and Systems	Introduction to MAT LAB	White board marker	II-I
4	Random Variables and Stochastic Processes	Convergence of sequence of Random Variables	NPTEL Video	II-I
5	Electronic Circuit Analysis	clapp oscillator	PPT	II-II
6	Linear control Systems	Non Linear System Analysis	NPTEL Video	II-II
7	Digital Communications	Minimum Shift Keying	PPT	III-I
8	Computer Organization & Architecture	Interrupts	White board marker	III-I
9	VLSI Design	Floor Planning	NPTEL Video	III-II
10	Digital Signal Processing	Realization of lattice ladder structure of IIR filter.	NPTEL Video	III-II
11	Microwave Engineering	Circular Wave Guides	NPTEL Video	III-II
12	Microwave and Optical Communication	Laboratory Experiments –I [launching of light in optical fiber]by	NPTEL Video	IV-I

	Engineering	NPTEL Video		
13	Data Communications & Computer networks	Concept of Sockets	PPT	IV-I
14	Digital Image and Video Processing	Colour Image Processing	NPTEL Video	IV-I

Table 2.1.1.13 List of Curricular gaps identified by course Coordinator for Academic Year 2021-22

S. No	Course Name	Curricular Gap	Action Planned	Target Students
1	Signals and Systems	Introduction to MATLAB	White Board Marker	II-I
2	Linear control Systems	Nonlinear system analysis	NPTEL Video	II-II
3	Analog Communications	Phase modulation	PPT	II-II
4	Digital Communications	Detailed study on Low Density ParityCheck Codes	NPTEL Video	III-I
5	Digital System Design UsingHDL	Explanation programming basics onVHDL	White Board Marker	III-I
6	Wired and Wireless Transmission Devices	Wave Propagation and Phase Shifts	COURSERA	III-II
7	VLSI Design	Floor planning	NPTEL Video	III-II
8	Internet of Things	OSI Layer Model	White board marker	III-II
9	Optical Communications	Fiber optic cables (Cable Structure, indoor & outdoor cable)	NPTEL Video	IV-I
10	Wireless sensors & Networks	To learn the concept of IR SENSOR	Demonstration	IV-II

Table 2.1.1.14 List of Curricular gaps identified by course Coordinator for Academic Year 2020-21

S. No	Course Name	Curricular Gap	Action Planned	Target Students
1	Electronic CircuitAnalysis	wideband amplifiers	NPTEL video	II-II
2	Linear I C Applications	Charge Balancing ADC	PPT	III-I
3	Digital I C Applications	VHDL Models like Structural andData Flow models	White Board Marker	III-I
4	Digital Signal Processing	Speech processing	NPTEL Video	III-II
5	Micro Processors &Micro Controllers	RS-232 Basics and operation	YOU TUBE Video	III-II
6	Digital Image Processing	Image mosaic	PPT	IV-I
7	Wireless sensors &Networks	Familiarization of different layers	Reference model topiccovered by PPT	IV-II

Table 2.1.1.15 List of Curricular gaps identified by course Coordinator for Academic Year 2019-20

S. No	Course Name	Curricular Gap	Action Planned	Target Students
1	Signals and Systems	Introduction to MATLAB	White Board with Marker & Talk	II-I
2	Control Systems	Introduction to Nonlinear Optimal Control	NPTEL Video	II-II
3	Electromagnetic Waves and Transmission Lines	Basics of coordinate systemsand vector algebra	PPT	II-II
4	Antenna and Wave Propagation	Design of microstrip antennas (MSA)	NPTEL Video	III-I
5	Micro Wave Engineering	Advances in Microwave Engineering	PPT	III-II
6	Embedded Systems	Introduction to Internet ofThings (IOT)	NPTEL Video	IV-I
7	Wireless sensors &Networks	Advantages of TCP protocol	Discussion	IV-II

Coordinator

HOD

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2.1.2 ***State the delivery details of the content beyond the syllabus for the attainment of POs and PSOs (10)*** (Provide details of the additional course/learning material/content/laboratory experiments/projects etc., arising from the gaps identified in 2.1.1 in a tabular form in the format given below)

A. Steps taken to get identified gaps included in the curriculum (letter to university/BOS)

- A letter was sent to the Board of Studies of JNTUK through Principal intimating the identified curricular gaps for better attainment of POs and PSOs.

Table 2.1.2.1: Communication to JNTUK regarding curricular gaps

S. No	Letter to Affiliating University regarding curricular gaps	Date of communication
1.	Letter to JNTUK intimating the identified curricular gaps in the curriculum forbetter CO / PO- PSO attainment [R20 Curriculam]	14-09-2020
2.	Letter to JNTUK intimating the identified curricular gaps in the curriculum forbetter CO / PO- PSO attainment [R19 Curriculam]	06-05-2019

Coordinator

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B & C Delivery details of the content beyond the syllabus & Mapping of content beyond syllabusWith the POS & PSOs

Academic Year 2022-23

Table 2.1.2.2 Delivery Details of Content beyond syllabus

S. No	Course Name	Gap	Action Taken	Date and Year	Resource person with designation	% of students	Relevance to POs & PSOs
1	Electronic Devices and Circuits	Small Signal High Frequency Transistor Amplifier	PPT.	10-11-2022	M.S.Mallika, Assistant professor	90	PO3
2	Switching Theory and Logic Design	Introduction to various logic families	PPT.	09-11-2022	D V Satish Assistant professor	93	PO 1
3	Signals and Systems	Introduction to MAT LAB	White board marker	05-12-2022	S Raghava Rao Assistant professor	92	PO1, PO3, PO5
4	Random Variables and Stochastic Processes	Convergence of sequence of Random Variables	NPTEL Video	29-09-2022	Prof.P K Bora IIT Gowhati	90	PO2
5	Electronic Circuit Analysis	clapp oscillator	PPT	11-04-2023	M.S.Mallika, Assistant professor	92	PO3
6	Linear control Systems	Non Linear System Analysis	NPTEL Video	01-02-2023	Arun D mahindrakar	91	PO1,PO3
7	Digital Communications	Minimum Shift Keying	PPT	21-09-2022	V.Prasanna Laxmi, Assoc. Prof.	95	PO4,PO5
8	Computer Organization & Architechture	Interrupts	White board marker	12-10-2022	K.Jyothirmai, Assistant professor	92	PO1,PO3, PO5
9	VLSI Design	Floor Planning	NPTEL Video	11-04-2023	Prof.Indranil Senugupta, IIT Kharagpur	94	PO3
10	Digital Signal Processing	Realization of lattice ladder structure of IIR filter.	NPTEL Video	04-03-2023	Prof. S. C. Dutta Roy,IIT Delhi	90	PO3
11	Microwave Engineering	Circular Wave Guides	NPTEL Video	30-01-2023	Prof. R.Bhattacharjee IIT Guwahati	92	PO3

12	Microwave and Optical Communication Engineering	Laboratory Experiments –I [launching of light in optical fiber]by NPTEL Video	NPTEL Video	10-10-2022	R.K. Shevgaonkar,Department of ECE,IIT Bombay.	95	PO5,PO6
13	Data Communications & Computer Networks	Concept of Sockets	PPT	17-10-2022	M V V S N Murthy, Assistant professor	93	PO1
14	Digital Image and Video Processing	Colour Image Processing	NPTEL Video	28-09-2022	Prof. P.K.Biswas, IIT Kharagpur	95	PO1

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Academic Year 2021-22

Table 2.1.2.3 Delivery Details of Content beyond syllabus

S. No	Course Name	Gap	Action Taken	Date and Year	Resource person with designation	% of students	Relevance to POs & PSOs
1	Signals and Systems	Introduction to MAT LAB	White Board Marker	23-12-2021	Dr.G.M.V.Prasad Professor	90	PO1, PO3, PO5
2	Linear control Systems	Nonlinear system analysis	NPTEL Video	29-04-2022	Prof Arun D Mahindrakar IITM	93	PO1, PO3
3	Analog Communications	Phase modulation	PPT	30-04-2022	Dr. G.M.V.Prasad Professor	95	PO2, PSO1
4	Digital Communications	Detailed study on Low Density Parity Check Codes	NPTEL Video	29-12-2021	Dr. Adrish Banerjeee Professor	91	PO1, PO2, PO3
5	Digital System Design Using HDL	Explanation programming basics on VHDL	White Board Marker	17-11-2021	D V Satish Assistant professor	92	PO5
6	Wired and Wireless Transmission Devices	Wave Propagation and Phase Shifts	COURSERA Video	29-03-2022	COURSERA	95	PO2, PO3
7	VLSI Design	Floor planning	NPTEL Video	22-03-2022	Prof.Indranil Sengupta, Professor	94	PO3
8	Internet of Things	OSI Layer Model	White board marker	17-2-2022	BH.V.V.S.R.K.K. Pavan Assistant Professor	95	PO1
9	Optical Communications	Fiber optic cables (Cable Structure, indoor & outdoor cable)	NPTEL Video	06-10-2021	Prof. Vipul Rastogi, Dept of physics, IIT Roorkee	92	PO3
10	Wireless sensors & Networks	To learn the concept of IR SENSOR	Demonstration	22-02-2022	V V S N Murthy Mangipudi, Assistant Professor	93	PO4

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Electronics & Communication Engineering
B.V.C. Institute of Technology and Science
Batlapalem, Amalapuram - 533 201

Academic Year 2020-21

Table 2.1.2.4 Delivery Details of Content beyond syllabus

S. No	Course Name	Gap	Action Taken	Date and Year	Resource person with designation	% of students	Relevance to POs & PSOs
1	Electronic Circuit Analysis	Wideband amplifiers	NPTEL video	14-07-2021	Prof. D C Cube Dept. of Physics IIT Delhi	90	PO2
2	Linear I C Applications	Charge Balancing ADC	PPT	15-02-2021	V.Prasanna Laxmi Associate Professor	95	PO2, PO3
3	Digital I C Applications	VHDL Models like Structural and Data Flow models	White Board Marker	06-01-2021	D.V Satish Assistant professor	96	PO5
4	Digital Signal Processing	Speech processing	NPTEL Video	17-05-2021	Prof. S. K Das Mandal, IIT Kharagpur	95	PO4, PSO1
5	Micro Processors & Micro Controllers	RS-232 Basics and operation	YOU TUBE Video	29-04-2021	YOU TUBE VIEDO-electroncsforu.com	93	PO1
6	Digital Image Processing	Image mosaic	PPT	18-02-2021	Dr. K Sirisha Professor	93	PO1
7	Wireless sensors & Networks	Familiarization of different layers	Reference model topic covered by PPT	14-05-2021	V V S N Murthy Mangipudi, Assistant Professor	94	PO4

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B.V.C. Institute of Technology and Science
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Academic Year 2019-20

Table 2.1.2.5 Delivery Details of Content beyond syllabus

S. No	Course Name	Gap	Action Taken	Date and Year	Resource person with designation	% of students	Relevance to POs & PSOs
1	Signals and Systems	Introduction to MATLAB	White Board with Marker & Talk	04-10-2019	Dr.G.M.V. Prasad Professor	90	PO1, PO3, PO5
2	Control Systems	Introduction to Nonlinear Optimal Control	NPTEL Video	20-03-2020	Prof Arun D Mahindrakar IITM	89	PO1, PO3
3	Electromagnetic Waves and Transmission Lines	Basics of coordinate systems and vector algebra	PPT	19-11-2019	Mr. R.Satish Kumar Associate Professor	90	PO1, PO2, PO3, PSO1
4	Antenna and Wave Propagation	Design of microstrip antennas (MSA)	NPTEL Video	03-10-2019	Prof. Girish Kumar, Department of Electrical Engineering, IIT Bombay	92	P01, P02
5	Micro Wave Engineering	Advances in Microwave Engineering	PPT	24-12-2019	P. Girish Assistant Professor	92	PO3
6	.Embedded Systems	Introduction to Internet of Things (IOT)	NPTEL Video	02-10-2019	Prof. Sudip Misra IIT Kharagpur	91	PO2
7	Wireless sensors & Networks	Advantages of TCP protocol	Discussion	13-03-2020	Y.N.S. Vamsi mohan Associate Professor	90	PO2

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Table 2.1.2.6 Activities conducted in view of Attaining PO4, PO5, PO6, PO7, PO8,PO9, PO10, PO11, PO12, PSO2

Academic Year 2022-23					
S. No	**Activity**	**Resource Person**	**Benefited Students**	**Date of Event**	**Relevance toPOs and PSOs**
1	A Guest Lecture on Career Oppurtunities in VLSI Design	D.Venkata Kiran, Project Lead, Tech Mahindhra	IV Year	07-02-2023	PO5PO8,PO9,PO10, PO11,PO12,PSO1, PSO2
2	A Guest Lecture on Career Oppurtunities in VLSI Design	D.Venkata Kiran, Project Lead, Tech Mahindhra	III Year	06-02-2023	PO5PO8,PO9,PO10, PO11,PO12,PSO1, PSO2
Academic Year 2021-22					
S. No	**Activity**	**Resource Person**	**Benefited Students**	**Date of Event**	**Relevance toPOs and PSOs**
1	One day Workshopon Building IOT Projects using Arduino/ Raspberry-Pi	By internal Faculty BH.V.V.S.R.K.K. Pavan	IV Year	22-02-2022	PO2, PO3, PO4,PO11, PSO1
2	Career Opportunities AfterEngineering – GATE & ESE	Made Easy Jitendra Tiwari	III & IV Year	26-03-2022	PO12
3	Soft Skills - Etiquette and Grooming Live session	Reference Globe P. Satish	IV Year	01-12-2021	PO9, PO10, PO12,PSO2
4	Studying Abroad and Career Opportunities	College Deko	III & IV Year	13-11-2021	PO5, PO12, PSO1
5	How to crack Technical Interviews for TCS/Wipro	Reference GlobeP.Satish	IV Year	07-10-2021 to 10-10-2021	PO8, PO9, PO10,PO12, PSO2
6	How to approachGATE 2022 & Career Guidance	Test Book Skilled Campus Team Pranshu Mahajan	III & IV Year	03-07-2021	PO12

Academic Year 2020-21					
S. No	**Activity**	**Resource Person**	**Benefited Students**	**Date of Event**	**Relevance to POs and PSOs**
1.	A Guest Lecture onSensor Technology	By internal Faculty T. Aditya Kumar Assistant Professor	IV Year	22-12-2020	PO2, PO3, PO4,PSO1
2	Awareness on Internships	Techiefrogs, Hyderabad Pasumarthy Sudeep	III Year	15-12-2020	PO1,PO2, PO3, PO5,PO7, PO9, PO10,PO11, PSO1,PSO2
3	Quiz tests conducted on Aptitude, Reasoningand Coding	Codetantra	III Year	16-08-2020 to 20-08-2020	PO1, PO2, PO5, PO8, PO12, PSO1,PSO2

Academic Year 2019-20					
S. No	**Activity**	**Resource Person**	**Benefited Students**	**Date of Event**	**Relevance toPOs and PSOs**
1	A one day Workshop on Intellectual Property Rights	Mr. Y. Ravi IPR Consultant	IV Year	19-11-2019	PO2, PO4, PO5, PO8, PO10, PSO1,PSO2
2	A Guest Lecture onRecent Trends in Communication Theory	Dr. M. MallikarjunaRao (A.U Engg College)	III Year	27-11-2019	PO2, PO4, PO5,PSO1
3	Quiz tests conducted on Aptitude, Reasoning and Coding	Code tantra	III Year	22-06-2020 to 27-06-2020	PO1, PO2, PO5, PO8, PO12, PSO1,PSO2
4	Soft Skills Training	APITA Kennedy	IV Year	03-01-2020 to 04-01-2020	PO6, PO8,PO9, PO10, PSO2
5	Seminar on Resume Preparation	FREELANCER, Dashrath Misal	IV Year	04-12-2019	PO1, PO2, PO3,PO5, PO8, PO12, PSO1, PSO2
6	Soft Skills Training	FREELANCER, Dashrath Misal	IV Year	13-07-2019	PO6, PO8,PO9, PO10, PSO2

Coordinator

HOD
Head of the Department
Electronics & Communication Engineering
B.V.C. Institute of Technology and Science
Batlapalem, Amalapuram - 533 201

2.2 Teaching - Learning Processes (100)

2.2.1. Describe Processes followed to improve quality of Teaching & Learning (25)

(Processes may include adherence to academic calendar and improving instruction methods using pedagogical initiatives such as real-world examples, collaborative learning, quality of laboratory experience with regard to conducting experiments, recording observations, analysis of data etc. encouraging bright students, assisting weak students etc. The implementation details and impact analysisneed to be documented)

The processes followed to improve quality of teaching & learning for B.Tech ECE Students are stated below

S. No	Name of the Process
A	Adherence to academic calendar
B	Use of various instructional methods and pedagogical initiatives
C	Methodologies to support weak students and encouragebright students
D	Quality of class room teaching
E	Conduct of Experiments
F	Continuous Assessment in the laboratory
G	Student feedback on teaching learning process and action taken

A. Adherence to Academic calendar

Academic calendar of events is well planned ahead of the commencement of the semester, which consists of the activities planned from the gaps in attaining the PO's.

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Directorate of Academic Planning
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA-533003, Andhra Pradesh, INDIA
(Established by AP Government Act No. 30 of 2008)

Lr. No. DAP/R.O. II,III & IV Year B. Tech/B. Pharmacy/2021 Date 08.10.2021

Dr. R. Srinivasa Rao,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada

Revised Academic Calendar for II, III, IV Year - B. Tech/B. Pharmacy for the AY 2021-22
(As per G.O. Rt. No. 242, Higher Education (U.E) Dept., dated 13.09.2021)

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**01.10.2021**		
I Unit of Instruction	01.10.2021	20.11.2021	7W
I Mid Examinations	22.11.2021	27.11.2021	1W
II Unit of Instructions	29.11.2021	15.01.2022	7W
II Mid Examinations	17.01.2022	22.01.2022	1W
Preparation & Practicals	24.01.2022	29.01.2022	1W
End Examinations	31.01.2022	12.02.2022	2W
Commencement of II Semester Class Work	**14.02.2022**		
II SEMESTER			
I Unit of Instructions	**14.02.2022**	02.04.2022	7W
I Mid Examinations	04.04.2022	09.04.2022	1W
II Unit of Instructions	11.04.2022	28.05.2022	7W
II Mid Examinations	30.05.2022	04.06.2022	1W
Preparation & Practicals	06.06.2022	11.06.2022	1W
End Examinations	13.06.2022	25.06.2022	2W
Commencement of next Year Class Work			
Note: Calendar is prepared with 8 hrs/day hence 7 weeks per Instruction period			

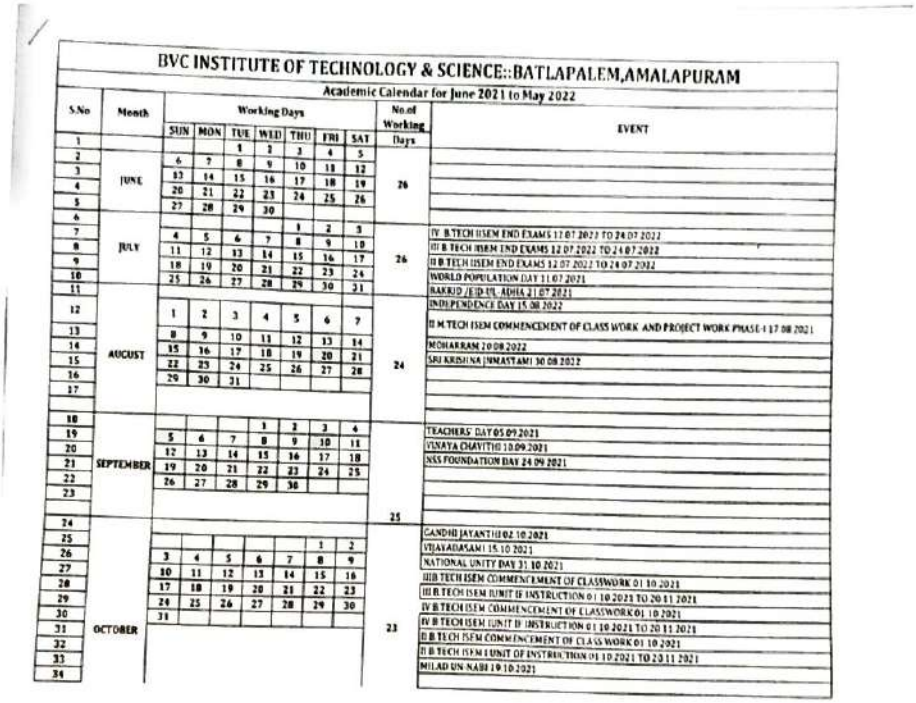
R. Srinivasa Rao
Director Academic Planning

Director
Academic Planning
JNTUK Kakinada

Copy to the Secretary to the Hon'ble Vice Chancellor, JNTUK
Copy to Rector, Registrar, JNTUK
Copy to Director Academic Audit, JNTUK
Copy to Director of Evaluation, JNTUK

Figure. 2.2.1.1: Jawaharlal Nehru Technological University, Kakinada Academiccalendar

✓ Institution Prepares Academic Calendar with all activities to be done keeping University Academic Calendar as a reference.



BVC INSTITUTE OF TECHNOLOGY & SCIENCE::BATLAPALEM,AMALAPURAM

Academic Calendar for June 2021 to May 2022

S.No	Month	Working Days							No.of Working Days	EVENT
		SUN	MON	TUE	WED	THU	FRI	SAT		
1				1	2	3	4	5		
2	JUNE	6	7	8	9	10	11	12	26	
3		13	14	15	16	17	18	19		
4		20	21	22	23	24	25	26		
5		27	28	29	30					
6						1	2	3		
7	JULY	4	5	6	7	8	9	10		IV B.TECH IISEM END EXAMS 17.07.2021 TO 24.07.2021
8		11	12	13	14	15	16	17	26	III B.TECH IISEM END EXAMS 12.07.2021 TO 24.07.2021
9		18	19	20	21	22	23	24		II B.TECH IISEM END EXAMS 12.07.2021 TO 24.07.2021
10		25	26	27	28	29	30	31		WORLD POPULATION DAY 11.07.2021
11										BAKRID /EID UL ADHA 21.07.2021
12	AUGUST	1	2	3	4	5	6	7		INDEPENDENCE DAY 15.08.2022
13		8	9	10	11	12	13	14		II M.TECH ISEM COMMENCEMENT OF CLASS WORK AND PROJECT WORK PHASE-I 17.08.2021
14		15	16	17	18	19	20	21		MOHARRAM 20.08.2022
15		22	23	24	25	26	27	28	24	SRI KRISHNA JANMASTAMI 30.08.2022
16		29	30	31						
17										
18										
19					1	2	3	4		TEACHERS' DAY 05.09.2021
20		5	6	7	8	9	10	11		VINAYA CHAVITHI 10.09.2021
21	SEPTEMBER	12	13	14	15	16	17	18		NSS FOUNDATION DAY 24.09.2021
22		19	20	21	22	23	24	25		
23		26	27	28	29	30				
									25	
24										
25							1	2		GANDHI JAYANTHI 02.10.2021
26		3	4	5	6	7	8	9		VIJAYADASAMI 15.10.2021
27		10	11	12	13	14	15	16		NATIONAL UNITY DAY 31.10.2021
28		17	18	19	20	21	22	23		III B.TECH ISEM COMMENCEMENT OF CLASSWORK 01.10.2021
29		24	25	26	27	28	29	30		III B.TECH ISEM JUNIT II INSTRUCTION 01.10.2021 TO 20.11.2021
30		31								IV B.TECH ISEM COMMENCEMENT OF CLASSWORK 01.10.2021
31	OCTOBER								23	IV B.TECH ISEM JUNIT II INSTRUCTION 01.10.2021 TO 20.11.2021
32										II B.TECH ISEM COMMENCEMENT OF CLASS WORK 01.10.2021
33										II B.TECH ISEM I UNIT OF INSTRUCTION 01.10.2021 TO 23.11.2021
34										MILAD UN-NABI 19.10.2021

Figure. 2.2.1.2: Institution Academic calendar

Action Plan of Department:

Department calendar of events is well planned ahead of the commencement of the semester based onInstitution Academic calendar of events, which consists of activities planned for attaining PO – PSOs.

BVC INSTITUTE OF TECHNOLOGY & SCIENCE::BATLAPALEM,AMALAPURAM

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Academic Calendar for June 2021 to May 2022

S.No	Month	Working Days							No.of Working Days	EVENT
		SUN	MON	TUE	WED	THU	FRI	SAT		
1				1	2	3	4	5		
2	JUNE	6	7	8	9	10	11	12	26	
3		13	14	15	16	17	18	19		
4		20	21	22	23	24	25	26		
5		27	28	29	30					
6						1	2	3		IV B.TECH ISEM END EXAMS 12.07.2021 TO 24.07.2022
7	JULY	4	5	6	7	8	9	10		III B.TECH ISEM END EXAMS 12.07.2021 TO 24.07.2022
8		11	12	13	14	15	16	17	26	II B.TECH ISEM END EXAMS 12.07.2021 TO 24.07.2022
9		18	19	20	21	22	23	24		BAKRID /EID UL ADHA 21.07.2021
10		25	26	27	28	29	30	31		WORLD POPULATION DAY 11.07.2021
11										INDEPENDENCE DAY 15.08.2022
12	AUGUST	1	2	3	4	5	6	7		II M.TECH ISEM COMMENCEMENT OF CLASSWORK AND PROJECT WORK PHASE-I 17.08.2021
13		8	9	10	11	12	13	14		MOHARRAM 20.08.2022
14		15	16	17	18	19	20	21	24	SRI KRISHNA JNMASTAMI 30.08.2022
15		22	23	24	25	26	27	28		Cultural Cell Activity:15.08.2021 INDEPENDENCE DAY Celebrations
16		29	30	31						Co Curricular Activity:15.08.2021 INDEPENDENCE DAY Celebrations
17										
18	SEPTEMBER				1	2	3	4		TEACHERS' DAY 05.09.2021
19		5	6	7	8	9	10	11		VINAYA CHAVITHI 10.09.2021
20		12	13	14	15	16	17	18	25	NSS FOUNDATION DAY 24.09.2021
21		19	20	21	22	23	24	25		Co Curricular Activity: Engineers Day Celebrations 14sep
22		26	27	28	29	30				Cultural Cell Activity: Teachers Day Celebrations on 5th Sep
23										
24	OCTOBER									
25							1	2		GANDHI JAYANTHI 02.10.2021
26		3	4	5	6	7	8	9		VIJAYADASAMI 15.10.2021
27		10	11	12	13	14	15	16		NATIONAL UNITY DAY 31.10.2021
28		17	18	19	20	21	22	23		III B.TECH ISEM COMMENCEMENT OF CLASSWORK 01.10.2021
29		24	25	26	27	28	29	30	23	III B.TECH ISEM JUNIT IF INSTRUCTION 01.10.2021 TO 20.11.2021
30		31								IV B.TECH ISEM COMMENCEMENT OF CLASSWORK 01.10.2021
31										IV B.TECH ISEM JUNIT IF INSTRUCTION 01.10.2021 TO 20.11.2021
32										II B.TECH ISEM COMMENCEMENT OF CLASS WORK 01.10.2021
33										II B.TECH ISEM I UNIT OF INSTRUCTION 01.10.2021 TO 20.11.2021
										MILAD UN-NABI 19.10.2021

Figure. 2.2.1.3: Department Calendar

Lesson Plan Sample

- ✓ Subject allotment is done before the commencement of the semester and lesson plan,tutorials, Assignments and lecture notes are made ready by respective class teacher.

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE::BATLAPALEM
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

LESSON PLAN

Course Name: Linear IC Applications — Year / Sem: III B.Tech/I Sem
AY: 2020-21 — Faculty Name: Mrs. V.Prasanna Laxmi
Course Code: C312

Unit No.	Name of the Topic	No. of Hours	Reference Book	Delivery Method
UNIT-I	**UNIT I INTEGRATED CIRCUITS** Differential Amplifier and their configurations	1	T2	WBM & Talk
	DC analysis of Dual input Balanced output Configuration	1	T2	WBM& Talk
	DC analysis of amplifier configuration (Dual Input Unbalanced Output, Single Ended Input– Balanced/ Unbalanced Output),		T2	WBM& Talk
	AC analysis of Dual input Balanced output Configuration, Inverting and non-inverting inputs	1	T2	WBM& Talk
	AC analysis of Dual input Unbalanced output Configuration	1	T2	WBM& Talk
	AC analysis of , Single Ended Input – Balanced/ Unbalanced Output, Problems	1	T2	WBM& Talk
	Differential Amplifier with Swamping resistors	1	T2	WBM& Talk
	Constant current bias circuits, Current mirror	2	T2	WBM& Talk
	DC Coupling and Cascade Differential Amplifier Stages	1	T2	WBM& Talk,
	Level translator	1	T2	WBM& Talk
	Total	**10**		
UNIT-II	**UNIT II Characteristics of OP-Amps** Integrated circuits-Types, Classification	1	T2	WBM& Talk
	Integrated circuits - Package Types,Manufacture designation of Linear ICs	1	T2	PPT
	Integrated circuits- Temperature ranges, Power supplies	1	T2	WBM& Talk
	Op-amp :-Definition,Block Diagram, Output stage	1	R2 T2	WBM& Talk

			R6	
	Op-Amp schematic symbol, Ideal and practical Op-amp Specifications	1	T2 T1 T1	WBM& Talk
	DC characteristics of Op-amp	1	T1	WBM& Talk
	AC characteristics of Op-amp	1	T1	WBM& Talk
	741 op-amp & its features	1	R6	WBM& Talk
	FET input. Op-Amps, Op-Amp parameters & Measurement, Input & Out put Off set voltages & currents	1	R6 T1 R7	WBM& Talk
	Slew rates, CMRR, PSRR, drift	1	R6 R5	WBM& Talk
	Frequency Compensation technique.	2	T1	WBM& Talk
	Total	**12**		
	UNIT III LINEAR and NON-LINEAR APPLICATIONS OF OP- AMPS: Introduction, Inverting and Non-inverting amplifier	1	T1 R6	WBM& Talk
	Integrator, Scale changer,Summer,Subtractor	2	T1 R6	WBM& Talk
	Differentiator	1	T1	WBM& Talk
	Difference amplifier, AC amplifier, Problems	1	R2 T1	WBM& Talk
	Instrumentation amplifier	1	T1	WBM& Talk
UNIT - III	V to I, I to V converters,	1	T1	WBM& Talk
	Buffers,Non- Linear function generation	1	T1 R5 R5	WBM& Talk
	Comparators, Schmitt trigger, Problems.	3	T1	WBM& Talk
	Multivibrators	1	T1 T3	NPTEL Video
	Triangular and Square wave generators	1	T1	WBM& Talk
	Log Amplifiers and Anti log Amplifiers	1	T1	WBM& Talk
	Precision rectifiers	1	T1	WBM& Talk

	Total 15			
UNIT - IV	**UNIT IV ACTIVE FILTERS, ANALOG MULTIPLIERS AND MODULATORS:** Introduction,Filter transfer function	1	T2 R2	WBM& Talk
	Introduction of Practical Active Filters :- Butterworth,chebyshev,Cauer	1	T2 R2	WBM& Talk
	Butter worth filters 1st order, LPF, HPF filters.	1	T1	WBM& Talk
	Butter worth filters 2nd order LPF 2nd order LPF design	1	T1 R4	WBM& Talk
	Butter worth filters - 2nd order HPF	1	T3	WBM& Talk
	BPF:-Introduction,types, Wide Band pass filter	1	T1 T3	WBM& Talk
	Narrow Band pass filter	1	T1	WBM& Talk
	Wide Band reject filter	1	T1	WBM& Talk
	Narrow Band reject filter	2	T1	WBM& Talk
	All pass filter	1	T3	WBM& Talk
	Four Quadrant multiplier,	1	R7	WBM& Talk
	Balanced modulator	1	R7	WBM& Talk
	IC1496	1	R7	WBM& Talk
	Sample & Hold circuits	1	R7	WBM& Talk
	Total 15			
UNIT – V	**UNIT V TIMERS & PHASE LOCKED LOOPS** Introduction to 555 timer	1	T1	WBM& Talk
	555 timer functional diagram		T1	WBM& Talk
	555 timer Astable operation	1	T1	WBM& Talk
	555 timer Monostable operation	1	T1	WBM& Talk
	555 timer Monostable applications	1	T1	WBM& Talk, Quiz
	555 timer Astable applications	1	T1	WBM& Talk, Quiz
	Schmitt Trigger	1	T1	WBM& Talk
	PLL - introduction, block schematic		T1	WBM& Talk
	PLL- principles and description of individual blocks	2	T1	WBM& Talk
	565 PLL	1	T1	WBM& Talk,
	Applications of PLL – frequency multiplication, frequency translation, AM, FM	2	T1	WBM& Talk

	demodulators,FSK demodulator			
	Applications of VCO (566).		R7	WBM& Talk
	Total	**11**		
UNIT -VI	**UNIT VI DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS** Introduction,Application of ADC & DAC	1	T1	WBM& Talk
	Basic DAC techniques, weighted resistor DAC	1	T1	WBM& Talk
	R-2R ladder DAC, inverted R-2R DAC	1	T1	WBM& Talk
	IC 1408 DAC	1	T1	WBM& Talk
	ADC introduction, Basic ADC technique, Types of ADC	1	T1	WBM& Talk
	Parallel Comparator type ADC	1	T1	WBM& Talk
	Counter type ADC	1	T1	WBM& Talk
	Successive approximation ADC	1	T1	WBM& Talk
	Charge Balancing ADC [GAP BEYOND]	1		PPT
	Dual slope ADC	1	T1	WBM& Talk
	Resolution & it's problems DAC and ADC Specifications,	1	R3 T1	WBM& Talk
	Specifications AD 574 (12 bit ADC)	1	R7	WBM& Talk
	Total	**12**		
	Total No. Of Hours	**75**		

TEXT BOOKS:

T1. Linear Integrated Circuits – D. Roy Choudhury, New Age International (p) Ltd, 2nd Edition,2003.

T2. Op-Amps & Linear ICs - Ramakanth A. Gayakwad, PHI, 1987.

T3. Operational Amplifiers–C.G. Clayton, Butterworth & Company Publ. Ltd./Elsevier, 1971

REFERENCES:

R1. Operational Amplifiers & Linear Integrated Circuits –Sanjay Sharma; SK Katarina &Sons;2nd Edition,2010

R2. Design with Operational Amplifiers & Analog Integrated Circuits – Sergio Franco, McGraw Hill, 1988.

R3.OP AMPS and Linear Integrated Circuits concepts and Applications, James M Fiore, Cenage Learning India Ltd.

R4. Operational Amplifiers & Linear Integrated Circuits–R.F.Coughlin & Fredrick Driscoll, PHI, 6th Edition.

R5. Operational Amplifiers & Linear ICs – David A Bell, Oxford Uni. Press, 3rd Edition

R6. Linear Integrated Circuits – D. Roy Choudhury, New Age International (p) Ltd, 4th Edition

R7. Linear IC Applications-U.A.Bakshi & A.P.Godse ,Technical Publications

Figure. 2.2.1.4 Lesson Plan

B. Use of Various instructional methods and pedagogical initiatives:

The Faculty of the department adopts various innovative teaching and learning methodologies for effective content delivery

Course Delivery Methods used in our department:

- Lectures
- PPT
- NPTEL Videos and Animated Videos
- Quiz
- Seminar
- Discussion
- Brain Storming
- Demonstration
- Case study
- Problem solving
- Differentiation
- Cooperative Learning.
- Tutorials
- Experimental Laboratory Work
- Collaborative Learning
- Industrial Visits
- Project Based Learning

Course Delivery	Justification
Lectures	• Faculty of the ECE Department Effectively teaches students about aconcerned Concept/Course. • Faculty conveys significant information, history, background, theories,analogies and equations to make the concepts clear. • Faculty relate engineering practice to the real world
Presentations (PPT and Video)	• Presentations are given to illustrate ideas and concepts. • Presentations give information with data relating to an issue. • Videos effectively communicate the working of actual engineering solutions • Long learning in the appropriate societal context.
Tutorials	• Faculty helps the slow learners by solving a greater number of similarproblems. • University question paper will be solved. • Regular assignments will be given. • Solutions to the assignment will be provided for the students.

Experimental and laboratory work	• Laboratory work demonstrates how theory can be verified by experimentsthrough interpretation of results. • Experiments a r e normally done in groups thereby encouraging students todo team work.
Collaborative Learning	• Collaborative learning is based on the view thatknowledge is a social need.
	• Collaborative learning can occur peer-to-peer or in larger groups. • This often occurs in a class session after students are • introduced to course material through readings or videos before class, and/orthrough instructor lectures.
Industrial Visits	• Industrial visits represent one of the important attributes in any engineering undergraduate program that contribute to the achievement of various essential learning outcomes and program outcomes. • It provides the students an opportunity to learn practically through interaction, and by seeing the working methods and employment practices.
Group tasks (Projects)	• Here the concept of engineering that the student has understood in thecourse is showcased. • This helps to do work in groups effectively.
Hand-outs	• Gives a quick insight to the course. • It helps the slow learners to face the exams with confidence

➢ **Power Point Presentations**

Table 2.2.1.1 List of lectures delivered by faculty as PPT with audio

S. No	Name of the Course	Year-semester	Topic	Relevance to POs, PSOs
1	Microwave and Optical Communication Engineering	IV-I	Two Cavity Klystrons	PO1,PO2,PO3,PSO1
2	Data Communications & Computer networks	IV-I	Concept Of Sockets	PO1,PO2,PO4,PSO1
3	Digital Image and Video Processing	IV-I	Image Sampling And Quantization	PO1,PO2,PO3,PO5, PSO1
4	Embedded Systems	IV-I	Embedded Firmware Design	PO1, PO3, PSO1
5	Wireless Communication	IV-II	concepts of 2G,3G,4G of wireless communication	PO1,PO2,PO3,PSO1
6	Electromagnetic Waves and Transmission Lines	III-I	Vector Calculus And Theorems	PO1,PO2,PO3,P4,PSO1
7	Digital Communications	III-I	Comparision of Digital Pulse modulation Techniques	PO1,PO2
8	Computer Organization and Architecture	III-I	Memory Organization	PO1, PO3,PO5
9	Electronic Measurements and Instrumentation	III-I	AC Brides and Q meters	PO1,PO2,PO3,PSO1
10	Microprocessor and Microcontrollers	III-II	8086 Min Mode And Max Mode Operation	PO1 ,PO2,PSO1
11	VLSI Design	III-II	FinFet Technology	PO1,PO3,PSO1
12	Computer Network	III-II	A comparison of the OSI and TCP/IP Reference Models, OSI Vs TCP/IP	PO1, PSO1
13	Electronic Devices and Circuits	II-I	Comparison of FET amplifiers	PO1,PO2,PO3,PSO1
14	Switching Theory and Logic Design	II-I	Design of registers - Buffer register, control buffer register, shift register	PO1,PO2,PO3,PSO1
15	Signals and Systems	II-I	Introduction to Hilbert Transform	PO1,PO2,PSO1

16	Random Variables and Stochastic Processes	II-I	Vector Random Variables	PO1,PO2,PO4,PSO1
17	Electronic Circuit Analysis	II-II	Colpitt's oscillator with BJT and FET and their analysis	PO1,PO2,PO3,PSO1
18	Digital IC Design	II-II	Entity declaration, architecture	PO1,PO3,PO5,PSO1
19	Linear control Systems	II-II	Frequency response analysis	PO1,PO2,PO3,PO4,PSO 1

➢ **NPTEL Videos and Animation**

Table 2.2.1.2 NPTEL Videos

S. No	Name of the Course	Year-semester	Topic	Relevance to POs,PSOs
1	Microwave and Optical Communication Engineering	IV-I	Semiconductor Laser - I Device Structure Injection laser Diodes	PO1,PO2,PO3,PSO1
2	Digital Image and Video Processing	IV-I	Image enhancement	PO1,PO2,PSO1
3	Embedded Systems	IV-I	Embedded System Development, Implementation And Testing	PO1, PO2, PSO1
4	Wireless Communication	IV-I	MIMO CONCEPTS	PO1,PO2,PO3,PSO1
5	Electromagnetic Waves and Transmission Lines	III-I	Transmission line equations and coaxial cables	PO1,PO2,PO3,P4,PSO1
6	Digital Communications	III-I	Source Coding: Introduction and advantages	PO1,PO2,PO3,PO4
7	Computer Organization and Architecture	III-I	Addressing modes	PO1, PO3,PO5
8	Electronic Measurements and Instrumentation	III-I	signal generators and analyzers	PO1,PO2,PO3,PSO1
9	Microprocessor and Microcontrollers	III-II	8086 Programming -Compare two Strings	PO1 ,PO2,PO5 ,PSO1
10	VLSI Design	III-II	Floor Planning	PO1,PO3,PSO1
11	Microwave Engineering	III-II	Reflex Klystron Apple Gate Diagram	PO1,PO2,PO3,PSO1
12	Electronic Devices and Circuits	II-I	Transistor characteristics	PO1,PO2,PO3,PSO1
13	Switching Theory and Logic Design	II-I	Design code converts using Karnaugh method	PO1,PO2,PO3,PSO1
14	Signals and Systems	II-I	Dirichlet's conditions	PO1,PO2,PSO1
15	Random Variables and Stochastic Processes	II-I	Distribution function and Density functions, Properties	PO1,PO2,PO4,PSO1
16	Electronic Circuit Analysis	II-II	Power Amplifiers	PO1,PO2,PO3,PSO1

17	Digital IC Design	II-II	Design code converts using Karnaugh method	PO1,PO3,PO5,PSO1
18	Linear control Systems	II-II	Routh's stability criterion	PO1,PO2,PO3,PSO1

Animated videos

Table 2.2.1.3 List of Animation Videos

S. No	Name of the Course	Year-semester	Topic	Relevance toPOs, PSOs
1	Signals and Systems	II-I	Fourier transform and Fourier series	PO1,PO2,PO3,PSO1
2	Electronics and DeviceCircuits	II-I	Working of Transistor as a amplifier	PO1,PO2,PSO1
3	Electronic CircuitAnalysis	II-II	Working Of Class A Amplifier	PO1,PO2,PO3,PSO1
4	Analog IC Applications	III - I	Working of Op Amp	PO1,PO2,PSO1
5	VLSI Design	III-II	Fabrication of an IC	PO1,PO2,PSO1
6	Computer Networks	III-II	Basics of Computer Network - 3D animation	PO1,PO2,PSO1
8	Optical Communication and networks	IV-I	Total Internal Reflection Demo: Optical Fibers	PO1,PSO1
9	Microwave engineering	III-II	Working of klystrontube	PO1,PO2,PO3,PSO1

- **Faculty Lecture Videos**

Table 2.2.1.4 Video lectures delivered by course faculty

S.No	Name of the Course	Year-semester	Topic	Relevance to POs,PSOs
1	Digital Communication	III-I	Introduction To Digital Communication	PO1,PO2
2	Micro Wave Engineering	III-II	Magnetron	PO1,PO2,PSO1
3	Cellular Mobile Communication	IV-II	Multiple Access Techniques	PO2,PO5,PSO1
4	Satellite Communication	IV-II	GPS Position LocationPrinciples	PO1,PO5,PSO1
5	Embedded Systems	IV-I	Serial Communications	PO1,PSO1
6	VLSI Design	III-II	Design rules	PO1,PO2,PO3, PSO1
7	Electronic Devices And Circuits	II-I	Common Drain Amplifier	PO1,PO2,PSO1
8	Random Variables & Stochastic Processes	II-I	Cross Correlation Function Properties	PO1,PO2,PO3,PSO1
9	Electronic Circuit Analysis	II-II	Oscillators	PO1,PO2,PO3,PSO1

- **Seminar**

Table 2.2.1.5 List of Seminars

S.No	Name of the Course	Year-semester	Topic	Relevance to POs, PSOs
1	Embedded Systems	IV-I	Concepts of C versus Embedded C and Compiler versus Cross-compiler.	PO1, PO3, PSO1
2	Electromagnetic Waves and Transmission Lines	III-I	Phase And Group Velocity	PO1,PO2,PO3,P4,PSO1
3	Digital Signal Processing	III-II	VLIW architecture, pipelining	PO1,PSO1
4	Microwave Engineering	III-II	Bolo Meter Method	PO1,PO2,PO3,PO4,PSO1
5	Computer Network	III-II	Data link layer in HDLC: configuration and transfer modes, frames, control field	PO1,PO2, PSO1
6	Electronic Devices and Circuits	II-I	Comparison between JFET and MOSFET	PO1,PO2,PO3,PSO1
7	Electronic Circuit Analysis	II-II	Hartley oscillator with BJT	PO1,PO2,PO3,PSO1
8	Digital IC Design	II-II	Flip-Flop circuits	PO1,PO3,PO5,PSO1

➢ **Discussion**

Table 2.2.1.6 List of Topics as Discussion

S.No	Name of the Course	Year-semester	Topic	Relevance toPOs, PSOs
1	Digital Signal Processing	III-II	Comparison of IIR and FIR filters	PO1,PO2,PO3,PSO1

➢ **Quiz**

Table 2.2.1.7 List of Course topics as Quiz

S.No	Name of theCourse	Year-semester	Topic	Relevance to POs,PSOs
1	Computer Organizatio n and Architecture	III-I	Register transfer language and micro operation	PO1, PO3,PO5
2	Switching Theory and Logic Design	II-I	Johnson counter, ring counter	PO1,PO2,PO3, PSO1
3	Signals and Systems	II-I	Linear time invariant (LTI) system, Linear time variant (LTV)system	PO1,PO2,PSO1

- **Demonstration**

Table 2.2.1.8 Demonstration

S. No	Name of the Course	Year-semester	Topic	Relevance to POs,PSOs
1	Data Communications & Computer networks	IV-I	Introduction To Data Communications	PO1,PSO1
2	Digital Image and Video Processing	IV-I	Spatial Filtering	PO1,PO2,PSO1
3	Wireless Communication	IV-II	CDMA wireless communication	PO1,PO2,PSO1
4	Electronic Measurements and Instrumentation	III-I	Different types of oscilloscopes	PO1,PO2,PSO1
5	Computer Network	III-II	Flow control, error control, error detection and correction codes, CRC	PO1,PO2, PSO1
6	Microprocessor and Microcontrollers	III-II	8051 Interfacing with traffic light controller	PO1 ,PO2,PO5 ,PO11 ,PSO1

➢ **Brain Storming**

Table 2.2.1.9 Brain Storming

S. No	Name of the Course	Year-semester	Topic	Relevance to POs,PSOs
1	Microwave and Optical Communication Engineering	IV-I	Microwave Solid State Devices	PO1,PO2,PO3,PSO1
2	Data Communications & Computer networks	IV-I	OSI Model, Layers in OSI Model	PO1,PSO1
3	Digital Communications	III-I	FSK Generation and Detection	PO1.PO2,PO4,PO5

- **Problem Solving**

Table 2.2.1.10 Problem Solving

S. No	Name of the Course	Year-semester	Topic	Relevance to POs,PSOs
1	VLSI Design	III-II	Biasing Styles	PO1,PO2,PO3
2	Digital Signal Processing	III-II	Design of FIR Digital Filters Using Window Technique's	PO1,PO2,PO3,PSO1
3	Microwave Engineering	III-II	Problems On Magnetron	PO1,PO2,PO3,PSO1
4	Random Variables and Stochastic Processes	II-I	Moments about the Origin	PO1,PO2,PO4,PSO1
5	Linear control Systems	II-II	Block diagram representation of systems considering electrical systems as examples	PO1,PO2,PO3,PSO1

➢ **Collaborative Learning**

S. No	Roll Number	Student Name	Name of the Project	Relevance to Pos & PSOs
1	20H45A0411	Perabathula Nandini	Design Of Log Periodic Microstrip Antenna Array For Wlan And Wimax Applications	PO1,PO2,PO3,PO4,PO5, PO6,PO7, PO9,PO10, PO11,P O12,PSO1,PSO2
	19H41A04C3	Suda Satya Sai		
	19H41A0469	Bobbili Durga Susmitha		
	19H41A0493	M.S.R.Kasi Manikanta Teja		
2	19H41A0467	Akula Eswar Surya Venkatesh	Jcs: An Explainable Covid-19 Diagnosis System By Joint Classification And Segmentation	PO1,PO2,PO3,PO4,PO5, PO6,PO7, PO9,PO10, PO11,P O12,PSO1,PSO2
	206M5A0416	Narni Geetha Sri Veera Maheswari		
	19H41A04A6	Mutyala Saraswathi Devi		
	19H41A04B9	Saladi Pushpa Latha		
3	19H41A0401	Adabala Kusuma	Sram Reliability Improvement Using Ecc For Multiple Adjacent Bit Errors	PO1,PO2,PO3,PO4,PO5, PO6,PO7, PO9,PO10, PO11,P O12,PSO1,PSO2
	19H41A0415	Chinta Priyanka		
	19H41A0455	Thoram Pla Madhuri		
	19H41A0433	Mandali L R Sudha		
4	18H41A0425	Mutyala Sushmasri	Raspberry Pi Based Home Security Notification System Using BOT Commands Of Telegram	PO2,PO3,PO4, PO5,PO8,PO9,PO10, PO11, PO12, PSO1,PSO2
	18H41A0436	Pithani Satyasailakshmi		
	18H41A0438	Rajulapudi Durgadevi		
	18H41A0439	Saladi Dedeepya Lakshmi		
5	18H41A0421	Kasara Satyanarayana Murthy	Design And Fabrication Of Semi-AI Based Electric Vehicle	PO2,PO3,PO4, PO5,PO8,PO9,PO10, PO11, PO12, PSO1,PSO2
	18H41A0445	Tumu Dileep Venkata Subrahmanyam		
	18H41A0402	Adapa Trinadha Satya Sai Prasad		
	18H41A0407	Chodapaneedi Venkata Sri Rama Sai		
6	19H45A0420	Nandyala Pavani Lakshmi	Area And Power Efficient ECC For Multiple Adjacent Bit Errors In SRAMs	PO2,PO3,PO4, PO5,PO8,PO9,PO10, PO11, PO12, PSO1,PSO2
	19H45A0417	Kesavadasu Devi Prameela		
	196M5A0406	Kumpatla Vijaya Lakshmi		
	18H41A0485	Kukunuri Satya Naveen		
	18H41A0466	Chiravuri Subrahmanya Chandra Sekhar		

7	17H41A0448	Sanka Tulasi Preethi	Sierpinski Carpet Fractal Antenna By Using HFSS Software	PO1,PO2,PO3,PO4, PO5,PO8,PO9,PO10, PO11, PO12, PSO1,PSO2
	17H41A0454	Thota Naga Venkata Lakshmi Sravya		
	18H45A0411	Vasamsetti Sri Durga		
	18H45A0403	Kankatala Chakravarthi		
8	17H41A0489	Kommana Sravani	Design Of Energy Efficient IOT Enabled Smart System Based On Dali Network Over MQTT Protocol	PO1,PO2,PO3,PO4, PO5,PO8,PO9,PO10, PO11, PO12, PSO1,PSO2
	17H41A04B6	Thoram Durga Devi		
	17H41A04B8	Yallamilli Chaitanya DurgaNaga Sai		
	17H41A04A4	Nutukurthi Lakshmi Prasanna		
9	16H41A0454	Undru Pallavi	Guitar Shaped Planar Monopole C Shaped DGS For Wideband Application	PO1,PO2,PO3,PO4, PO5,PO8,PO9,PO10,PO11, PO12, PSO1,PSO2
	16221A0496	Nagireedy Swathi		
	17H45A0409	Uppuganti Soma Veera VGanesh		
	16H41A0427	Korlapati Bhanusai PhaniSubash		
10	16H41A0428	Kota V V D JagadeeshKumar	Bio Telemonitoring Of Pregnant Women Health Using IoT	PO1,PO2,PO3,PO4, PO5,PO8,PO9,PO10,PO11, PO12, PSO1,PSO2
	16H41A0421	Kadali Tarankumar		
	16H41A0442	Pilla Satya NagendraPrasad		
	16H41A0420	Kasara Sai Prakash		
11	16H41A04A7	Pindi Sai Durga Pramod	A Low Power And Small Area Multiplier For Accuracy Scalable Approximate Computing	PO1,PO2,PO3,PO4, PO5,PO8,PO9,PO10,PO11, PO12, PSO1,PSO2
	16H41A0490	Kopanathi Durga Prasad		
	16H41A0495	Mattaparthi Mounika		
	16H41A04B1	Relangi Vijaya Ratnam		
12	16H41A04A0	Nukala Veera Siva Subrahmanya m	A Peculiar Access to Furnish Shield for	PO1,PO2,PO3,PO4, PO5,PO8,PO9,PO10,PO11, PO12, PSO1,PSO2
	17H45A0416	Goda Baby	Women Using Alert Immune Gadget	PO1,PO2,PO3,PO4, PO5,PO8,PO9,PO10,PO11, PO12, PSO1,PSO2
	16H41A0492	Lutukurti Bala NagaPrasanna		
	16H41A04B4	Surampudi Sriram Manikanta		

Table. 2.2.1.11 List of Projects

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C. Methodologies to support weak students and to encourage bright students: Identification of slow learners/ Weak Students

- ✓ The weak students are identified based on their previously available academic result, regularity to the class work, participation in class room discussions, performance in the class tests and Mid Examinations.
- ✓ Remedial classes are conducted for weak students before supplementary Examinations.
- ✓ Slow learners are identified and make up classes are arranged for entire semester

Support extended to slow learners/ Weak Students

Identification	Actions taken
Students scoring less than 60% of marks in Internal Assessment	1. Student counselor follows their progress regularly advising students about attending classes, making up classes missed, and getting additional help. 2. Intimating parents to counsel their wards. 3. Conduction of remedial classes 4. Question Bank with answers were given
Lateral entry students who entered with less basics of mathematics	Conduction of special classes.
students who have more than or equal to 3 back papers	Conduction of remedial classes to those who failed in previous semester subjects.
students who are having lesser credits for promotion	Conduction of special classes to student to get promoted to next year

Impact Analysis

Through the conduct of remedial classes for assisting weak students the following is the impact evident.

Table 2.2.1.12: List of some Remedial classes

S.No	Course Name	Year-Semester	Number of Remedial Classes Conducted	No. Of Students Failed in Regular Exams	No. of Students passed in immediate supply exams
		2021-22			
1	Switching Theory and Logic Design	II-I	9	48	23
2	Linear I C Applications	III-I	10	47	23
		2020-21			
1	Digital Communication	III-I	8	33	20
2	Embedded Systems	IV-I	10	25	16
		2019-20			
1	Electronic Devices and Circuits	II-I	10	48	31
2	Antenna and Wave Propagation	III-I	8	37	23

Procedure adopted to identify bright students

- The bright students are identified based on their previous available academic result, participation in classroom discussions, performance in the class tests and participation in classroom seminars, questioning ability and end semester examinations.
- Academic Guidance will be given to bright students by faculty to participate in Inter- Institute Competitions such as paper presentations, poster presentations, project display and tech Quiz etc.
- Awareness is created to bright students on latest techniques, project management and prototype building to take up industry-based projects
- Bright students are engaged to lead the students' association activities which organize various programs like paper presentation, poster presentation, guest lecture, essay writing workshops, etc...

- Academic toppers in each class for every semester are encouraged and appreciated by giving certificates and prizes.
- Best outgoing and passed out students are appreciated with gold medals on college day of everyyear

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D. Quality of classroom teaching

Quality of classroom is very important factor for quality learning. The following aspects are considered to ensure a good quality classroom teaching

- ✓ Classroom ambience is made Learner- Centric
- ✓ LCD projectors are placed in class room for effective content delivery.
- ✓ To enhance active learning in the class, lectures are planned such that, First 10 minutes overview of lecture of previous class, 40 Minutes today's Lectures and Last 10 Minutes question and Answer session.
- ✓ Real components and models are taken by the faculty to the classroom to demonstrate the concept in clear way to the students.
- ✓ Real time examples are cited in the form of videos
- ✓ Principal and Head of the department regularly visit classes to observe the teaching process and convey their Observations and appreciation to the Faculty Member.

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E. Conduct of Experiments:

Curriculum stipulates 2/3 laboratory courses per semester from 1st to 7th Semester. Students carry out more than the required number of experiments, beyond the minimum specified by the University. All laboratories have excellent facilities, both hardware and software based. For the experiments detailed Laboratory manuals are provided. The observations are checked and verified by faculty and record books are maintained systematically. Three faculty members and one instructor are assigned for each practical class with 36 Students.

Initiatives and implementation details of improving Quality of Laboratory Experiments

- Faculty members of respective specialization form a group with a team leader to discuss the preparation of manual, Material requirements, conduction of experiments and cycle of experiments before commencement of the semester.
- The Electronics and Communication Laboratories are conducted in session of 3 hours, in each session the faculty explains the circuits/logic and design/ algorithm of theexperiment.
- The students write the complete experiment concerned in the observation book, and then connect the circuit diagram on the board/execute the program on the system and interpretthe results.
- The executed program with output, related theory and Algorithm or flowchart is documented in the record book by the students later which will be evaluated.
- In each laboratory course many students are encouraged to work on number of additional experiments for the better understanding of the subject.
- Viva-Voce questions will be prepared in advance for all the experiment.
- The Laboratories are evaluated by the faculty as per the rubrics framed by the department.

F. Continuous Assessment in laboratory:

Continuous assessment system is also implemented for assessment of laboratory work. The assessment is done on the basis of submission of laboratory records, observations, attendance, understanding of the experiment through oral viva voce questions and participation in performing the experiment. Neatness of the laboratory record book is also given weightage in the assessment. Day to Day Evaluation is done in Laboratories based on the performance of students in

- ✓ Preparation towards the Experiment in Laboratory
- ✓ Recording Observations
- ✓ Viva-Voce Questions
- ✓ Submission Observation and Records

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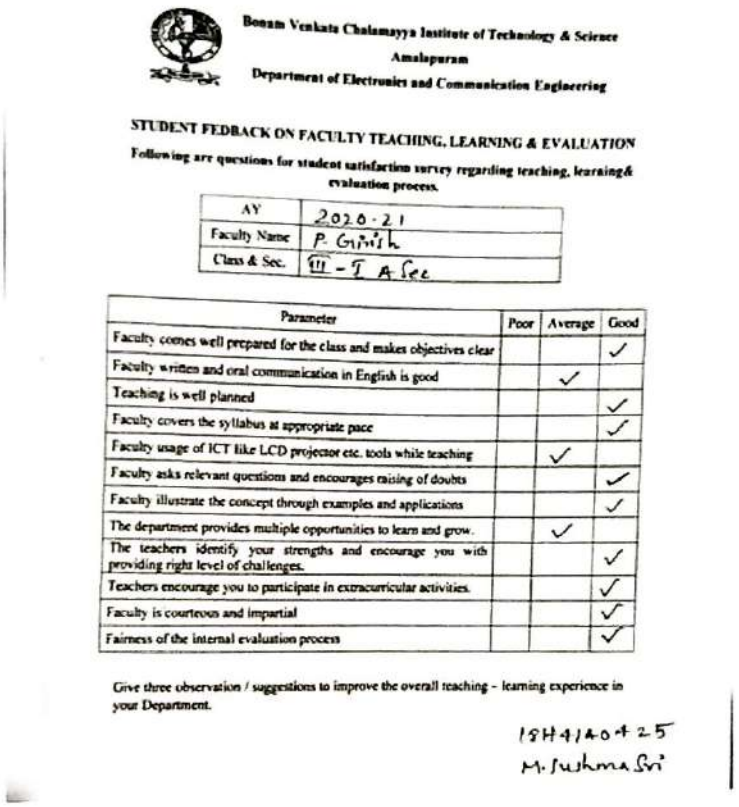
G. Student feedback of teaching learning process and actions taken:

- All the students are required to fill online / offline feedback-form apprising the faculty oncein a semester. The feedback will be taken on the following parameters



Bonam Venkata Chalamayya Institute of Technology & Science
Amalapuram
Department of Electronics and Communication Engineering

STUDENT FEDBACK ON FACULTY TEACHING, LEARNING & EVALUATION

Following are questions for student satisfaction survey regarding teaching, learning& evaluation process.

AY	2020-21
Faculty Name	P. Girish
Class & Sec.	III - I A Sec

Parameter	Poor	Average	Good
Faculty comes well prepared for the class and makes objectives clear			✓
Faculty written and oral communication in English is good		✓	
Teaching is well planned			✓
Faculty covers the syllabus at appropriate pace			✓
Faculty usage of ICT like LCD projector etc. tools while teaching		✓	
Faculty asks relevant questions and encourages raising of doubts			✓
Faculty illustrate the concept through examples and applications			✓
The department provides multiple opportunities to learn and grow.		✓	
The teachers identify your strengths and encourage you with providing right level of challenges.			✓
Teachers encourage you to participate in extracurricular activities.			✓
Faculty is courteous and impartial			✓
Fairness of the internal evaluation process			✓

Give three observation / suggestions to improve the overall teaching - learning experience in your Department.

18H41A0425
M. Sushma Sri

Fig: 2.2.1.5 Student Feedback Form on Teaching, Learning And Evaluation

- Lecture classes are monitored by Professors and the HoD of the Department. They give constructive comments to improve the quality of teaching and the teaching- learning process.
- Counseling by the respective HoD for those faculty members who have secured low scores and negative comments, if any, in the feedback. This motivates them to improve their skills and abilities.
- Training / orientation programs are conducted by professional experts to master the skills of the faculty members in the nuances of teaching, thus improving the efficiency of teaching-learning Process

Feedback Analysis & Remedial Action:

Based on the end feedback and pass percentage obtained in end semester examinations ratingwill be given as follows

Parameter	Very Good	Good	Above Average	Average	Critical
Percentage of Feedback	>90%	80% - 90%	70%-80%	60%-70%	<60%
Pass percentage of Course	>80%	70%-80%		60%-70%	<60%

The Faculty who got very good rating in both feedback and result are given appreciation letters The Faculty who got poor rating in feedback are given letter of advice and informed about the corrective measures to be taken by thoroughly going into the details of scores obtained for various parameters considered for feedback

Impact Analysis of Teaching and Learning Process:

The following are the positive outcomes observed after adopting the above-mentioned innovative Teaching and Learning Process

- Use of various instructional methods and pedagogical initiatives resulted in betterteaching and learning Process Like

✓ Collaborative learning

Students Participated in events	AY 21-22	AY 20-21	AY 19-20
	Total No of Students		
PPTS	-	-	5
Poster Presentation	-	-	100
Quiz	-	-	80
Elocution	50	-	-
JAM	75	-	-
Project Expo	-	-	1

✓ Project Based Learning resulted in more no of Mini Projects and students also participated inInnovative competitions

Name of the contest	No. of students
DST & Texas Instruments India	109

Innovation Challenge	
Code Gladiators coding Contest	21
Hacker rank	106

- Weak students are supported through Counseling and remedial classes which improved their performance in End Semester Examinations.
- With the guidance provided by the faculty bright students improved their analyticalcapably, research aptitude, soft skills and presentation skills.

	AY 21-22	AY 20-21	AY 19-20
Higher education	-	-	3
Student won awards in Various events	4	-	13
Certifications courses done	1	6	92
Placements	80	71	71
Placement with High Package	1	1	0

Coodinator

HOD

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2.2.2 ***Quality of internal semester Question papers, Assignments and Evaluation (20)*** *(Mention the initiatives, implementation details and analysis of learning levels related toquality of semester question papers, assignments and evaluation)*

A.Process for internal semester question paper setting and evaluation and effectiveprocess implementation

1. Internal Semester (Mid Exam) Question Papers are being prepared with Blooms Taxonomy levels mentioned for each question covering all units of syllabus with Course Outcome mentioned.
2. Mid Exam Question paper has two parts. One of them is an online objective type examination being conducted by the university. The second part is the descriptive paper which is conducted by the college.
3. Question Paper is set by the course coordinator who is nominated by the department HOD among the teachers who teach the same course in the current semester. The prepared question paper is sent to HOD through mail, which in turn will be sent to the Controller of Examinations through mail.
4. Following guidelines are circulated to all the faculty members before they prepare the internal question papers.

Guidelines for setting the question paper

1. The course coordinator is responsible for the setting of the question paper by taking the inputs from all the remaining course teachers handling the same course during the semester.
2. Each Subjective type test question paper shall contain 3 questions and all questions need to beanswered.

B. Process to ensure questions from outcomes/learning levels perspective:

- The descriptive question paper is prepared by mentioning the Bloom's Taxonomy Levels and Course Outcomes.
- Faculty are required to prepare the scheme of valuation for the mid exam question paperprepared.
- Internal examination answer scripts are evaluated based on the scheme of valuationprepared.

C. Evidence of COs coverage in class test / mid-term testsQuestion Paper Sample

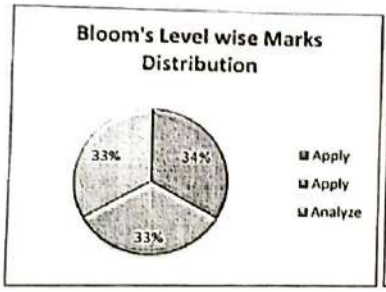
BVC INSTITUTE OF TECHNOLOGY AND SCIENCE::BATLAPALEM

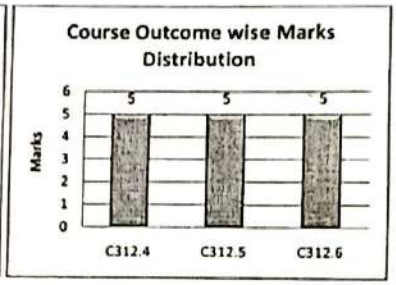
MID EXAM-I | III BTECH I SEM ECE | SUB:LICA

TIME:9:30 AM to 11.00 AM | DATE:02.01.21 | MAX MARKS:15

ANSWER ALL THE QUESTIONS | 3X5=15M

Q.No	Questions	BL	CO	Marks
1	Build and explain the first order low pass filter and plot the frequency response	Apply	C312.4	5
2	Make use of 555 timer to draw the functional diagram of Astable multivibrator and Derive the expression for frequency of oscillations.	Apply	C312.5	5
3	a. Inspect the important specifications of D/A and A/D convertors?	Analyze	C312.6	2
	b. Examine the Flash type ADC?	Analyze	C312.6	3





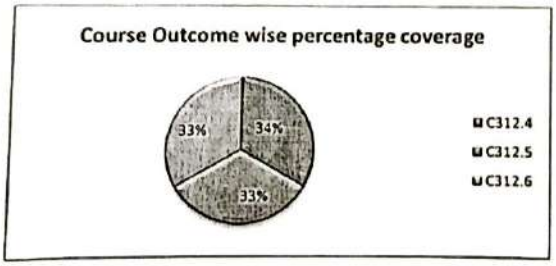


Fig. 2.2.2.1 Mid Examination Model Question Paper

BVC INSTITUTE OF TECHNOLOGY AND SCIENCE::BATLAPALEM

MID EXAM-I | III BTECH I SEM ECE | SUB LICA

TIME:9:30 AM to 11.00 AM | DATE:02.03.21 | MAX MARKS:15

ANSWER ALL THE QUESTIONS | 3X5=15M

SCHEME OF EVALUATION WITH CO AND BT MAPPING

Q.No	Questions	BL	CO	Marks
1	Build and explain the first order low pass filter and plot the frequency response	Apply	C312.4	5
2	Make use of 555 timer to draw the functional diagram of Astable multivibrator and Derive the expression for frequency of oscillations.	Apply	C312.5	5
3	a. Inspect the important specifications of D/A and A/D converters?	Analyze	C312.6	2
	b. Examine the Flash type ADC	Analyze	C312.6	3

1. Circuit diagram of Low pass filter – 1M
   Frequency response plot – 1M
   Derivation – 3M

2. Functional Diagram and waveforms- 2M
   Derivation – 3M

3. a. specifications of D/A and A/D convertors -2M

   b. Circuit diagram – 1.5 M

   . Explanation - 1.5 M

Fig. 2.2.2.2 Scheme of Evaluation

Coordinator

HOD

Head of the Department
Electronics & Communication Engineering
B.V.C. Institute of Technology and Science
Batlapalem, Amalapuram - 533 201

D. Quality of Assignment and its relevance to COs: Process to ensure to the Quality of Assignments:

- Unit-wise Assignments are being prepared with Course Outcome mentioned for eachquestion.
- Unit Wise Assignments are being prepared with questions falling under the variouscognitive levels of Blooms Taxonomy.
- Each assignment answered by the students is evaluated for 5 marks.
- The sample assignments with mapping of COs and cognitive levels are shown in theTable.

BVC INSTITUTE OF TECHNOLOGY AND SCIENCE::BATLAPALEM
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ASSIGNMENT QUESTION PAPER MAPPED WITH CO AND BT

Course Name: Linear IC Applications
AY: 2020-21

Year / Sem: III B.Tech/I Sem
Faculty Name: V.Prasanna Laxmi

Course Code: C312

ASSIGNMENT QUESTIONS	Course Outcome	Taxonomy Level
ASSIGNMENT-1		
1. Solve DC analysis of the circuit diagrams of all four differential	C312.1	APPLY
2. Construct AC analysis of single input, balanced output differential amplifier?	C312.1	APPLY
3.Classify Differential Amplifier configurations?	C312.1	ANALYZE
4.Build the circuit diagram of level translator using emitter follower?	C312.1	APPLY
5. For a Dual input balanced output differential amplifier RC=47kΩ, RS1=RS2=20kΩ, R1=43kΩ, hfe=75, hie=20k, Vcc=9v, VEE=-9v and VBE=0.7v solve i) operating point values ii) Ad iii) Ac iv) CMRR in dB	C312.1	APPLY
6. Examine cascaded differential amplifier stages with and without DC coupling.	C312.1	ANALYZE
ASSIGNMENT-2		
1. Identify the various types of IC packages. Mention the criteria for selecting an IC package.	C312.2	APPLY
2. Examine AC and DC characteristics of Op-Amp?	C312.2	ANALYZE
3. Draw and explain the block diagram of a typical op-amp?	C312.2	UNDERSTAND
4. Analyze the frequency compensation using pole – zero method with a neat sketch?	C312.2	ANALYZE
5. Compare internal and external frequency compensation techniques?	C312.2	ANALYZE
ASSIGNMENT-3		
1. Identify linear and non-linear applications of OP-Amp?	C312.3	APPLY
2. Inspect, how to obtain triangular wave using a square wave generator?	C312.3	ANALYZE
3. Make use of 3 Op-Amp's explain instrumentation amplifier?	C312.3	APPLY
4. Construct and design an op-amp differentiator that will differentiate an input signal with fmax = 100 Hz..	C312.3	APPLY
5. Construct an adder circuit using an op-amp to get the output expression asV0 = - (0.1 V1 + V2 + 10 V3).	C312.3	APPLY
6. Build V to I convertor using op-amp. Write the applications of it.	C312.3	APPLY

Fig. 2.2.2.3 Model Assignment Question Paper

Coordinator

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B) Finalize the list of teams/guide/topic based on area ofspecialization/other interested areas.
C) To review the projects as per the schedules to give necessary suggestions/improvements/modifications required in the project.
D) To evaluate the projects.

7. The internal evaluation for 60 marks out of total 200 marks is distributed as under and to be taken up by the members of project review committee along with guide:
8. Proposed methodology &project execution process
9. INTERNAL MARKS:[60 Marks]

I. REVIEW-1 [20 Marks]
RUBRIC: poor: 0-7 Marks [Need improvement]
Average:8-14 Marks [Clear and moderate]
Good: 15-20 Marks [Well define and good]

II. REVIEW-2 [20 Marks]
RUBRIC: poor: 0-7 Marks [Need improvement]
Average:8-14 Marks [Clear and moderate]
Good: 15-20 Marks [Well define and good]

III. REVIEW-3[20 Marks]
RUBRIC: poor: 0-7 Marks [Need improvement]
Average:8-14 Marks [Clear and moderate]
Good: 15-20 Marks [Well define and good]

MEMBERS PRESENT:

S.NO	NAME OF THE FACULTY	SIGN	S.NO	NAME OF THE FACULTY	SIGN
1	MR.B.V.RAMANA		8.	MR.D.V.SATISH	
2	DR.K.SIRISHA		9.	MR.M.V.S.S. MURTHY	
3	MR.SATISH KUMAR		10.	MR.G. VIJAYA RAJU	
4	MRSV.PRASANNA LAXMI		11.	MRS.K.JYOTHIRMAI	
5	MR.A. SARMA		12.	MRS.N.S.P LAXMI	
6	MR.P.GIRISH		13.	MR.S.RAGHAVA RAO	
7.	V V S R K K PAVAN BH		14.	MS.S.MALLIKA	

PC

HOD
Head of the Department
Electronics & Communication Engineering
B.V.C. Institute of Technology
Batapalem, Amalapuram - 533 2

BVC INSTITUTION OF TECHNOLOGY & SCIENCE-BATLAPALEM-AMALAPURAM

DEPT OF ELECTRONICS & COMMUNICATION ENGINEERING

METHODOLOGY IN FORMING PROJECTS GROUPS-B Tech-4th yr-2ndsem

Given below the procedure in forming the project batches:

1. Result analysis is prepared till 3rd yr-2nd semester for all 147 students
2. Prepared the list for aggregate for all 147 students.
3. Students list is prepared based on aggregate in descending order.
4. Based on the above list grouping is done based on the snake order and finalized the project groups which came to 36 batches.
5. 3 batches are of 5 students per batch (3x5=15) and remaining batches are 4 students (4X33=132) per batch.
6. Like that way total 36 batches are finalized.

PROJECT COORDINATOR

Head of the Department
Electronics & Communication Engineering
B.V.C. Institute of Technology and Science
Batlapalem, Amalapuram - 533 201

- The constitution of the PRC is as below.

Feature	Details
Functions	✓ To formulate guidelines for implementation of project work for students ✓ To identify the domain areas for the selection of project titles ✓ To evaluate the student performance both as a team and individual
Members(5)	✓ HoD, Project Coordinator and Senior Faculty Members(3)
Aspects reviewed/ Considered	✓ Project Titles ✓ Project Synopsis ✓ IndividualandTeamPerformance ✓ Quality of the Project work
Meeting Frequency	Four times in every even semester (once for PRC formation, thrice for three reviews)

- ❖ The PRC will review the student batch formation and allocates the guide for each of the project batch.
- ❖ The PRC will review the identified project problems with the support of literature materials.
- ❖ The PRC evaluates the student performance both as a team and individual. It reviews the progress of the project development

Guidelines for evaluation of project work (Rubrics) include the following

Out of a total of 200 marks for the Project work, 60 marks shall be for Internal Evaluation and 140 marks for the End Semester Examination. The End Semester Examination (Viva-voce) shall be conducted by the committee. The committee consists of an external examiner nominated by JNTU Kakinada, Head of the Department and Supervisor of the Project. The Evaluation of project work shall be conducted at the end of the IV year. The Internal Evaluation shall be on the basis of three reviews conducted.

Rubrics for Major Project

Review	Parameter	Rubric	Marks

	17H41A0489 17H41A04B6 17H41A04B8 17H41A04A4	Design of Energy Efficient IoT Enabled Smart System Based on Dial Network Over MQTT Protocol	Mr. Ch Ravi Shankar	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0493 18H45A0413 17H41A0481 18H45A0416	Fire Fighting Robot	Dr. K Sirisha	Embedded	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

2016 – 20 Project List

	Regd. No.	Project Title	Guide Name	Domain	Field	Type	PO / PSO
	16H41A0419 16H41A0410 17H45A0407 17H45A0408	Hand-Talk Glove	A. Sarma	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0416 16H41A0448 16H41A0459 16H41A0447	IoT Based Early Flood Detection and Control System Using Arduino MegaMicrocontroller	V Ramoji	Embedded	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0449 16H41A0444 17H45A0406	Advanced Footstep Power Generation System Using RFID For Charging	V.Prasanna Laxmi	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H45A0404 16H41A0435 16H41A0455	Insightful Road Traffic Control System	Y.N.S. Vamsi Mohan	Embedde	Safety	Prototype	PO1 – PO5, PO8 –

	16H41A0411						PO12, PSO1, PSO2
	16H41A0407 16H41A0415 17H45A0402 16H41A0451	Design and Development ofFour Elements RectangularDielectric ResonatorAntenna for BluetoothApplications	B.V. Ramana	Antenna	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0454 16221A0496 17H45A0409 16H41A0427	Guitar Shaped Planar Monopole C Shaped DGS ForWideband Application	R. Satish Kumar	Antenna	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0413 16H41A0457 16H41A0406 16H41A0438	Design of Combinational Circuits UsingReversible Decoder	Ch. Ravi Shankar	VLSI	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H45A0401 17H45A0405 16H41A0460 17H45A0410	Smart home Via Mobile App	G. Ramprabu	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0432 16H41A0431 16H41A0437 16221A04D6	Agriculture & Field Monitoring Using IoT	A Srinivas Rao	IoT	Agriculture	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0409 16H41A0403 16H41A0408 16H41A0443	SMART GARBAGE MONITORING USING IoT	D Tulasi	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

	16H41A0405 16H41A0402 16H41A0412 16H41A0441	Water Quality and Level Monitoring System Using IoT	B. Vijaya Lakshmi	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0429 16H41A0440 16H41A0425 16H41A0433	Smart Gardening Using EmailNotification	Ch Nagaraju	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0434 16H41A0430 16H41A0450 16H41A0453	Smart Solar Power Management System	Dr.G.M.V.PRASAD	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0456 16H41A0422 16H41A0446 16H41A0424	An Adaptive Routing Algorithm on NOC With Encryption	Karri Srinivas	VLSI	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0428 16H41A0421 16H41A0442 16H41A0420	Bio Telemonitoring of Pregnant Women Health Using IoT	P. Girish	IoT	Health Care	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0418 16H41A0439 16H41A0436	IoT Based Health MonitoringSystem	K Sirisha	IoT	Health Care	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0423 16H41A0417 16H41A0452	Voice Controlled Robot Using Arduino	K. Ajitha Lakshmi	Embedde	Robotics	Prototype	PO1 – PO5, PO8 –

	17H41A0491						PO12, PSO1, PSO2
	17H41A0471 17H41A04A6 17H41A04A0 17H41A0496	Real Time Fish Pond Monitoring and Automation Using Arduino	Dr. G M V Prasad	Embedded	Monitoring	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0475 17H41A0462 17H41A04A2 17H41A04A5	Air Pollution Monitoring System Using IoT	Mr. D Suribabu	IoT	Monitoring	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0488 17H41A0495 18H45A0424 17H41A0494	Voice Controlled Home Automation	Mr. G Sampath Lal	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A04B3 17H41A04A3 17H41A0460 17H41A0476	Voice Based Notice Board Using Android	Mrs. N S P Lakshmi	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0485 17H41A04A7 17H41A0498 18H45A0421	Fingerprint Biometric Controlled Smart Banking Machine Embedded with GSM Technology for OTP	Ms. M S Mallika	Embedded	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A04B0 17H41A04A9 17H41A04B5 17H41A0487	Design and Implementation of a Fingerprint Based Lock System for Shared Access	Mrs. V Prasanna Laxmi	Embedded	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

	16H41A0426						PO12, PSO1, PSO2
	16H41A04A8 16H41A0484 16H41A0465 16H41A0478	Industrial Monitoring Using IoTand Raspberry Pi	B.V. Ramana	IoT	Monitoring	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0485 16H41A04A4 16H41A0498 16H41A0494	Smart Coal Mining	R. Satish Kumar	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0479 16H41A0472 16H41A0476 16H41A04B0	Smart Apartment Vehicle Parking Using RFID	S. Raghava Rao	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0488 16H41A04A5 16H41A04A3 16H41A0481	Home Automation Using Google Assistant	S.V.S.M. Madhulika	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0497 16H41A0461 16H41A0466 16H41A0475	Intruder Monitoring and Alerting System	Dr.G.M.V.PRASAD	Embedded	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0463 16H41A0493 16H41A04A2 16H41A04A1	Home Automation Using MQTT	Ch. Naresh	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

	17H41A0466 17H41A0473 17H41A04A8 17H41A0497 17H41A0477	Smart Water Management Using IoT	Mr. V V Satyanarayana Konn	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0478 17H41A0492 17H41A04B2 17H41A0490 17H41A0482	RFID Based Production Data Analysis in an IoT Enabled Smart Job Shop	Mrs. K Jyothirmai	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A04B7 17H41A04B1 18H45A0422 17H41A0499	Automatic Unauthorized Parking Detector with SMS Notification to Owner	Mr. Sarma Adithe	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0461 18H45A0417 17H41A0480 18H45A0419	Tunable Band-Notched UWB Antenna with Open Loop Resonator Using Lumped Capacitors	Mr. R Satish Kumar	Antenna	Communication	simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0463 18H45A0423 18H45A0414 17H41A04A1	Design of Bus Tracking and Fuel Monitoring System	Mr. P Girish	Embedded	Automotive	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0486 18H45A0420 18H45A0418 18H45A0415	Automated Billing System Based on RFID	Mrs. D Tulasi	Embedded	automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0469 17H41A0464 17H41A0465	Design of Rectangular Microstrip Patch Antenna for X Band Applications	Mr. B V Ramana	Antenna	Communi cation	simulation	PO1 – PO5, PO8 –

	16H41A0464 16H41A0486 16H41A04A9 16H41A04B7	Women Safety & Security Using IoT	K Sirisha	IoT	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0499 16H41A04B5 16H41A0477 16H41A0480	Smart Vehicle Anti-Theft and Accident Detection	D Tulasi	Embedded	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0473 16H41A0483 16H41A0470 16H41A0467	Low Dense and Low Power Bus Architecture Using Modified ETI For Serial Links	V Prasanna Laxmi	VLSI	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0487 16H41A0474 16H41A0482 16H41A04B6	Automatic Goods Transporter Using Arduino	Vamsi Mohan	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A04A7 16H41A0490 16H41A0495 16H41A04B1	A Low Power and Small Area Multiplier for Accuracy Scalable Approximate Computing	Ch. Ravi Shankar	VLSI	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A04A0 17H45A0416 16H41A0492 16H41A04B4	A Peculiar Access to Furnish Shield for Women Using Alert Immune Gadget	D. Krathi Kumar	IoT	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0462 16H41A0496	Design of Efficient DSP Operation Using 16x16 R-MAC	A Srinivas Rao	VLSI	Communicati	Simulation	PO1 – PO5, PO8 – PO12,

	16H41A04B9						PSO1, PSO2
	16H41A0471						
	16H41A04B2	Low Power FPGA Based on Power Gating	NSP Lakshmi	VLSI	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	16H41A0468						
	16H41A04B3						
	16H41A04C0						
	17H45A0412	IoT And RFID Based Rationing System	A. Sarma	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H45A0419						
	17H45A0414						
	17H45A0417						
	16H41A0469						
	17H45A0420	Smart Grocery Management Using IoT	G Ramprabu	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H45A0413						
	17H45A0418						
	17H45A0415						
	17H45A0411						

Continuous Monitoring:

- ✓ Students have to submit synopsis to the project guide.
- ✓ Project guide will give suggestions towards the improvement of the project work. Based on inputs, students have to start their work.
- ✓ Periodically, the student has to give presentation on the project work in front of the project review committee along with project guide.
- ✓ Project review committee has to give permission to the student for submission of the report.

Process for monitoring and evaluation

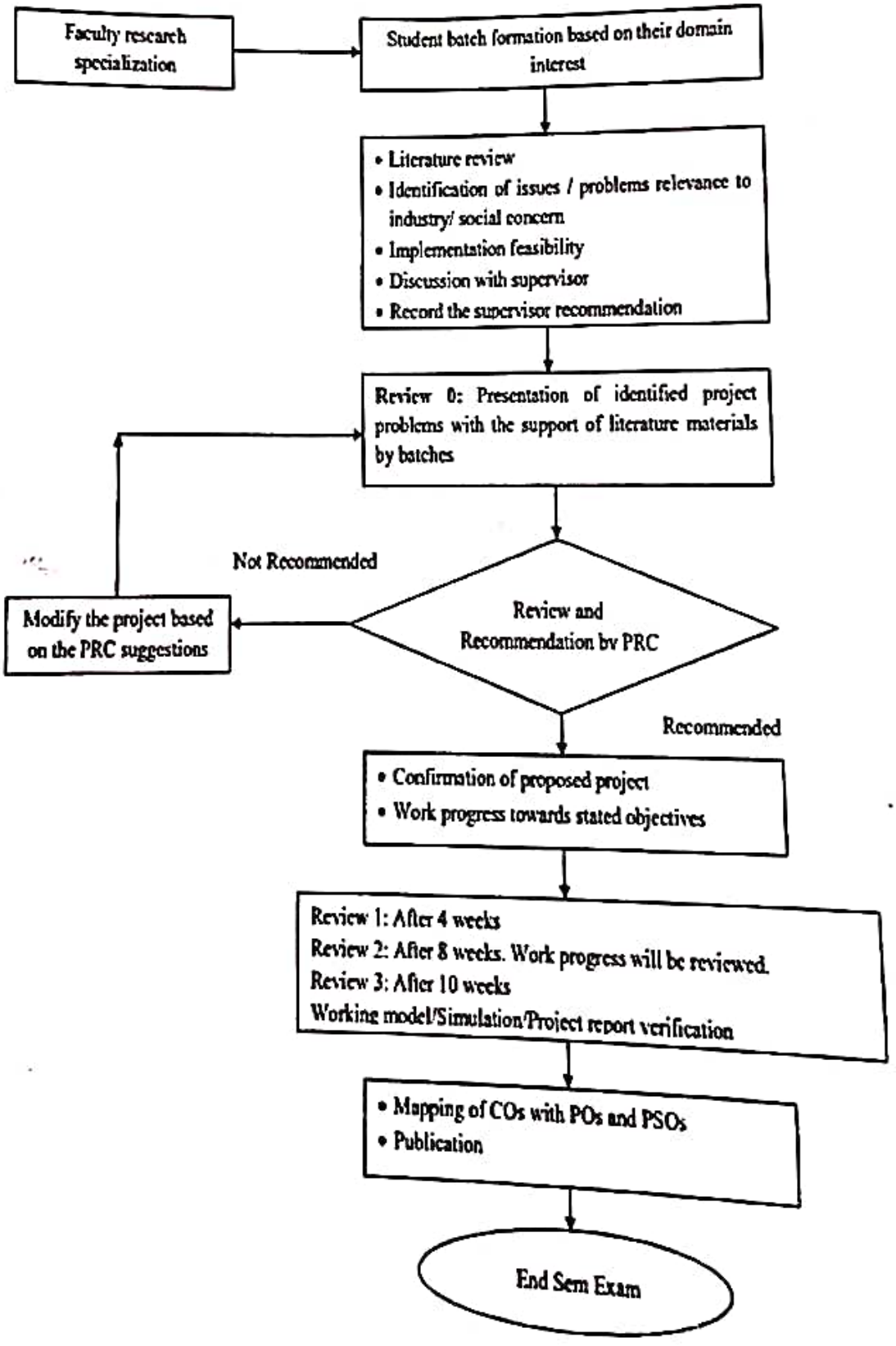
- ✓ Internal guide will continuously monitor the performance of the students' performance and progress in the project work.
- ✓ Internal guide will guide the students in case of any obstacles encountered by the students during the project development and execution.
- ✓ Project coordinator schedules three reviews for continuous monitoring of performance individual and team.
- ✓ Evaluation of project will be done by consolidating marks obtained in overall three reviews which covers theParameters like literature survey data acquisition, proposed methodology in implementing project,appropriate presentation of project and results.

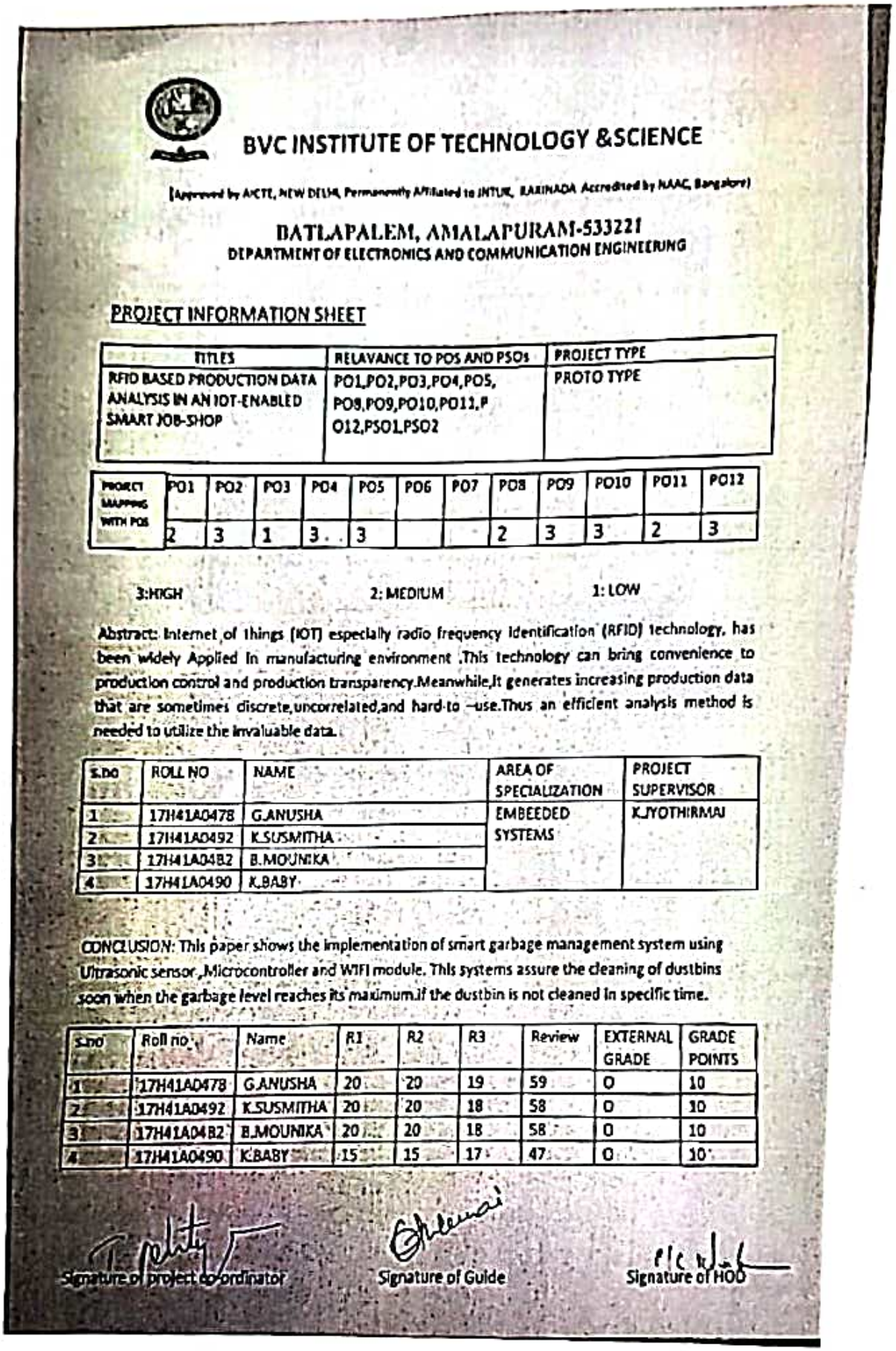
Process to Assess Individual and Team Performance

1. Performance of each student at individual as well as in team in completion of project is assessed by respective project supervisor throughout the semester.

2. All students have to give presentation on their project work before project review committee (PRC) and internal guide.
3. Rubrics are used to assess the individual and team performance of the students in the project.
4. Three reviews are conducted to monitor the project work.
   - Review 1 is on project synopsis
   - Review 2 is on midterm project evaluation
   - Review 3 is on end semester project evaluation

Fig. 2.2.3.1. Process for monitoring and evaluation





BVC INSTITUTE OF TECHNOLOGY &SCIENCE

[Approved by AICTE, NEW DELHI, Permanently Affiliated to JNTUK, KAKINADA Accredited by NAAC, Bangalore]

BATLAPALEM, AMALAPURAM-533221
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROJECT INFORMATION SHEET

TITLES	RELAVANCE TO POS AND PSOs	PROJECT TYPE
RFID BASED PRODUCTION DATA ANALYSIS IN AN IOT-ENABLED SMART JOB-SHOP	PO1,PO2,PO3,PO4,PO5, PO8,PO9,PO10,PO11,P O12,PSO1,PSO2	PROTO TYPE

PROJECT MAPPING WITH POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	3	1	3	3			2	3	3	2	3

3:HIGH 2: MEDIUM 1: LOW

Abstract: Internet of things (IOT) especially radio frequency identification (RFID) technology, has been widely Applied in manufacturing environment .This technology can bring convenience to production control and production transparency.Meanwhile,it generates increasing production data that are sometimes discrete,uncorrelated,and hard-to –use.Thus an efficient analysis method is needed to utilize the invaluable data.

S.NO	ROLL NO	NAME	AREA OF SPECIALIZATION	PROJECT SUPERVISOR
1	17H41A0478	G.ANUSHA	EMBEEDED SYSTEMS	K.JYOTHIRMAI
2	17H41A0492	K.SUSMITHA		
3	17H41A04B2	B.MOUNIKA		
4	17H41A0490	K.BABY		

CONCLUSION: This paper shows the implementation of smart garbage management system using Ultrasonic sensor ,Microcontroller and WIFI module. This systems assure the cleaning of dustbins soon when the garbage level reaches its maximum.If the dustbin is not cleaned in specific time.

S.NO	Roll no	Name	R1	R2	R3	Review	EXTERNAL GRADE	GRADE POINTS
1	17H41A0478	G.ANUSHA	20	20	19	59	O	10
2	17H41A0492	K.SUSMITHA	20	20	18	58	O	10
3	17H41A04B2	B.MOUNIKA	20	20	18	58	O	10
4	17H41A0490	K.BABY	15	15	17	47	O	10

Signature of project co-ordinator Signature of Guide Signature of HOD

Figure 2.2.3.2 Project Information Sheet

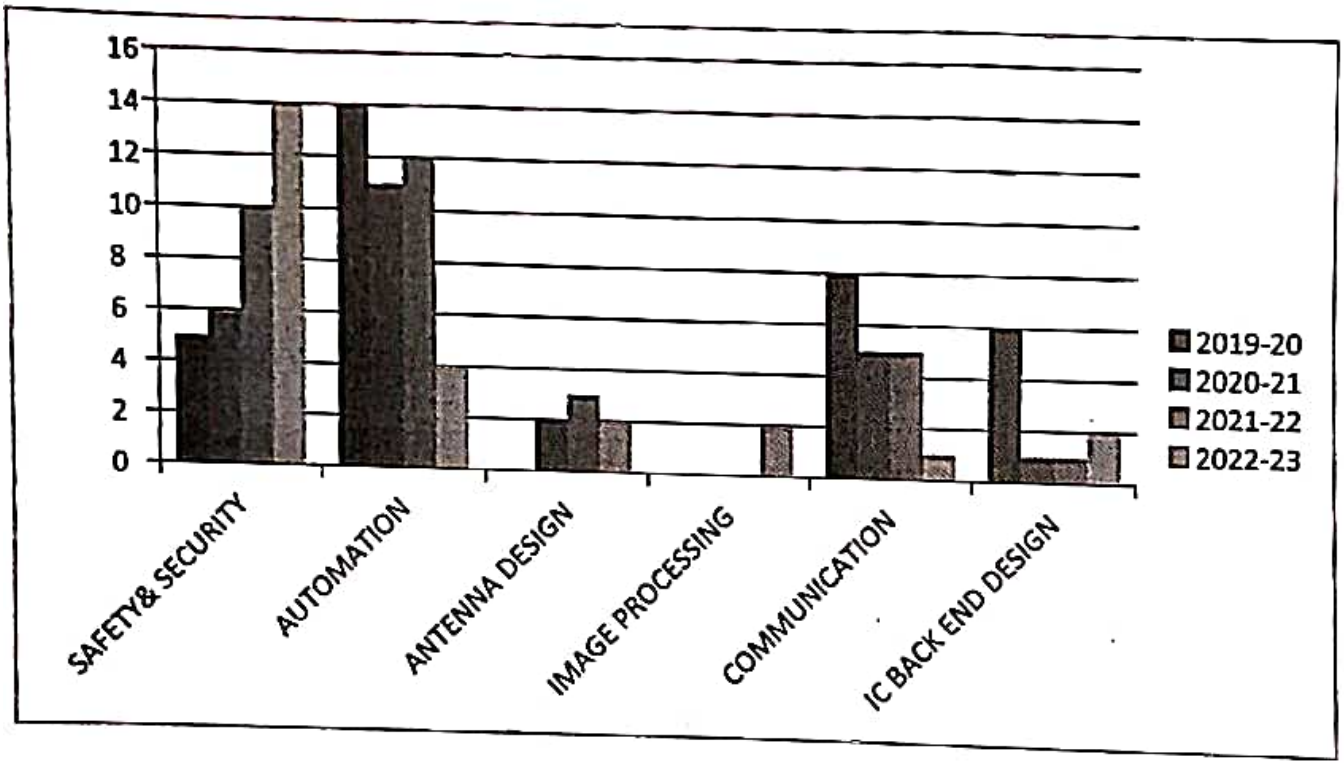
Impact Analysis:

- Best 5 projects are selected and given awards to the students
- Based on this year project PRC will recommendation to improve the quality of project for next coming batches
- Quality Project are categorized and displayed in Project Lab for students to further improvement.
- The below statics represents the diversity that was followed in allocation of projects

	17H41A0419						PO12, PSO1, PSO2
	17H41A0430 17H41A0436 17H41A0427 17H41A0421	IoTBased Waste Management System for Smart Cities	Mr. V V Satynnarayana Kona	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0417 17H41A0441 17H41A0410 17H41A0456	Low Cost Assistive Out Door Navigation System for Blind People	Mrs. G Vijaya Lakshmi	Embedded	Navigation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0432 17H41A0459 17H41A0440 18H45A0404	Vehicle Theft Intimation	Mr. D Krathi Kumar	Embedded	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0449 17H41A0452 18H45A0401 17H41A0447	Identifying Parking Spaces and Detecting Occupancy Using Vision Based IoT Devices	Mrs. V Prasanna Laxmi	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0455 17H41A0443 17H41A0420 17H41A0451	IoT Health Monitoring for Comatose Patients	Dr. G M V Prasad	IoT	Medical	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0479 17H41A0467 17H41A0470 17H41A0474 17H41A0472	Overloaded CDMA Crossbar for Network on Chip	Mr. T Aditya Kumar	VLSI	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2

PROJECTS IN APPLICATION SECTOR

FIELDS	2019-20	2020-21	2021-22	2022-23
SAFETY& SECURITY	5	6	10	14
AUTOMATION	14	11	12	4
ANTENNA DESIGN		2	3	2
IMAGE PROCESSING	-	-	-	2
COMMUNICATION	8	5	5	1
IC BACK END DESIGN	6	1	1	2



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	17H41A0418 17H41A0401 17H41A0453 17H41A0412	IoT Based Smart Agriculture System	Dr. G Ramprabu	IoT	Agriculture	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0411 18H45A0410 18H45A0409 17H41A0426	Social Distancing Alert System	Mr. D V Satish	Embedded	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0446 17H41A0433 17H41A0450 17H41A0404	Design of An IoT Based Autonomous Vehicle With The Aid Of Computer Vision	Mr. P Girish	IoT	Automotive	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0444 17H41A0434 17H41A0457 17H41A0429	Solar Panel Dual Management System	Dr. K Sirisha	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0448 17H41A0454 18H45A0411 18H45A0403	Sierpinski Carpet Fractal Antenna by Using HFSS Software	Mr. R Satish Kumar	Antenna	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0406 17H41A0409 18H45A0412 17H41A0414	Design of UWB CPW – Fed Monopole Antenna With Variable Triple-Band-Notched Property	Mr. B V Ramana	Antenna	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0424 17H41A0415 17H41A0408	Rf Controlled Robotic Vehicle with Metal Detector	Mr. T Aditya Kumar	Embedded	Security	Prototype	PO1 – PO5, PO8 –

	19H45A0421						PO12, PSO1, PSO2
	18H41A0498 19H45A0419 18H41A0463 18H41A04A6	Raspberry Pi Based Smart Car Security for Theft Control and Accident Notification	V PRASANNA LAXMI	IoT	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

2017 – 21 Project List

	REGD.NO.	PROJECT TITLE	GUIDE NAME	Domain	Field	Type	PO / PSO
	17H41A0437 17H41A0402 17H41A0428 18H45A0406 17H41A0431	The Can Protocol Based Embedded System to Avoid Rear-End Collision Of Vehicles	Mr. G Vijay Raju	Embedded	Automotive	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0458 17H41A0438 17H41A0435 17H41A0413 17H41A0407	IoT – Driven Automated Object Detection Algorithm for Urban Surveillance Systems In Smart Cities.	Mr. M V V S N Murty	IoT	Surveillance	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0439 18H45A0402 17H41A0442 17H41A0425 18H45A0405	Arduino Based Weather Reporting Over IoT	Mrs. K Ajitha Lakshmi	IoT	Monitoring	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	17H41A0416 18H45A0407 18H45A0408 17H41A0405	Configurable Medication Reminding System	Mr. Sarma Adithe	Embedded	Monitoring	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

	191I45A0415 181I41A0455 181I41A0456 181I41A04A8	LPG Gas Auto Booking and Leakage Control System	GUNJA VIJAYARAJU	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	181I41A0464 196M5A0410 181I41A0457 181I41A0460	Accident Prevention and Detection Reporting System	DULAM DURGA SURIBABU	Embedded	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A04A0 18H41A0499 18H41A0493 17221A0499	IoT Based Intelligent Communication for Collision Avoidance	KORIMILLI SIRISHA	Embedded	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A04A2 19H45A0423 196M5A0409 18H41A0472	An Efficient Design of Green House Monitoring and Controlling using Android Mobile Application with Linux Single Board Computer Raspberry Pi	VENKATA SATISH DHULIPUDI	IoT	Safety & Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0497 19H45A0414 196M5A0408 18H41A0495	IoT Based Antenna Positioning System	R SATISH KUMAR	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A04A4 18H41A0478 18H41A0465 18H41A0483	An Embedded System of Missile Detection and Auto Destroy Using Raspberry Pi	GIRISH PECHETTI	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A04A7 18H41A0474 196M5A0407	Smart Irrigation System Using IoT And Cloud	MANGIPUDI V V S N MURTHY	IoT	Agriculture	Prototype	PO1 – PO5, PO8 –

	18H41A0477						PO12, PSO1, PSO2
	18H41A0473 196M5A0411 18H41A0469 18H41A04A5	IoT Based Water Management System Using Raspberry Pi	V V SATYANRAYANA KONA	IoT	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0487 18H41A0496 19H45A0416 18H41A0482	Microstrip Patch Antenna for Rf Energy Harvesting	BODDAPALLI VENKATA RAMANA	Antenna	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0492 18H41A0476 18H41A0491 18H41A0471	E-Notice Board Using Raspberry Pi	TIKKIREDDI ADITYA KUMAR	IoT	Communication	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0462 18H41A0461 18H41A0459 18H41A0468	Student College Alert System to Parents by Using RFIDand GSM Technology	BONAM VIJAYA LAKSHMI	Embedded	Communication	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A04A1 18H41A0484 18H41A0454 18H41A0494	Automatic Fire Extinguishing Robot	MOSES VARAPRASAD GUMMADI	Embedded	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0470 19H45A0413 18H41A0481 18H41A0479	Real Time College Alarm Using PC	DONDAPATI KRATHI KUMAR	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

	18H41A0412 18H41A0428 18H41A0420 18H41A0431	Circularly Polarized Cylindrical Dra PatchAntenna for WirelessApplications	R SATISH KUMAR	Antenna	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0425 18H41A0436 18H41A0438 18H41A0439	Raspberry Pi Based Home Security NotificationSystem Using Bot Commands of Telegram	GIRISH PECHETTI	IoT	Security & Surveillance	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0441 19H45A0402 18H41A0450 19H45A0409	Location Based Vehicle Speed ControllingUsing Radio Frequency	V PRASANNA LAXMI	Embedded	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0421 18H41A0445 18H41A0402 18H41A0407	Design and Fabrication of Semi-AI Based ElectricVehicle	TIKKIREDDI ADITYA KUMAR	AI	Automotive	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	19H45A0420 19H45A0417 196M5A0406 18H41A0485 18H41A0466	Area and Power Efficient ECC For Multiple Adjacent Bit Errors in SRAMs	JYOTHIRMAI KANCHANAPALLY	VLSI	Memory	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0489 18H41A0486 19H45A0422 196M5A0405	IoT Based Smart Mirror Using Raspberry-Pi	MATTAPARTHI SWETHA MALLIKA	IoT	Automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0467 19H45A0418 18H41A0488	Raspberry Pi Based Robotic Arm Using RF Transceiver	SARMA ADITHE	IoT	Robotics	Prototype	PO1 – PO5, PO8 –

	18H41A0406						PO12, PSO1, PSO2
	18H41A0426 18H41A0409 19H45A0403 18H41A0404	Webcam Robot Using Raspberry Pi for Surveillance	RAMPRABU GOWTHAMAN	Embedded	Robotics	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0433 18H41A0442 19H45A0407 18H41A0430	Raspberry Pi Processor Based ATM TerminalDesign for Fingerprint Combination for Privacy Protection	MATTAPARTHI SWETHA MALLIKA	Embedded	Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	19H45A0406 18H41A0410 18H41A0440 18H41A0424	Raspberry Pi and Image Processing BasedElectronic Voting Machine (EVM)	KORIMILLI SIRISHA	Embedded	automation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	19H45A0408 18H41A0413 18H41A0417 17H41A0423	IoT Mining Tracking and Worker Safety Helmet	GUNJA VIJAYARAJU	IoT	Safety	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	19H45A0405 19H45A0411 18H41A0429 18H41A0415	Dielectric Resonator Antenna (Dra)	BODDAPALLI VENKATA RAMANA	Antenna	Communication	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	19H45A0404 18H41A0444 19H45A0410 18H41A0449	Students Attendance Monitoring &AccessControl Using Embedded Linux OS BasedRaspberry Pi	RAMPRABU GOWTHAMAN (PAVAN)	Embedded	Monitoring	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2

	Methodology & Project execution progress	Improvement	Satisfactory	and good	
		0 – 7 Marks	8 – 14 Marks	15 – 20 Marks	
3	Result, Conclusion and Presentation	Inappropriate	Average	Effective	20
		0 – 7 Marks	8 – 14 Marks	15 – 20 Marks	

2018 – 22 Project List

Sl. No.	Regd. No.	Project Title	Guide Name	Domain	Field	Type	PO / PSO
	19H45A0401 18H41A0434 18H41A0418 18H41A0437	Detection and Classification of Alzheimer'sDisease Using Noisy Deep Dictionary Learning	RAMPRABU GOWTHAMAN	Machine Learning	Medical	Simulation	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0427 18H41A0423 18H41A0443 18H41A0419	Automatic Water Theft Detection and Quality Identification	SARMA ADITHE	Embedded	Home Safety & Security	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	19H45A0412 18H41A0422 18H41A0401 18H41A0451	Advanced Embedded System Remote Control Robot Navigation System Using Arduino	MOSES VARAPRASAD GUMMADI	Embedded	Navigation	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0452 18H41A0435 18H41A0416 18H41A0448	Raspberry Pi Based Robotic Arm Using Bluetooth	VENKATA SATISH DHULIPUDI	Embedded	Robotics	Prototype	PO1 – PO5, PO8 – PO12, PSO1, PSO2
	18H41A0432 18H41A0403 18H41A0414	Baby Monitoring System Using Arduino	V V SATYANRAYANA KONA	Embedde d	Automati on	Prototype	PO1 – PO5, PO8 –

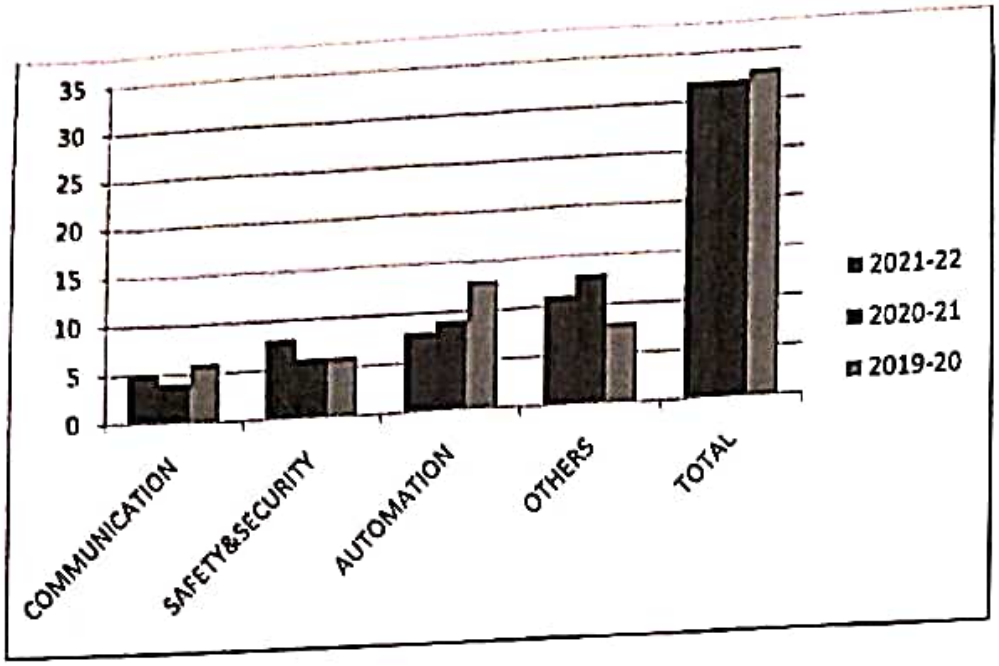


Table 2.2.3.4.ScheduleofProjectWorkReviewsfor A.Y.2021-22

S.No.	Item	Date
1	Review1	17/1/2022
2	Review2	21/2/2022
3	Review3	7/3/2022

B. Process to assess individual and team performance (05)

- ✓ The rubrics used to assess the individual and team performance of the students in the project.

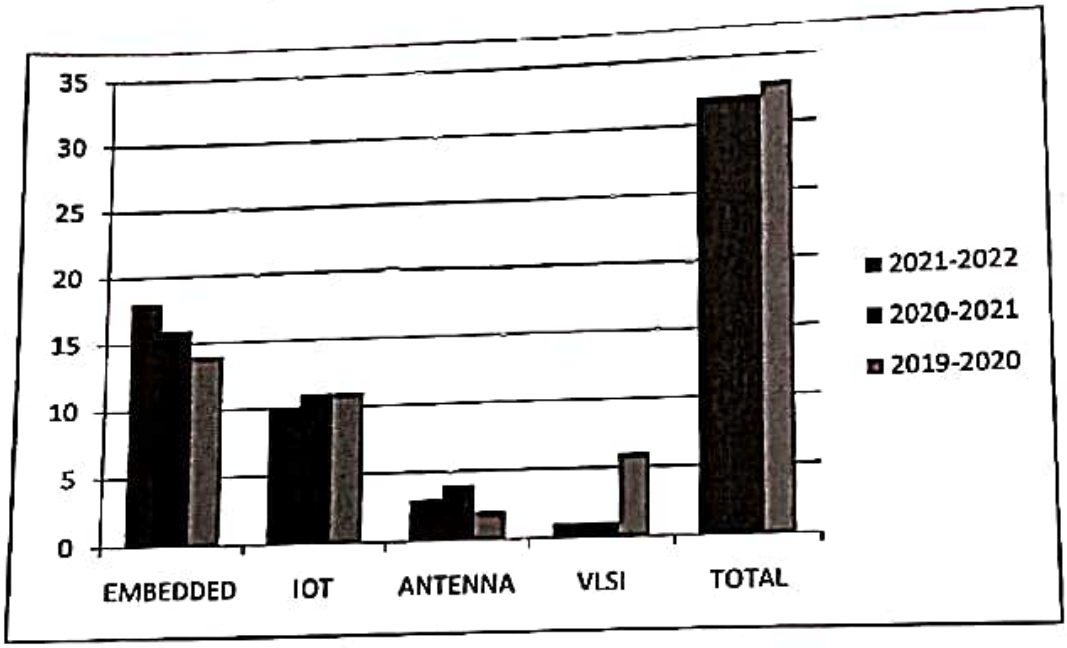
Table 2.2.3.5.Evaluation rubrics forIndividual and Team performance

Rubrics for Major Project

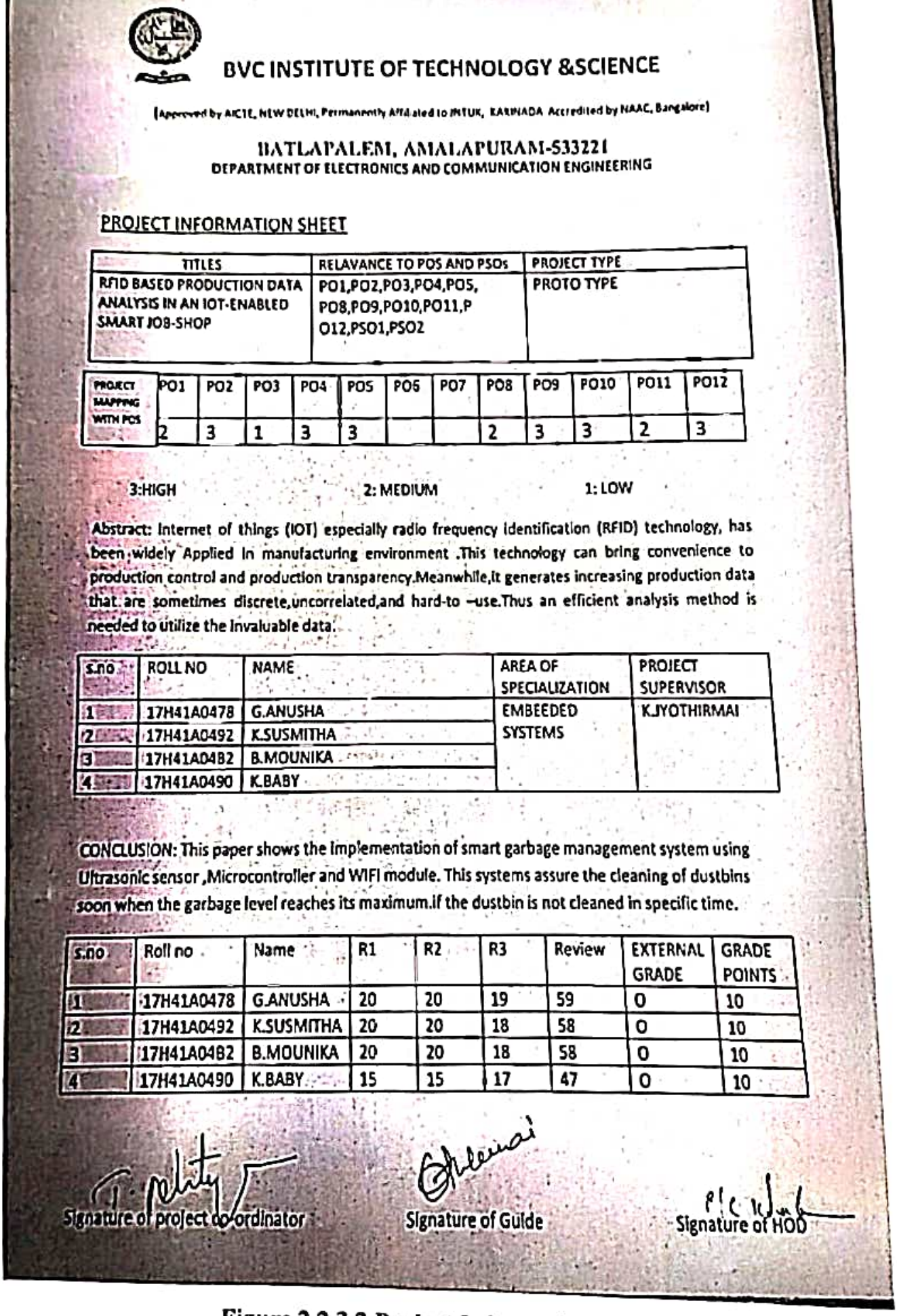
Review #	Parameter	Rubric			Marks
		Poor	Average	Good	
1	Objectives, Project Synopsis, Literature	Need Improvement	Clear and Moderate	Well defined and good	20
		0 – 7 Marks	8 – 14 Marks	15 – 20 Marks	

- Based on this year project PRC will recommendation to improve the quality of project for next coming batches
- Quality Project are categorized and displayed in Project Lab for students to further improvement.
- The below statics represents the diversity that was followed in allocation of projects

A.Y	EMBEDDED	IOT	ANTENNA	VLSI	TOTAL
2021-2022	18	10	03	1	32
2020-2021	16	11	04	1	32
2019-2020	14	11	02	06	33



A.Y	COMMUNICATION	SAFETY&SECURITY	AUTOMATION	OTHERS	TOTAL
2021-22	5	8	8	11	32
2020-21	4	6	9	13	32
2019-20	6	6	13	8	33



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(Approved by AICTE, NEW DELHI, Permanently Affiliated to JNTUK, KAKINADA Accredited by NAAC, Bangalore)

BATLAPALEM, AMALAPURAM-533221
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROJECT INFORMATION SHEET

TITLES	RELAVANCE TO POS AND PSOs	PROJECT TYPE
RFID BASED PRODUCTION DATA ANALYSIS IN AN IOT-ENABLED SMART JOB-SHOP	PO1,PO2,PO3,PO4,PO5, PO8,PO9,PO10,PO11,P O12,PSO1,PSO2	PROTO TYPE

PROJECT MAPPING WITH POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	2	3	1	3	3			2	3	3	2	3

3:HIGH 2: MEDIUM 1: LOW

Abstract: Internet of things (IOT) especially radio frequency identification (RFID) technology, has been widely Applied in manufacturing environment .This technology can bring convenience to production control and production transparency.Meanwhile,it generates increasing production data that are sometimes discrete,uncorrelated,and hard-to –use.Thus an efficient analysis method is needed to utilize the invaluable data.

s.no	ROLL NO	NAME	AREA OF SPECIALIZATION	PROJECT SUPERVISOR
1	17H41A0478	G.ANUSHA	EMBEEDED SYSTEMS	K.JYOTHIRMAI
2	17H41A0492	K.SUSMITHA		
3	17H41A04B2	B.MOUNIKA		
4	17H41A0490	K.BABY		

CONCLUSION: This paper shows the implementation of smart garbage management system using Ultrasonic sensor ,Microcontroller and WIFI module. This systems assure the cleaning of dustbins soon when the garbage level reaches its maximum.if the dustbin is not cleaned in specific time.

s.no	Roll no	Name	R1	R2	R3	Review	EXTERNAL GRADE	GRADE POINTS
1	17H41A0478	G.ANUSHA	20	20	19	59	O	10
2	17H41A0492	K.SUSMITHA	20	20	18	58	O	10
3	17H41A04B2	B.MOUNIKA	20	20	18	58	O	10
4	17H41A0490	K.BABY	15	15	17	47	O	10

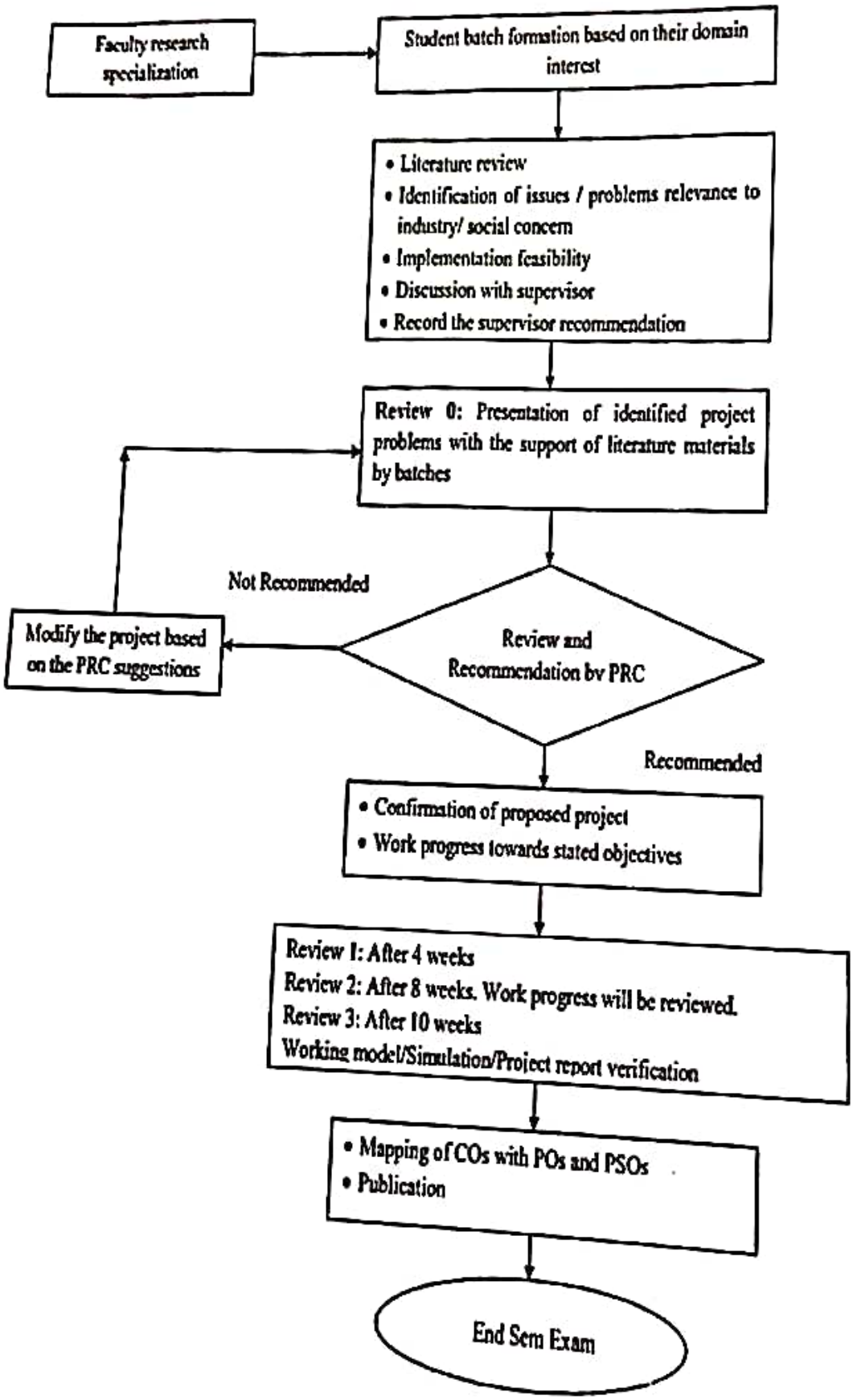
Signature of project co-ordinator Signature of Guide Signature of HOD

Figure 2.2.3.2 Project Information Sheet

Impact Analysis:

- Best 5 projects are selected and given awards to the students

Fig. 2.2.3.1. Process for monitoring and evaluation



- ✓ Evaluation of project will be done by consolidating marks obtained in overall three reviews which covers the Parameters like literature survey data acquisition, proposed methodology in implementing project, appropriate presentation of project and results.

D.Process to Assess Individual and Team Performance

1. Performance of each student at individual as well as in team in completion of project is assessed by respective project supervisor throughout the semester.
2. All students have to give presentation on their project work before project review committee (PRC) and internal guide.
3. Rubrics are used to assess the individual and team performance of the students in the project.
4. Three reviews are conducted to monitor the project work.
   - Review 1 is on project synopsis
   - Review 2 is on midterm project evaluation
   - Review 3 is on end semester project evaluation

#		Poor	Average	Good	
1	Objectives, Project Synopsis, Literature Survey	Need Improvement	Clear and Moderate	Well defined and good	20
		0 – 7 Marks	8 – 14 Marks	15 – 20 Marks	
2	Proposed Methodology &Project execution progress	Need Improvement	Clear and Satisfactory	Well defined and good	20
		0 – 7 Marks	8 – 14 Marks	15 – 20 Marks	
3	Result, Conclusion and Presentation	Inappropriate	Average	Effective	20
		0 – 7 Marks	8 – 14 Marks	15 – 20 Marks	

C.Continuous Monitoring:

- ✓ Students have to submit synopsis to the project guide.
- ✓ Project guide will give suggestions towards the improvement of the project work. Based on inputs, students have to start their work.
- ✓ Periodically, the student has to give presentation on the project work in front of the project review committee along with project guide.
- ✓ Project review committee has to give permission to the student for submission of the report.

Process for monitoring and evaluation

- ✓ Internal guide will continuously monitor the performance of the students' performance and progress in the project work.
- ✓ Internal guide will guide the students in case of any obstacles encountered by the students during the project development and execution.
- ✓ Project coordinator schedules three reviews for continuous monitoring of performance individual and team.

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Directorate of Academic Planning
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA-533003, Andhra Pradesh, INDIA
(Established by AP Government Act No. 30 of 2008)

Lr. No. DAP/AC/IV Year /B. Tech/B. Pharmacy/2022 *Date 25.06.2022*

Dr. KVSG Murali Krishna,
M.E, Ph.D.,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar for IV Year - B. Tech/B. Pharmacy for the AY 2022-23

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**04.07.2022**		
I Unit of Instruction	04.07.2022	27.08.2022	8W
I Mid Examinations	29.08.2022	03.09.2022	1W
II Unit of Instructions	05.09.2022	29.10.2022	8W
II Mid Examinations	31.10.2022	05.11.2022	1W
Preparation & Practicals	07.11.2022	12.11.2022	1W
End Examinations	14.11.2022	26.11.2022	2W
Commencement of II Semester Class Work	**05.12.2022**		
II SEMESTER			
I Unit of Instructions	**05.12.2022**	28.01.2023	8W
I Mid Examinations	30.01.2023	04.01.2023	1W
II Unit of Instructions	06.01.2023	01.04.2023	8W
II Mid Examinations	03.04.2023	08.04.2023	1W
Preparation & Practicals	10.04.2023	15.04.2023	1W
End Examinations	17.04.2023	29.04.2023	2W

Director, 25/6/22
Academics & Planning,
JNTUK

Director
Academic Planning
JNTUK Kakinada

Copy to the Secretary to the Hon'ble Vice Chancellor, JNTUK
Copy to Rector, Registrar, JNTUK
Copy to Director Academic Audit, JNTUK
Copy to Director of Evaluation, JNTUK

IDENTIFYING THE EXPERTISE WITH THE FACULTY (AREA OF SPECILIZATION)

VLSID

S.NO	NAME OF THE FACULTY	QUALIFICATION	DESIGNATION
1	MRS.N.S.P LAXMI	M.TECH	ASST.PROFESSOR
2	MS.S.MALLIKA	M.TECH	ASST.PROFESSOR
3	MRS.K.JYOTHIRMAI	M.TECH	ASST.PROFESSOR
4	MR.P.GIRISH	M.TECH	ASST.PROFESSOR

EMBEDDED SYSTEMS &IOT			
S.NO	NAME OF THE FACULTY	QUALIFICATION	DESIGNATION
1	MR.D.V.SATISH	M.TECH	ASST.PROFESSOR
2	MR.M.V.S.S. MURTHY	M.TECH	ASST.PROFESSOR
3	MR.G. VIJAYA RAJU	M.TECH	ASST.PROFESSOR
4	MR.S.RAGHAVA RAO	M.TECH	ASST.PROFESSOR

IMAGE PROCESSING			
S.NO	NAME OF THE FACULTY	QUALIFICATION	DESIGNATION
1	DR.K.SIRISHA	P.H.D	PROFESSOR
2	V V S R K K PAVAN BH	M.TECH	ASST.PROFESSOR

ANTENNA			
S.NO	NAME OF THE FACULTY	QUALIFICATION	DESIGNATION
1.	MR.B.V.RAMANA	P.H.D	PROFESSOR
2.	R.SATISH KUMAR	M.TECH	ASSOC PROFESSOR

PC

HOD
Head of the Department
Electronics & Communication Engineering
B.V.C. Institute of Technology
Ballapalem, Amalapuram

2.2.4 *Initiatives related to industry interaction (15)*

(Give details of the industry involvement in the program such as industry-attached laboratories, partial delivery of appropriate courses by industry experts etc. Mention the initiatives, implementation details and impact analysis) Industry supported laboratories, MoUs, Student benefited, Industry interaction, Guest Lecture by industry persons, Impact Analysis

The following initiatives are in practice to enhance industry interaction

1. Students are involved in remote internships from various reputed industries
2. Students are encouraged to attend the guest lecturers from various industry experts
3. Students are exposed to MNC's to help them increase their 'talent and technology quotient' and be industry-ready upon completing their graduate studies.
4. College has signed MOUs with various academic institutions and industries for enhancement of technical skills to the students through which the students of departmentof electronics and communication engineering are also being benefitted.
5. Department is being absorbed certain personnel from industry as visiting faculty to get real time experience sharing to the students.

A. Industry Supported Laboratories

Table 2.2.4.1. List of Industry Supported Laboratories.

S. No.	Name of The Laboratory	Name of the Industry	Type of Support	Year
1	Internet of Things Lab	Sri Shasha Prayathi Technologies PVT LTD	Technical Instructional Support	2022-2023
2	Java Script (Doc	Codetantra	Instructional	2021-2022
3	MONGODB (Doc Course)	Codetantra	Instructional	2021-2022
4	DBMS (Doc Course)	Codetantra	Instructional	2020-2021
5	HTML and CSS (Doc)	Codetantra	Instructional	2020-2021
6	Data Structures Using C/C++/Python/Java	Codetantra	Instructional Platform	2020-2021
7	C Programming	Codetantra	Instructional	2019-2020
8	C++ Programming	Codetantra	Instructional	2019-2020
9	Python Programming	Codetantra	Instructional	2019-2020
10	Java Programming	Codetantra	Instructional	2019-2020

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MOUs with Industry:

College has signed some MOUs with various academic institutions and industries forenhancement of imparting essential technical skills to the students.

Table 2.2.4.2 MoU's with Industry

S. No	Organization with which MoU is signed	City Name	Duration	Purpose
1	HighQ-Labs	Bangalore	2023-2027	To provide Trainings on Technical and Soft skills for the Placements.
2	International Skill Development Corporation	Bangalore	2023-2026	To provide FDP's to Faculty and Overseas Higher Study options to Students
3	Sri Shasha Prayathi Technologies PVT LTD (STEP – NITK)	Mangalore	2022 - 2027	To provide industrial training, Internships, Innovative Projects
4	Unacademy	Hyderabad	2022-2025	To provide Placement oriented training as wellas GATE, ESE,CAT,UPSC and BANK Exams
5	Reference Globe	Hyderabad	2021-2024	To provide Digital transformation of Education and Placement Training activities
6	Testbook	Navi Mumbai	2021-2022	To provide placement preparation activities likelive tests and CRT practice
7	Great Learning	Gurgaon	2020-2022	To provide online and blended learning operations for students and faculty
8	MSME Tool Room (CITD)	Hyderabad	2019-2024	To provide certification courses and Short-term projects
9	Coign Edu & IT Services	Hyderabad	2019-2024	To provide Projects Training and Internships
10	Tata Consultancy Services	Mumbai	2018-2024	To Conduct various Government and Non Government exams by TCS iON

11	TRIECODERS	Bangalore	2018-2023	To provide In-house Internships, Training and Placements activities
12	Codetantra Tech Solutions Pvt Ltd	Hyderabad	2018-2023	Online Learning Platform for Programming languages, Testing and Aptitude
13	Eduvance	Mumbai	2018-2021	To conduct workshopsand train students
14	QSpiders	Hyderabad	2018-2021	To train and place the students in various Multinational Companies
15	SB Technology Services	Hyderabad	2017-2027	To provide Projects Training and Internships
16	NextGen Ventures	Kolkata	2017-2022	Providing Campus Opportunities for the Students
17	VIDAL NDT	Vijayawada	2017-2021	To conduct workshops and for doing project works
18	RedHat Academy	Mumbai	2016-2017	Awareness on RedHat Software Products and licensed software
19	BrighTex Bio-Photonics Pvt. Ltd	Hyderabad	2012-2022	Conducted Various workshops on latest Technologies
20	Talent Sprint Educational Services Pvt. Ltd	Hyderabad	2011-2021	For professional Development and foundational software engineering

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B. Industry involvement in the program design and partial delivery of any regular courses forstudents:

Table 2.2.4.3 Industry involvement in identification of curricular gap

S. No	Name of the expert	Designation	Name of organization	Involved in curriculum Design
1	Ms. Sravya Bhargavi	Associate Technical Specialist	PROKARMA SOFTECH, Hyderabad	R16 Regulation
2	Mr. P S L Narasimha Rao	Sub – Divisional Engineer	BSNL	R19 Regulation
3	Mr. K. Anand Mohan	Embedded Engineer	Honey Well Technology solutions Hyderabad	R20 Regulation

Student Benefits

College has signed MOUs with various academic institutions and industries for enhancement of imparting technical skills to the students by conducting various workshops, seminars through which the students of department of electronics and communication engineering are also being benefitted

- We are involved with the following industries in partial delivery of the following regular courses.

Table 2.2.4.4 List of regular courses conducted with Industry supportfor Academic Year 2022-23

S. No	Name of the Industry	Resourceperson	Topic	Mode of delivery	Benefited Students	Date	Relevance to POs & PSOs
1	Sri Shasha Prayathi Technologies	Vikram Pingali, Technical Engineer	A One Week Workshop on Programming with Arduino for IOT Applications	Workshop	II Year	06-03-2023 to 11-03-2023	PO3, PO5, PO11,PSO1
2	Sri Shasha Prayathi Technologies	Vikram Pingali, Technical Engineer	Programming with Radar sensors for IOT and sensor fusion applications	Workshop	III Year	27-02-2023 to 04-03-2023	PO3, PO5, PO11,PSO1
Students Participation at Institute level activities							
3	HighQ-Labs	P Shankara Vara Prasad	Technical Skills Training	Online Training	III Year & II Year	23-05-2023 to 19-06-2023	PO5, PO9, PO11,PO12, PSO2
4	HighQ-Labs	K SriVidya	Soft Skills Training	Online Training	III Year & II Year	23-05-2023 to 19-06-2023	PO9, PO10, PO11,PSO2
5	ACE Engineering Academy	P. Ramesh	One Day Seminar on Career Opportunities after B.Tech	Seminar	III Year & IV Year	17-02-2023	PO9,PO10, PO12
6	Nyros Technologies	M. Pavan Kumar	Reaching Your Career Destination	Seminar	IV Year	14-12-2022	PO9,PO10, PO12
7	Reference Globe	Free Lancers	TCS NQT Online Training	Online Training	IV Year	4-8-2022 to 16-8-2022	PO9,PO10, PO12
8	HighQ-Labs	P Shankara Vara Prasad	Oracle Certifications (Java Training)	Online Training	III Year & IV Year	18-07-2022 to 28-07-2022	PO9,PO10, PO12

9	Training and Placement Cell	Ch Ranjith Kumar	ServiceNow CSA Certification Training	Training	IV Year	18-07-2022 to 23-09-2022	PO9,PO10, PO12
10	Tata Consultancy Services	Mr. Karthik Abhiram and Mr. Dhanesh	Webiner by TCS Hiring 2023	Webinar	IV Year TCS Eligible Students	15-07-2022	PO9,PO10, PO12
11	Virtusa	Bhanu Prakash	Virtusa CoE Training	Training	IV Year Virtusa DriveStudents	7-7-2022 to 9-7-2022	PO9,PO10, PO12

Table 2.2.4.5 List of regular courses conducted with Industry supportfor

Academic Year 2021-22

S. No	Name of the Industry	Resource person	Topic	Mode of delivery	Benefited Students	Date	Relevance to POs & PSOs
1	S V Technologies Vijayawada	Mr. K. Pradeep Technical Engineer,	Advanced VLSI & Communication using Tanner Tool	Workshop	III Year	20-12-2021 to 24-12-2021	PO3, PO5, PO11,PSO1
2	S V Technologies Vijayawada	Mr. S. Satish Technical Engineer,	IOT Applications using Arduino	Workshop	II Year	14-12-2021 to 18-12-2021	PO3, PO5, PO11,PSO1
3	DURA Automotive Hyderabad	Mr. Ch.Gopala Krishna, Engg. Manager	A Guest Lecture on "Career Opportunities in Automotive Embedded Systems"	Guest Lecture	IV Year	23-03-2022	PO8,PO9,PO10,PO11,PO12 PSO1, PSO2

Students Participation at Institute level activities

4	HighQLabs	Mr. Bhanu Prakash	Online CRT Training	Online Training	III Year	26-04-2022 to 03-05-2022	PO1,PO2,PO5, PO9,PO10,PSO2
5	Legato Health Systems	Mr. Sravan Kumar Borra	Manual Testing Training	Training Program	III Year	23-03-2022	PO1,PO2,PO3, PO5, PO8,PO12, PSO2

6	Legato Health Systems	Mr. Shyam Prasad Gurujala	Getting Started with Tableau	Seminar	III Year	09-03-2022	PO1,PO5, PO9, PO12, PSO2
7	TCS	Mr.Srikanth	TCS Technical Training Session	Training Program	IV Year	22-01-2022	PO9,PO10,PO11
8	Infosys	Ms.Y Samanvita	Orientation session - InfyTQ & Hackwithinfy	Seminar	III & IV Year	21-01-2022	PO1,PO2,PO3,PO5, PO8,PO12,,PSO2
9	HighQLabs	Bhanu Prakash	Online Technical Training	Online Training	IV Year	24-12-2021 to 30-12-2021	PO9, PO11,PSO2
10	Reference Globe	Mr. P.Satish	Hexaware Company Specific Live training session	Training Program	IV Year	13-11-2021 to 16-11-2021	PO1,PO2, PO5, PO8,PO12
11	Reference Globe	Mr. P.Satish	Virtusa and Tech Mahindra Mock tests Conducted	Mock test	IV Year	29-10-2021 to 03-11-2021	PO1,PO2, PO5, PO8,PO12,PSO2
12	HighQLabs	Mr. Bhanu Prakash	CRT Training	Training Program	IV Year	02-09-2021 to 09-09-2021	PO1,PO2,PO5, PO9,PO10,PSO2
13	NAANDI Foundation	Mr. Goutham & Vikas	TCS Ninja Training	Training Program	III Year	03-08-2021 to 06-08-2021	PO1,PO2, PO9, PO11, PO12, PSO2
14	APSSDC in collaboration with NASSCOMP	Ms Uma	Online Training program on AWS Cloud	Online Training	IV Year	29-7-2021 to 30-07-2021	PO1,PO2, PO5, PO8,PO9, PO12, PSO2
15	Techiefrogs	Mr.Pasumarthy Sudeep	Online skill based training program for entry level jobs	Online Training	IV Year	15-07-2021	PO1,PO2, PO8,PO12,PSO2
16	Face, Bangalore	Mr. Pavan	Placement Overdrive Webinar	Seminar	IV Year	06-07-2021	PO9,PO10,PO11,PO12,PSO2

Table 2.2.4.6 List of regular courses conducted with Industry support for Academic Year 2020-21

S. No	Name of the Industry	Resource person	Topic	Mode of delivery	Benefited Students	Date	Relevance to POs & PSOs
Students Participation at Institute level activities							
1	Highq-Labs, Bangalore	Mr. Bhanu Prakash	Online Training on Technical Skills	Online Training	IV Year	19-04-2021 to 06-05-2021	PO9, PO11,PSO2
2	Career Steps, Germany	Mr. Pavan Sripada	Exploring New Career Options	Seminar	III & IV Year	06-04-2021	PO9,PO10,PO11, PO12,PSO2
3	Infosys	Mr. P.Venkat	Orientation on Employability Skills	Orientation Program	IV Year	03-04-2021	PO9,PO10,PO11, PO12,PSO2
4	SBTECH, Hyderabad	Mr. Majeti Ramana	One day workshop on Python Coding	Workshop	IV Year	12-02-2021	PO3, PO5,PO11, PSO1
5	The Talent Shine Institute, Vizag	Mr. Marcharla Venu	Online CRT Training	Online Training	III Year	03-08-2020 to 11-08-2020	PO1,PO2,PO5, PO9,PO10,PSO2

Table 2.2.4.7 List of regular courses conducted with Industry support for Academic Year 2019-2020

S. No	Name of the Industry	Resource person	Topic	Mode of delivery	Benefited Students	Date	Relevance to POs & PSOs
1	Eduvance Arm University	Mr. Sadanand Gulwadi	ARM 11 Microcontroller Programming	Workshop	III Year	25-11-2019 to 29-11-2019	PO2,PO3,PO4,PO5,PSO1
2	C2C Technologies	Mr.K Pradeep	Embedded Systems & (IOT) Fundamentals	Workshop	IV Year	16-12-2019 to 18-12-2019	PO3, PO5, PO11,PSO1

Students Participation at Institute level activities							
3	Made Easy	Mr. Jitendra Tiwari	Career Opportunities	Seminar	III & IV Year	24-02-2020	PO1, PO9, PO10, PO11, PSO2
4	The Talent Shine Institute, Vizag	Mr. Marcharla Venu Gopal rao	CRT Training	Training Program	IV Year	16-12-2019 to 24-12-2019	PO1, PO2, PO5, PO9, PO10, PO11, PSO2
5	SBTECH, Hyderabad	Mr. Majeti Ramana	Awareness on Mini Projects	Awareness Program	IV Year	04-11-2019 to 06-11-2019	PO1,PO2,PO 3, PO5,PO9,PO 11,PSO1
6	U LEARN SYSEMS,Hyde rabad	Mr. Avinash, Mr.Hemanth, Ms. Manasa	CRT Training	Training Program	IV Year	09-09-2019 to 14-09-2019	PO1,PO2, PO5, PO9,PO10,P O11,PSO2
7	Techiefrogs, Hyderabad,	Mr.Chakka Ramadatta, Mr. P Sudeep	Cyber Security Workshop	Workshop	IV Year	03-09-2019 to 05-09-2019	PO5, PO8, PO9, PO11, PSO1, PSO2

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Figure. 2.2.4.1 A Guest Lecture on "Career Opportunities in Automotive Embedded Systems"

Figure. 2.2.4.2 Work shop on EmbeddedSystems & (IOT) Fundamentals

Figure. 2.2.4.3 Programming with Radar sensors for IOT and sensor fusion applications (Workshop)

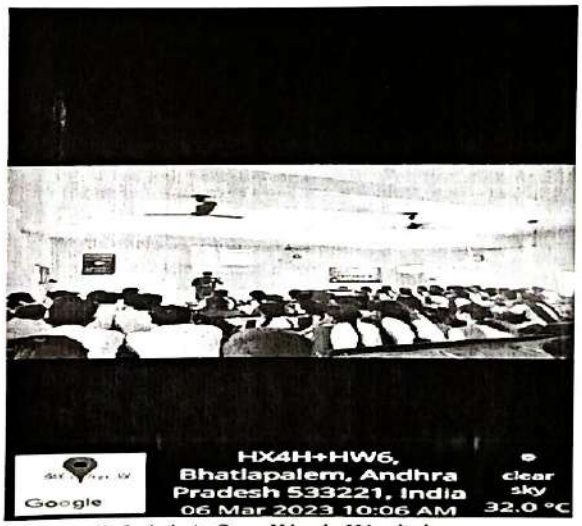

Figure. 2.2.4.4 A One Week Workshop on Programming with Arduino for IOT Applications

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Industrial Experts:

Employees from industries are invited to give lectures on real time application in order to improve thetechnical knowledge of students.

Table 2.2.4.8 List of Industrial Experts

S. No	Industry/Institute	Name of the Industry Expert	Designation	Target Students
2022-23				
1	Tech Mahindhra	D.Venkata Kiran,	Project Lead	III & IV Year
2021-22				
2	Honey Well Technology solutions Bengaluru	Mr. K Anand mohan	EmbeddedEngineer	III & IV Year
3.	Coign Edu & IT Services	Mr. Chintala Venkata sai Avinash	Technical Engineer,	II & III Year
2020-21				
4.	SV Technologies Vijayawada	Mr K Pradeep	Technical Engineer,	III & IV Year
2019-20				
5.	PROKARMA SOFTECH, Hyderabad	Ms. Sravya Bhargavi	Associate Technical Specialist,	II& III Year

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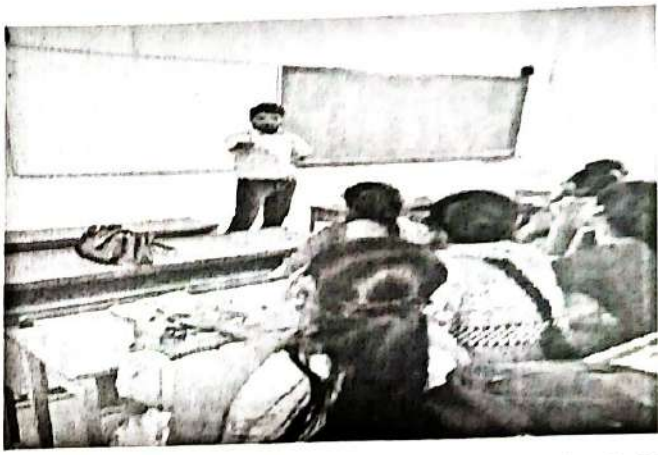
Industrial Experts:

D.Venkata Kiran, Tech Mahindhra

Mr. K Anand mohan, Honey Well Technology solutions Bengaluru



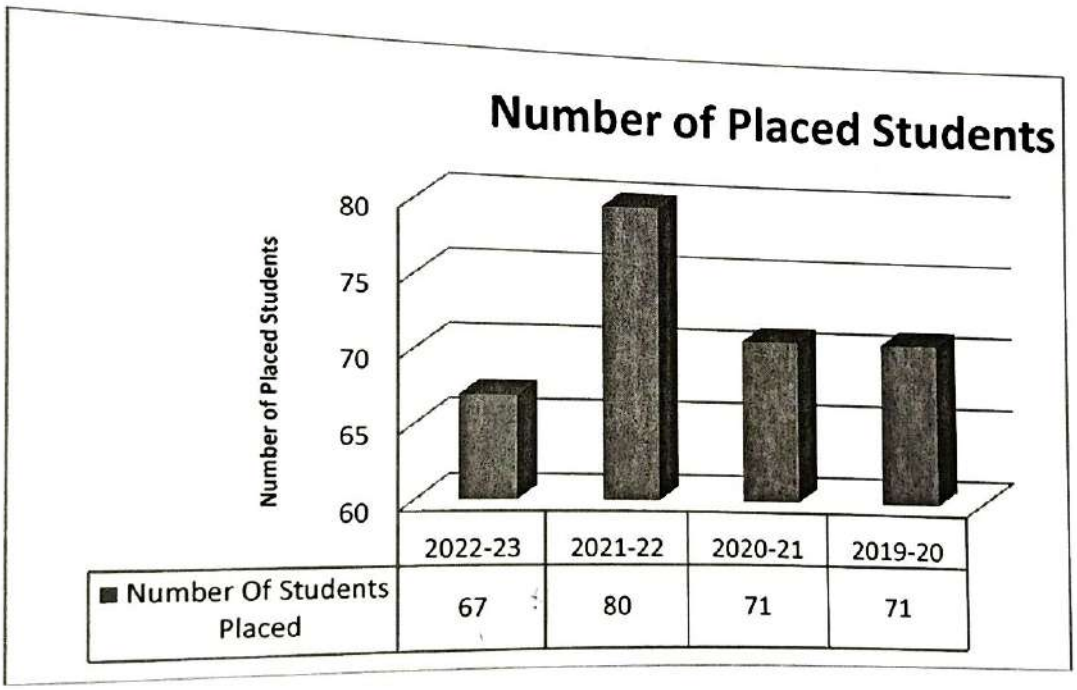
Mr. Chintala Venkata saiAvinash, Coign Edu & I Services

Mr K Pradeep, SV TechnologiesVijayawada

Ms. Sravya Bhargavi, PROKARMASOFTECH, Hyderabad

C. Impact Analysis:

- The students got exposure on various experiments beyond the curriculum.
- By conducting workshops/orientation programs, students enhance their knowledge with latest technology and tools, and they adopted modern methodologies and practices.
- Practical and excited environment is created by providing exclusive laboratories for projectwork.
- The workshops/orientation programs conducted improved the skill-based knowledge of the students.



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2.2.5 *Initiatives related to industry internship/summer training (15)*

(Mention the initiatives, implementation details and impact analysis)

The following initiatives are in practice to enhance industry internship / summer training.

Industry Visits, Internships, Training.

- Students are encouraged to undergo internships and summer/winter school programs at various reputed organizations

A. Industrial Tour for Students:

Academic Year 2022-23

Table 2.2.5.1: List of Industrial Visits

S No	Name of the Industry/ Substation	Duration	Year of students	Mapping with POsand PSOs
1	Visakhapatnam Steel Plant	31-03-2023 to 02-04-2023	III	PO1,PO2,PO3,PO4,PO5,PO9,PO10,PO11,PSO1,PSO2

Academic Year 2019-20

Table 2.2.5.2: List of Industrial Visits

S No	Name of the Industry/ Substation	Duration	Year of students	Mapping with POsand PSOs
1	Doppler Weather Radar Station, Visakhapatnam	31-12-2019 to 02-01-2020	IV	PO1,PO2,PO3,PO4,PO5,PO9,PO10,PO11,PSO1,PSO2

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Figure: 2.2.5.1 Doppler Weather Radar Station,Visakhapatnam

Figure: 2.2.5.2 Visakhapatnam Steel Plant ,Visakhapatnam

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2.2.5

B. Industry Internship / Summer Training by students

Academic Year 2022-23

Table. 2.2.5.3 List of Industrial Internships

S.No	Name of the Industry/Institute	Name of the Course	No. of Students	Relevance to POs and PSOs
1.	HiQ Labs		140	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
2.	Smart Internz		12	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
3.	Edunet [IBM]		100	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
4.	Virtusa, Hyderabad		2	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
5.	Vodafone Idea Limited, Hyderabad		6	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
6.	Hidden Brains Infotech Pvt. Ltd. Hyderabad		3	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
7.	SMBXL Pvt. Ltd. Hyderabad		1	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
8.	Verzeo, Bengaluru	Machine Learning with Python course	4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2

9.	Acmegrade Pvt. Ltd	Machine Learning	3	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
10.	Microsoft	Azure Fundamentals	110	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
11.	Smart Internz	Salesforce Developer Virtual Internship	85	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
12.	AWS Academy	AI ML Virtual Internship	1	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
13.	AWS Academy	AWS Cloud Virtual Internship	14	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
14.	Paloalto Cyber security academy	Cyber security Virtual Internship	34	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
15.	Alteryx Sparked	Data Analytics Process Automation	5	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
16.	Celonis Academy	Process Mining Virtual Internship	2	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2
17.	Blueprism University	Robotic Process Automation (RPA) Virtual Internship	17	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PSO1, PSO2

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Academic Year 2021-22

Table. 2.2.5.4 List of Industrial Internships

S.No	Name of the Industry	No. of Students	Relevance to POs and PSOs
1	Mind Tree Limited Bengaluru	2	PO1, PO2, PO3,PO4, PO5, PO6, PO7,PO9, PO10,PO11, PSO1, PSO2
2	Wipro Limited, Bengaluru	13	PO1, PO2, PO3,PO4, PO5, PO6, PO7,PO9, PO10,PO11, PSO1, PSO2
3	Tiger Analytics India ConsultingPvt Ltd, Chennai	1	PO1, PO2, PO3,PO4, PO5, PO6, PO7,PO9, PO10,PO11, PSO1, PSO2
4	DXC Technology India Pvt Ltd	8	PO1, PO2, PO3,PO4, PO5, PO6, PO7,PO9, PO10,PO11, PSO1, PSO2

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Academic Year 2019-20

Table. 2.2.5.5 List of Industrial Internships

S.No	Name of the Industry	No. of Students	Relevance to POs and PSOs
1	ALPHABT	1	PO1, PO2, PO3, PO4, PO5, PO6,PO7, PO9, PO10,PO11, PSO1, PSO2
2	Soft Suave Technologies(P)Ltd, Chennai	1	PO1, PO2, PO3, PO4, PO5, PO6,PO7, PO9, PO10,PO11, PSO1, PSO2

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Summer Training:

Table: 2.2.5.6 List of Courses

Academic Year	No. of Courses Registered	Course Name	No. of Students Certified
2022-23	8	SQL	75
		JAVA	13
		Java Foundations	145
		Java Fundamentals	145
		Java Programming	145
		Machine Learning withPython	4
		Machine Learning	1
		Communication Skills	1
2021-22	1	DXC Technology	1
2020-21	2	Pantech E Learning AI	5
		Code Tantra	1
2019-20	3	Getting Started with Python	16
		Introduction to HDML 5	1
		Programming forEverybody (Python)	75

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C.Impact analysis:

All these Initiatives help in identifying the industries for industrial visits and in-plant training. Due to such training and placement initiatives, the employability and placement of prospectivestudents is improved. Students have opportunity to interact with the technocrats.

The effectiveness of the related to industry internship/summer training have positively impacted the learning culture of students.

Industry training is assessed by the students' feedback. Based on the analysis of student learning level and usefulness of the training, an Initiative/Action taken to send more no of students to the training as well as for tour

List of Student Selected in Core Companies Summary

S.No.	Year of Pass	Number of Students Placed
1.	2019	6
2.	2020	2
3.	2021	1

List of Student Selected in Core Companies

S.No.	Regd No.	Name Of the Student	Year of Pass	Name of the Company
1.	16H45A0425	Kondeti Venkata Sai Pradeep	2019	Tech Mahindra
2.	16H45A0427	Mula Sai Pavan	2019	Honeywell
3.	16H45A0424	Kasturi Sai Naga Phani Kumar	2019	Delta IoT Solutions
4.	16H45A0421	Gudimella Ramalingeshwara Pavan	2019	Collins Aerospace
5.	16H45A0424	Kasturi Sai Naga Phani Kumar	2019	Delta IoT Solutions
6.	15H41A0487	Mogallapalli N V S K S Surya Teja	2019	ALTRAN
7.	16H41A0460	Yeeti Sai Kumar	2020	Seoyon Electronics R&D
8.	16H41A0465	Arigela Tulasi Sri Vidya	2020	Aptiv
9.	15H41A0418	J.Devi Saikumar	2021	Seoyon Electronics R&D

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D. Industrial visit Feed back

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

STUDENT FEDBACK ON INDUSTRY / FIELD VISIT

Following are questions for student satisfaction survey regarding Industry / Field visit

AY	2019 - 20
Student Name	P. G. S. Sai Sukesh
Regd. No.	16U41A04A4
Class & Sec.	IV Year A Sec

Place of Visit & Address: Dopplex wealth Relax Station Visakhapatnam

Instructions: Please answer all questions by Ticking against each statement.

S. No.	Parameter	Poor	Average	Good
1	The Industry / Field visit was timely and well organized			✓
2	The location selected was appropriate to meet the stated objectives			✓
3	The visit was useful to strengthen knowledge gathered in lectures			✓
4	Aims and objectives of the visit was explained at the beginning			✓
5	A teacher accompanied the students.			✓
6	The Teacher/Resource Person discussed subject matter during the visit			✓
7	The Teacher/Resource Person was responsive to studentquestions during the visit.			✓
8	The Teacher/Resource Person encouraged student participation		✓	
9	I recommend this Industry / Field visit to be continued.			✓

The overall grading of the course: Good

Any other comments / suggestions Need more Industrial visits

P. Sai Sukesh
Student Signature

Coordinator

HOD

Head of the Department
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