



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

Department of ECE

Attainment of Program Outcomes and Program Specific Outcomes (2016 - 20 Batch)

a) Direct assessment tools and attainment process:

- The performance of the students in the examinations during the semester in each course is used to compute the level of attainment of the POs and PSOs through the mapping of questions to COs & COs to POs and PSOs.
- CO-PO & PSO mapping for all the courses in the program is prepared by The program coordinator.
- An MS - Excel sheet is used to compute the level of attainment of the POs and PSOs
- The attainment of the POs & PSOs is computed as a weighted average of attainment of the COs that are mapped to the given POs & PSOs.

b) Indirect assessment tools and attainment process:

The following indirect assessment tools are used for calculating PO & PSO attainments.

- (i) Program Exit survey
- (ii) Student portfolio.

The overall PO & PSO attainments are calculated as follows:

- ✓ 70% for direct assessment tool
- ✓ 30% for indirect assessment through surveys
 - 10% for program exit survey
 - 20% for student portfolio

Results of evaluation of each PO & PSO.

- The attainment of POs and PSOs are compared with the expected level and the process is carried out to continuously improve the attainment level.
- In addition to the above, an internal academic audit is being carried out to observe and realize how direct and indirect assessment tools can be improved to ensure that all course outcomes are realized and aligned with POs & PSOs.
- Every year Action Taken Report(ATR) is to be prepared to attain expected levels of POs and PSOs

The following table1 depicts the POs & PSOs Direct Attainment

1. Direct Attainment Values – 2016 Batch

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Eng - I	CO1	63.45						2			3	3		2			
	CO2	62.00						2			3	3		2			
	CO3	76.00						2			3	3		2			
	CO4	70.00						2			3	3		2			
	CO5	72.00						2			3	3		2			
M - I	CO1	77.45	3	2	2									2			
	CO2	74.32	3	2	2									2			
	CO3	73.43	2	2	1									2			
	CO4	63.41	3	2	2									2			
	CO5	73.00	3	2	2									2			
EP	CO1	72.15	3	3		2								3			
	CO2	72.20	3	3		2								3			
	CO3	64.78	3	3	2	2	2							3			
	CO4	61.11	3	3	3	2	2							3			
	CO5	61.19	3	3		2	1							3			
ECN - I	CO1	68.26	2	2	1									1		2	
	CO2	63.03	2	3	1									1		2	
	CO3	65.00	2	2	1									1		2	
	CO4	51.67	2	3	1									1		2	
	CO5	49.08	2	1	1									1		2	
CP	CO1	74.27	2	3									1	1			
	CO2	65.77	2	3	2	1							1	1			
	CO3	73.43	2	3	2	1							1	1			
	CO4	58.67	2	3	2								1	1			
	CO5	62.40	2	3	2								1	1			
EP Lab	CO1	89.06	3	3	2	2					3			3			
	CO2	89.06	3	3	2	2					3			3			
	CO3	89.06	3	3							3			3			
	CO4	89.06	3	3							3			3			
EWS	CO1	61.78	3		2	3	3	3			3			2			
	CO2	61.78	3		2	3	3	3			3			2			
	CO3	61.78	3		2	3	3	3			3			2			
	CO4	61.78	3		2	3	3	3			3			2			
CP Lab	CO1	56.44	2	3	1						1	1		2			
	CO2	56.44	2	3	1						1	1		2			
	CO3	56.44	2	3	1						1	1		2			
CAED LAB	CO1	63.78					3				1		2	1			
	CO2	63.78					3				1		2	1			
	CO3	63.78					3				1		2	1			
	CO4	63.78					3				1		2	1			
ENG - II	CO1	72.61					2			3	3		2				
	CO2	74.11					2			3	3		2				
	CO3	74.75					2			3	3		2				
	CO4	72.34					2			3	3		2				
	CO5	67.64					2			3	3		2				

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
M-II	CO1	78.00	3	2	2										2			
	CO2	79.00	3	2	2										2			
	CO3	75.00	2	2	1										2			
	CO4	71.00	3	2	2										2			
	CO5	64.00	3	2	2										2			
EC	CO1	63.16	3	3	2			2	1						2			
	CO2	66.34	3	3	2			2	1						2			
	CO3	73.09	3	2	3			2	1						2			
	CO4	68.37	3	2	2			2	1						2			
	CO5	71.10	3	2	2			3	2						2			
ECN - II	CO1	75.58	2	3	1										1		2	
	CO2	73.71	2	3	3										1		2	
	CO3	74.11	2	3	3										1		2	
	CO4	63.80	2	3	3										1		2	
	CO5	62.41	1												1		2	
EDC	CO1	79.79	3	2											2		2	
	CO2	79.24	3	2											2		2	
	CO3	80.69	3	1											2		2	
	CO4	68.61	3	3	2										2		2	
	CO5	60.73	3	2	2										2		2	
EC LAB	CO1	90.82	3	3		2		2	2									
	CO2	90.82	2	3														
	CO3	90.82	3	2														
	CO4	90.82	2	2														
ENGLISH LAB	CO1	90.00				3					3	3		2				
	CO2	91.00				3					3	3		2				
	CO3	90.40				3					3	3		2				
	CO4	91.00				3					3	3		2				
ECN LAB	CO1	59.33	1	1		2	2										3	
	CO2	59.33	1	2		3	3										3	
	CO3	59.33	1	1		1	1										3	
EDC LAB	CO1	66.29	2	2		3	2										3	
	CO2	66.29	2	2	1	3	2										3	
	CO3	66.29	2	2	1	3	2										3	
M - III	CO1	80.59	3	2	2										2			
	CO2	75.55	3	2	2										2			
	CO3	76.94	2	2	1										2			
	CO4	67.84	3	2	2										2			
	CO5	72.36	3	2	2										2			
AEC	CO1	89.73	2	2											2		2	
	CO2	86.72	2	2	1										2		2	
	CO3	91.99	1	2											2		2	
	CO4	76.63	1												2		2	
	CO5	82.24	2	2	3										2		2	

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
DEC	CO1	85.84	1	2										2		2	
	CO2	84.96	2	2	3									2		2	
	CO3	79.89	2	2	3									2		2	
	CO4	81.74	1	2	2									2		2	
PSC	CO1	79.24	2	2	2									1		2	
	CO2	83.72	3	2	3									1	1	2	
	CO3	85.84	3	2	2									1	1	2	
	CO4	71.48	3	2	3									1		2	
	CO5	68.42	1	1	1									1		2	
RVSP	CO1	93.65	3	3		1								1	2		1
	CO2	91.34	2	2		1								1	2		1
	CO3	74.85	2	2		1								1	2		1
	CO4	82.35	2	3		1								1	2		1
SS	CO1	80.70	3	2	1	1								2			3
	CO2	71.00	3	2	1	2								2			3
	CO3	70.81	3	3	1	3								2			3
	CO4	65.06	3	2	1	1								2			3
	CO5	51.43	3	3	3	3								2			3
PEHV	CO1	90.51								3							
	CO2	92.05			1					3							
	CO3	93.64		1	2					3	2						
	CO4	81.63				1		2		3	1						
	CO5	83.56						1	2	3				1			
AEC LAB	CO1	53.80	3	3		3	3									2	
	CO2	53.80	1	2		2	2									1	
	CO3	53.80	1	1		2	2									1	
	CO4	53.80	2	1	1	3	3									2	
	CO5	97.00								1	2	3		1			
PDC LAB	CO1	67.00	3	3		3	3									2	
	CO2	62.00	2	2		3	3									2	
	CO3	68.00	3	1		3	3									2	
	CO4	73.00	2	1	1	3	3									2	
	CO5	97.00								1	2	3		1			
AC	CO1	73.47	2	2										2	3		
	CO2	69.28	1	1										2	3		
	CO3	73.38	1	3										2	3		
	CO4	68.32	2	2										2	3		
	CO5	74.16	3	2										2	3		
AIC	CO1	84.09	2	3	1									2		2	
	CO2	81.61	3	3	1									2		2	
	CO3	79.79	1	2	3									2		2	
	CO4	83.55	3	2	1									1		2	
	CO5	82.42	2	2	3									2		2	

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO	CO1	77.99	1	1	1									1		2	
	CO2	83.33	1	2	1									2		2	
	CO3	87.30	1	2	3									2		2	
	CO4	88.52	2	2	2									2		2	
	CO5	85.49	1	1	1									1		2	
CS	CO1	79.76	1	2	1									2			1
	CO2	81.15	1	3	2									2			2
	CO3	86.04	1	3	2									2			2
	CO4	87.55	1	3	2									2			2
	CO5	86.43	1	3	3									2			2
DSP	CO1	72.89	3	3	1	1								2			2
	CO2	70.19	3	3	2									2			2
	CO3	72.19	3	3	2									2			2
	CO4	65.46	3	3	3	2								2			3
	CO5	67.29	3	3	3	2								2			3
EMFW	CO1	86.08	2	2	1			2						2	3		
	CO2	80.90	2	2	1			2						2	3		
	CO3	89.06	3	3	1			2						2	3		
	CO4	86.82	1	1	1			1	1					2	3		
	CO5	83.66	1	1	1									1	2		
ES	CO1	89.13	3	2	1	2								1			
	CO2	78.10	3	2	1	2								1			
	CO3	91.33	2	3	1	3								1			
	CO4	92.02	2	3	1	3								1			
	CO5	91.37	2	3	1	3								1			
AIC LAB	CO1	71.00	2	2	3	2	2									3	
	CO2	71.00	2	1	2	1	1									3	
	CO3	73.00	2	2	3	1	1									3	
	CO4	100.00								1	2	3		1			
SSP LAB	CO1	71.00	1	1			3										3
	CO2	69.00	2	3		1	3										3
	CO3	74.00	2	2	3	2	3										3
	CO4	100.00								1	2	3		1			
DC	CO1	85.50	1	1										1	2		
	CO2	84.90	1	2										2	2		
	CO3	90.10	1	2	2									2	3		
	CO4	87.30	3	2	3									2	2		
	CO5	82.20	2	2	2									3	2		
DSD - VHDL	CO1	77.80	1		1									1		3	
	CO2	82.80	1		2		2							2		3	
	CO3	81.90	3	2	2		2							2		3	
	CO4	85.90	3	2	3		2							2		3	
	CO5	89.30	2	2	3									2		3	

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)				
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
EMI	CO1	89.00	1	1	1												1		
	CO2	85.00	1	1	3									1			2		
	CO3	89.90	2	2										1			2		
	CO4	88.60	1											1			2		
	CO5	84.90	2	2										1			2		
MP & MC	CO1	66.70	1											1			2		
	CO2	69.40	2	2	2									1			2		
	CO3	78.00	2	2	2									1			3		
	CO4	64.60	1	2										1			2		
	CO5	72.20	2	2	3									1			3		
TSSN	CO1	65.30	2	2										1			2		
	CO2	68.30	2	3										1			2		
	CO3	75.70	1	1										1			2		
	CO4	78.80	1	1										1			1		
	CO5	74.80		2										2			3		
TLWG	CO1	73.70	2	2	3									1			3		
	CO2	27.60		2	2									1			2		
	CO3	59.20	1	3										1			2		
	CO4	60.70	1	3										1			3		
	CO5	59.90	2	2	3									1			3		
ADC LAB	CO1	77.00	1	1		2	1										3		
	CO2	77.00	1	1		1	2										3		
	CO3	69.00	1	1		2	1										3		
	CO4	72.00	1	1		2	1										3		
	CO5	100.00									2	3							
MPMC LAB	CO1	68.00	1	2	1	2	2											2	
	CO2	72.00	1	1	2	2	2											2	
	CO3	76.00	1	2	2	2	2											2	
	CO4	97.65									2	3							
SEMINAR	CO1	80.70	3	2	1		2	2					2			3	3	3	3
	CO2	82.10	1	2	2	2	3	2					2			3	3	3	3
	CO3	72.90												3		3			
	CO4	77.84													3		3		
AWP	CO1	77.10	1												1		1		
	CO2	77.10	2	2	2										2		2		
	CO3	74.30	2	2	3										2		3		
	CO4	73.90	1	1											1		2		
	CO5	69.20	1	1											1		2		
DSD - VERILOG	CO1	67.70	1	1			1								1			2	
	CO2	74.80	1	2	2		2								2			3	
	CO3	68.10	2	2	3		2								2			3	
	CO4	72.00	2	2	3		2								2			3	
	CO5	60.00	2	2	3										1			3	

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
DSOOP	CO1	94.10	3	2			2							2	1		
	CO2	77.20	3	2			2							2	1		
	CO3	80.40	3	2			2							2	1		
	CO4	77.40	3	2			2							2	1		
	CO5	75.40	3	2			2							2	1		
VLSID	CO1	75.40	1	2										1		2	
	CO2	68.20	2	2	3									1		2	
	CO3	68.90	2	2	3									2		3	
	CO4	69.40	2	2	3									2		3	
	CO5	63.30	2	2	2									1		3	
DIP	CO1	73.30	1											1			1
	CO2	74.20	2	2	1									1			2
	CO3	70.20	2	3	3									2			3
	CO4	74.80	1	1	1									1			2
	CO5	72.10	1	1	1									2			2
ESD	CO1	73.40	1	1										1		1	
	CO2	69.00	1		1									1		1	
	CO3	74.20	1	2	2									1		2	
	CO4	65.40	1	1	2									1		2	
	CO5	75.20	2	2	3									1		3	
DSOOP LAB	CO1	76.86	3	2			2							2	1		
	CO2	69.00	3	2			2							2	1		
	CO3	71.08	3	2			2							2	1		
	CO4	71.08	3	2			2							2	1		
	CO5	68.72	3	2			2							2	1		
	CO6	100.00								1	2	3		1			
CPS LAB	CO1	66.00		1		3		2			3			2			
	CO2	66.00		1		3		2			3			2			
	CO3	66.00		1		3		2			3			2			
	CO4	66.00		1		3		2			3			2			
	CO5	66.00		1		3		2			3			2			
	CO6	100.00								1	2	3		1			
MINI PROJECT	CO1	85.94	2	3				3						3	3	3	3
	CO2	78.02	2	3	3	3	3	3	2					3	3	3	3
	CO3	73.48	2	3	3	2	2	3	2				3	3	3	3	3
	CO4	66.56										3		3			
	CO5	78.58								3	3			3			
	CO6	68.40										3		3			
IM	CO1	83.20	2							2	1			2			
	CO2	78.70					2							2			
	CO3	81.70												2			
	CO4	81.60								3	2			2			
	CO5	79.00				2							1	2			

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
MWE	CO1	72.10	1											1	1		
	CO2	61.90	1	2										1	2		
	CO3	73.50	1	1										1	2		
	CO4	58.70	2	2	2									1	3		
	CO5	49.10	1	2										1	2		
OC	CO1	72.00	1											1	2		
	CO2	70.80	1	2	1			1	1					1	2		
	CO3	56.10	1	2	1			1	1					1	1		
	CO4	58.40	2	3	2									1	3		
	CO5	53.00	3	3	2			2	2					1	3		
CMC	CO1	59.30	2	1	1									1	1		
	CO2	58.00	2	3	1									1	2		
	CO3	65.70	1	2	3									1	3		
	CO4	59.00	1	1	1									1	2		
	CO5	69.00	1	1	1									1	2		
CN	CO1	68.00	1	2										1	2		
	CO2	53.90	2	2	3									2	3		
	CO3	46.80	2	2	3									2	3		
	CO4	53.70	1											1	1		
	CO5	43.40	2	2	3					1				1	3		
PLD	CO1	73.60	1	1										1		1	
	CO2	62.10	1	2	1									1		1	
	CO3	57.70	1	2	2									2		3	
	CO4	57.70	1	3	2									1		2	
	CO5	37.70	1	2	3									2		3	
DSD LAB	CO1	78.00	2	2	3	3	3									3	
	CO2	72.00	1	2	3	3	3									2	
	CO3	72.00	1	2		2	2									2	
	CO4	93.00								1	2	3		1			
MWOC LAB	CO1	76.00	1	1	1	1	1								2		
	CO2	73.00	1	1		1	1								2		
	CO3	70.00	2	2	1	2	2								3		
	CO4	70.00	2	2	1	2	2								3		
	CO5	71.00	1	1		1	1								1		
	CO6	96.70								1	2	3		1			
INTERSHIP	CO1	72.20	3	3	2	3		2	2		3			3	3	3	3
	CO2	78.40	3	3	3	3	3	2			3			3	3	3	3
	CO3	81.70									3	3		3			
	CO4	66.10					1			3	3	3		3			
RS	CO1	64.40	1	1										1	2		
	CO2	63.50	1	2										1	1		
	CO3	57.50	1	2										1	2		
	CO4	53.10	1	2										1	2		
	CO5	51.50	1	2										1	2		

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
SC	CO1	62.40	1	2										1	1		
	CO2	44.30	1	2	1									1	2		
	CO3	39.30	2	2	1									1	3		
	CO4	53.50	1	2										1	2		
	CO5	81.90	1											1	2		
AE	CO1	52.50	1	1										1		1	
	CO2	80.20	1	1										1		2	
	CO3	54.10	1	2	1									1		2	
	CO4	81.90	1	1										1		1	
	CO5	84.60	1	1										1		1	
WT	CO1	37.90	2	1	3		2	1						1	2	3	2
	CO2	23.50	2	1	3		2	1						1	2	3	2
	CO3	37.30	2	2	3		2	1						1	2	3	2
	CO4	32.50	2	2	3		2	1						1	2	3	2
	CO5	41.40	2	2	3		2	1						1	2	3	2
MAIN PROJECT	CO1	69.30	2	3				3						3	3	3	3
	CO2	68.90	2	3	3	3	3	3	2					3	3	3	3
	CO3	63.80	2	3	3	2	2	3	2				3	3	3	3	3
	CO4	62.06										3		3			
	CO5	74.25								3	3			3			
	CO6	60.38										3		3			
CVV	CO1	76.90	3	3	3									2	3	3	3
	CO2	72.64										3	3	2			
Direct Attainment (%)			72.00	71.60	70.12	70.83	67.67	68.74	71.78	81.20	77.71	80.99	68.96	73.04	68.46	70.67	70.12

Indirect Attainment (2016 Batch):

1. Exit Survey (2016 Batch):

POs/PSOs	Excellent (4)	Very Good (3)	Good (2)	Poor (1)	Total No of Students Participated	Attainment Value (%)
PO1	52	92	63	1	208	73.44
PO2	54	85	66	3	208	72.84
PO3	50	77	75	6	208	70.55
PO4	46	82	78	2	208	70.67
PO5	50	76	77	5	208	70.55
PO6	56	88	63	1	208	73.92
PO7	59	85	60	4	208	73.92
PO8	62	88	57	1	208	75.36
PO9	63	94	51	0	208	76.44
PO10	69	89	50	0	208	77.28
PO11	63	82	59	4	208	74.52
PO12	59	83	65	1	208	74.04
PSO1	56	89	60	3	208	73.80
PSO2	46	88	70	4	208	71.15
PSO3	51	84	73	0	208	72.36

2. Student Portfolios (2016 Batch):

2.1. Co-curricular Details:

Component	No. of students		Total No. of Final Year Students	%	Weightage	Attainment (%)
Workshops	Participated	123	212	58.02	0.2	11.7
Certification Programs	Participated	93	212	43.87	0.05	2.2
	Certified	93	212	43.87	0.15	6.6
NPTEL	Successfully Completed	146	212	68.87	0.1	6.9
	(ELITE+GOLD) + ELITE	18	212	8.5	0.05	0.5
Technical Fest (Paper Presentation, Poster Presentation, Quiz, Project Expo, etc.)	Participated	98	212	46.23	0.2	9.3
	Awards	14	212	6.61	0.1	0.7
Journal Publications	Involved	204	212	96.23	0.1	9.7
Industrial Visit	Participated	173	212	81.61	0.05	4.1
Attainment (%)						51.7

2.2. Extra-curricular Details (2016 Batch):

Component	No. of students		Total No. of Final Year Students	%	Weightage	Attainment (%)	
Sports & Games	Participated	State Level	0	212	0	0.05	0
		International/ National Level	0	212	0	0.1	0
		University & Institute Level	149	212	70.29	0.1	7.1
	Awards	State Level	0	212	0	0.1	0
		International/ National Level	0	212	0	0.2	0
		University & Institute Level	53	212	25	0.05	1.3
Yoga	Participated	20	212	9.44	0.1	1	
	Awards	20	212	9.44	0.1	1	
Cultural Activities	Participated	60	212	28.31	0.1	2.9	
	Awards	1	212	0.48	0.1	0.1	
Attainment (%)						13.4	

2.3. Extension Activities (NSS, NCC) Details (2016 Batch):

Component	No. of students		Total No. of Final Year Students	%	Weightage	Attainment (%)	
NSS	Participated	Adopted Villages	7	212	3.31	0.2	0.7
		Institute Level /Local Community	121	212	57.08	0.3	17.2
	Awards			26	212	12.27	0.2
NCC	Participated			30	94	31.92	0.1
	Awards ('B' & 'C' certificates)			29	94	30.86	0.2
Attainment (%)						29.8	

2.4. Placements & Higher Studies Details (2016 Batch):

Component	No. of students		Total No. of Final Year Students	%	Weightage	Attainment (%)
Placement	Placed	141	212	66.51	0.8	53.3
Higher Studies	Qualified in Competitive Examinations	09	212	4.25	0.2	0.9
Attainment (%)						54.2

Student Portfolio Attainment:

Component	% Attainment	Program Outcomes (%)												Program Specific Outcomes (%)		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
COCURRICULAR ACTIVITIES	51.7	3	3	3	2	2	2	2	3	3	1	1	3	3	3	3
EXTRA CURRICULAR ACTIVITIES	13.4								3	3						
NSS and NCC	29.8								3	3	3					
PLACEMENT & HIGHER STUDIES	54.2	3	3	3	3	3				3	3		3	3	3	3
% Pos and PSOs Attainment		52.95	52.95	52.95	53.20	53.20	51.70	38.56	31.63	37.28	53.58	51.70	52.95	52.95	52.95	52.95

The Following Table depicts the POs & PSOs Indirect Attainment.

Assessment Tool	Program Outcomes (%)												Program Specific Outcomes (%)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Program Exit Survey (%)	73.44	72.84	70.55	70.67	70.55	73.92	73.92	75.36	76.44	77.28	74.52	74.04	73.80	71.15	72.36
Portfolio Component (%)	52.95	52.95	52.95	53.20	53.20	51.70	38.56	31.63	37.28	53.58	51.70	52.95	52.95	52.95	52.95
Indirect Attainment (%)	17.93	17.87	17.65	17.71	17.70	17.73	15.10	13.86	15.10	18.44	17.79	17.99	17.97	17.71	17.83

The overall attainment of the 2016-20 batch is depicted in the following table

Assessment Tool	Program Outcomes (%)												Program Specific Outcomes (%)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Target (%)	66.00	66.00	65.00	66.00	67.00	64.00	64.00	64.00	66.00	67.00	61.00	64.00	67.00	67.00	65.00
Direct Attainment (%)	72.00	71.60	70.12	70.83	67.67	68.74	71.78	81.20	77.71	80.99	68.96	73.04	68.46	70.67	70.12
Indirect Attainment (%)	17.93	17.87	17.65	17.71	17.70	17.73	15.10	13.86	15.10	18.44	17.79	17.99	17.97	17.71	17.83
PO Attainment (%)	68.33	67.99	66.73	67.29	65.06	65.85	65.35	70.7	69.5	75.14	66.06	69.12	65.89	67.17	66.91

Date: 14.12.2020

G. Suresh
PAC, Coordinator

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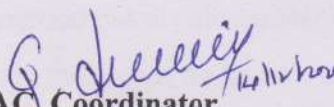
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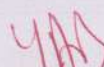
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Department of ECE

PO – PSO Attainments for Last 3 Batches			
PO / PSO	2014 Batch	2015 Batch	2016 Batch
PO1:Engineering knowledge	68.77	70.96	68.33
PO2:Problem analysis	68.6	71.31	67.99
PO3:Design/development of solutions	67.83	70.13	66.73
PO4:Conduct investigations of complex problems	68.27	69.08	67.29
PO5:Modern tool usage	64.93	67.28	65.06
PO6:The engineer and society	67.46	69.82	65.85
PO7:Environment and sustainability	66.81	73.27	65.35
PO8:Ethics	74.99	74.45	70.7
PO9:Individual and team work	70.87	70.44	69.5
PO9:Communication	72.62	73.3	75.14
PO10:Project management and finance	69.59	67.78	66.06
PO11:Life-long learning	70.44	71.79	69.12
PSO1: Communications	70.37	74.35	65.89
PSO2: VLSI & Embedded Systems	65.49	70.28	67.17
PSO3: Signal Processing	70.51	73.43	66.91

Date: 14/12/2020


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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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Dt:16.12.2020

Department of Electronics & Communication Engineering

POs& PSOs Attainment Levels for 2016 Admitted Batch and Actions Taken for improvement


PO	Target	Attained	Observation
PO1: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems	66	68.33	1. Out of 69 courses, 62 courses are contributing to PO1. Among these 69 courses, contribution by 10 courses is less. 2. Contribution through indirect attainment is bit lagging
<p>Action 1: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives.</p> <p>Action 2: The theory course attainments can be enhanced by preparing the students for test items with more knowledge based questions.</p>			
PO	Target	Attained	Observation
PO2: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences	66	67.99	63 out of 69 courses are contributing for PO2. Lesser values of CO attainments are observed for 12 courses. Contribution through indirect attainment is slightly low.
<p>Action1: It was observed that attainment values that are less in theory courses corresponds to application oriented courses and thus can be enhanced by organizing guest lectures , symposiums in the relevant domain</p> <p>Action2: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackathon etc.</p>			
PO	Target	Attained	Observation
PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	65	66.73	1. The number of course mapped to this PO is 54. Eleven courses have not reached the desired attainment level.

<p>Action1: It was observed that attainment values that are less in theory courses corresponds to application oriented courses and thus can be enhanced by organizing guest lectures , symposiums in the relevant domain.</p> <p>Action2: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackthon etc.</p> <p>Action3: The attainment in the courses that are more mathematics based can be improved by practicing more problems as well as giving assignments involving derivative questions.</p>			
PO	Target	Attained	Observation
PO4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	66	67.29	1. Two out of 27 courses that are correlated to this PO have not got significant attainment values.
<p>Action 1: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives.</p> <p>Action 2: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackthon etc.</p>			
PO	Target	Attained	Observation
PO5: 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.	67	65.06	Out of 24 courses that are contributing to PO5, three got less attainment.
<p>Action1: It was observed that attainment in web technologies is very less and can be strengthened by conducting more practical sessions involving more real time problems.</p> <p>Action 2: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives.</p> <p>Action 3: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackthon etc.</p>			
PO	Target	Attained	Observation
PO6: 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	64	65.85	Out of 13 courses that are contributing to PO6, two got less attainment.
<p>Action1: The usages of ICT tool are suggested for theoretical courses.</p> <p>Action2: Students are encouraged to participate in co curricular activities.</p>			
PO	Target	Attained	Observation
PO7: Understand the impact of the professional engineering solutions in	64	65.35	Out of 7 courses that are

societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development			contributing to PO6, one got less attainment. Contribution through extension activity is lagging
<p>Action1: The usages of ICT tool are suggested for theoretical courses. Action2: The students will be encouraged to participate in activities that contribute to the society like NCC and NSS.</p>			
PO	Target	Attained	Observation
PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice	64	70.7	Out of 15 courses that are contributing to PO7, one got less attainment. Contribution through extension activity is lagging
<p>Action1: The usages of ICT tool are suggested for theoretical courses Action2: Student should be more encouraged towards participation in portfolio components like Co curricular and Extra-curricular activities.</p>			
PO	Target	Attained	Observation
PO9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	66	69.5	Contribution of one laboratory course is slightly low.
<p>Action1: The faculty of the laboratory courses was advised to conduct more demonstration classes Action2: Student should be more encouraged towards participation in extracurricular activities, co curricular activities, and NCC & NSS activities.</p>			
PO	Target	Attained	Observation
PO10: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions	67	75.14	Contribution of one laboratory course is slightly low.
<p>Action1: Further improvement can be achieved by upgrading the student's knowledge in computer programming. Action2: Student should be more encouraged towards participation in co- curricular activities.</p>			
PO	Target	Attained	Observation
PO11: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	61	66.06	Contribution through Co curricular activities is lagging

Action1: Student should be more encouraged towards participation in co- curricular activities			
PO	Target	Attained	Observation
PO12: 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.	64	69.12	24 out of 69 courses that are mapped to this PO. 9courses bit lagging in the attainment level. Contribution by co- curricular activities is slightly low.
<p>Action1: The theory course attainments can be enhanced by preparing the students for test items with more knowledge based questions.</p> <p>Action2: The attainment in the courses that are more mathematics based can be improved by practicing more problems as well as giving assignments involving derivative questions.</p> <p>Action3: The faculty of the laboratory courses was advised to conduct more demonstration classes.</p> <p>Action4: Student should be more encouraged towards participation in co- curricular activities</p>			
PSO	Target	Attained	Observation
PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.	67	65.89	1. Out of 69 courses, 28courses are mapped to this PSO. Only for 5 courses the attainment levels are away from the targets. 2. Contribution by indirect attainment is slightly low.
<p>Action1: It was observed that attainment values that are less in theory courses corresponds to application oriented courses and thus can be enhanced by organizing guest lectures , symposiums in the relevant domain.</p> <p>Action 2::The attainment in the courses that are more mathematics based can be improved by practicing more problems as well as giving assignments involving derivative questions</p> <p>Action 3: Student should be more encouraged towards participation in co-curricular activities</p>			
PSO	Target	Attained	Observation
PSO2: Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools	67	67.17	12 courses are mapped to this PO among 69 courses. Only for 5 courses the attainment levels are away from the targets.

			Contribution by indirect attainment is slightly low.
<p>Action1: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives</p> <p>Action2: Application oriented concepts can emphasize with help of examples and ICT tools.</p>			
PSO	Target	Attained	Observation
PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.	65	66.91	<p>12 courses are mapped to this PO among 69 courses. Only for one courses the attainment levels are away from the targets.</p> <p>Contribution by indirect attainment is slightly low.</p>
<p>Action1: It was observed that attainment in web technologies is very less and can be strengthened by conducting more practical sessions involving more real time problems</p> <p>Action2: Students will be motivated to undergo certification programs in relevant domain.</p>			


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Department of ECE

Attainment of Program Outcomes and Program Specific Outcomes (2016 - 20 Batch)

a) Direct assessment tools and attainment process:

- The performance of the students in the examinations during the semester in each course is used to compute the level of attainment of the POs and PSOs through the mapping of questions to COs & COs to POs and PSOs.
- CO-PO & PSO mapping for all the courses in the program is prepared by The program coordinator.
- An MS - Excel sheet is used to compute the level of attainment of the POs and PSOs
- The attainment of the POs & PSOs is computed as a weighted average of attainment of the COs that are mapped to the given POs & PSOs.

b) Indirect assessment tools and attainment process:

The following indirect assessment tools are used for calculating PO & PSO attainments.

- (i) Program Exit survey
- (ii) Student portfolio.

The overall PO & PSO attainments are calculated as follows:

- ✓ 70% for direct assessment tool
- ✓ 30% for indirect assessment through surveys
 - 10% for program exit survey
 - 20% for student portfolio

Results of evaluation of each PO & PSO.

- The attainment of POs and PSOs are compared with the expected level and the process is carried out to continuously improve the attainment level.
- In addition to the above, an internal academic audit is being carried out to observe and realize how direct and indirect assessment tools can be improved to ensure that all course outcomes are realized and aligned with POs & PSOs.
- Every year Action Taken Report(ATR) is to be prepared to attain expected levels of POs and PSOs

The following table1 depicts the POs & PSOs Direct Attainment

1. Direct Attainment Values – 2016 Batch

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Eng - I	CO1	63.45						2			3	3		2			
	CO2	62.00						2			3	3		2			
	CO3	76.00						2			3	3		2			
	CO4	70.00						2			3	3		2			
	CO5	72.00						2			3	3		2			
M - I	CO1	77.45	3	2	2									2			
	CO2	74.32	3	2	2									2			
	CO3	73.43	2	2	1									2			
	CO4	63.41	3	2	2									2			
	CO5	73.00	3	2	2									2			
EP	CO1	72.15	3	3		2								3			
	CO2	72.20	3	3		2								3			
	CO3	64.78	3	3	2	2	2							3			
	CO4	61.11	3	3	3	2	2							3			
	CO5	61.19	3	3		2	1							3			
ECN - I	CO1	68.26	2	2	1									1		2	
	CO2	63.03	2	3	1									1		2	
	CO3	65.00	2	2	1									1		2	
	CO4	51.67	2	3	1									1		2	
	CO5	49.08	2	1	1									1		2	
CP	CO1	74.27	2	3									1	1			
	CO2	65.77	2	3	2	1							1	1			
	CO3	73.43	2	3	2	1							1	1			
	CO4	58.67	2	3	2								1	1			
	CO5	62.40	2	3	2								1	1			
EP Lab	CO1	89.06	3	3	2	2					3			3			
	CO2	89.06	3	3	2	2					3			3			
	CO3	89.06	3	3							3			3			
	CO4	89.06	3	3							3			3			
EWS	CO1	61.78	3		2	3	3	3			3			2			
	CO2	61.78	3		2	3	3	3			3			2			
	CO3	61.78	3		2	3	3	3			3			2			
	CO4	61.78	3		2	3	3	3			3			2			
CP Lab	CO1	56.44	2	3	1						1	1		2			
	CO2	56.44	2	3	1						1	1		2			
	CO3	56.44	2	3	1						1	1		2			
CAED LAB	CO1	63.78					3				1		2	1			
	CO2	63.78					3				1		2	1			
	CO3	63.78					3				1		2	1			
	CO4	63.78					3				1		2	1			
ENG - II	CO1	72.61					2			3	3		2				
	CO2	74.11					2			3	3		2				
	CO3	74.75					2			3	3		2				
	CO4	72.34					2			3	3		2				
	CO5	67.64					2			3	3		2				

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
M-II	CO1	78.00	3	2	2										2			
	CO2	79.00	3	2	2										2			
	CO3	75.00	2	2	1										2			
	CO4	71.00	3	2	2										2			
	CO5	64.00	3	2	2										2			
EC	CO1	63.16	3	3	2			2	1						2			
	CO2	66.34	3	3	2			2	1						2			
	CO3	73.09	3	2	3			2	1						2			
	CO4	68.37	3	2	2			2	1						2			
	CO5	71.10	3	2	2			3	2						2			
ECN - II	CO1	75.58	2	3	1										1		2	
	CO2	73.71	2	3	3										1		2	
	CO3	74.11	2	3	3										1		2	
	CO4	63.80	2	3	3										1		2	
	CO5	62.41	1												1		2	
EDC	CO1	79.79	3	2											2		2	
	CO2	79.24	3	2											2		2	
	CO3	80.69	3	1											2		2	
	CO4	68.61	3	3	2										2		2	
	CO5	60.73	3	2	2										2		2	
EC LAB	CO1	90.82	3	3		2		2	2									
	CO2	90.82	2	3														
	CO3	90.82	3	2														
	CO4	90.82	2	2														
ENGLISH LAB	CO1	90.00				3					3	3		2				
	CO2	91.00				3					3	3		2				
	CO3	90.40				3					3	3		2				
	CO4	91.00				3					3	3		2				
ECN LAB	CO1	59.33	1	1		2	2										3	
	CO2	59.33	1	2		3	3										3	
	CO3	59.33	1	1		1	1										3	
EDC LAB	CO1	66.29	2	2		3	2										3	
	CO2	66.29	2	2	1	3	2										3	
	CO3	66.29	2	2	1	3	2										3	
M - III	CO1	80.59	3	2	2										2			
	CO2	75.55	3	2	2										2			
	CO3	76.94	2	2	1										2			
	CO4	67.84	3	2	2										2			
	CO5	72.36	3	2	2										2			
AEC	CO1	89.73	2	2											2		2	
	CO2	86.72	2	2	1										2		2	
	CO3	91.99	1	2											2		2	
	CO4	76.63	1												2		2	
	CO5	82.24	2	2	3										2		2	

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
DEC	CO1	85.84	1	2										2		2	
	CO2	84.96	2	2	3									2		2	
	CO3	79.89	2	2	3									2		2	
	CO4	81.74	1	2	2									2		2	
PSC	CO1	79.24	2	2	2									1		2	
	CO2	83.72	3	2	3									1	1	2	
	CO3	85.84	3	2	2									1	1	2	
	CO4	71.48	3	2	3									1		2	
	CO5	68.42	1	1	1									1		2	
RVSP	CO1	93.65	3	3		1								1	2		1
	CO2	91.34	2	2		1								1	2		1
	CO3	74.85	2	2		1								1	2		1
	CO4	82.35	2	3		1								1	2		1
SS	CO1	80.70	3	2	1	1								2			3
	CO2	71.00	3	2	1	2								2			3
	CO3	70.81	3	3	1	3								2			3
	CO4	65.06	3	2	1	1								2			3
	CO5	51.43	3	3	3	3								2			3
PEHV	CO1	90.51								3							
	CO2	92.05			1					3							
	CO3	93.64		1	2					3	2						
	CO4	81.63				1		2		3	1						
	CO5	83.56						1	2	3				1			
AEC LAB	CO1	53.80	3	3		3	3									2	
	CO2	53.80	1	2		2	2									1	
	CO3	53.80	1	1		2	2									1	
	CO4	53.80	2	1	1	3	3									2	
	CO5	97.00								1	2	3		1			
PDC LAB	CO1	67.00	3	3		3	3									2	
	CO2	62.00	2	2		3	3									2	
	CO3	68.00	3	1		3	3									2	
	CO4	73.00	2	1	1	3	3									2	
	CO5	97.00								1	2	3		1			
AC	CO1	73.47	2	2										2	3		
	CO2	69.28	1	1										2	3		
	CO3	73.38	1	3										2	3		
	CO4	68.32	2	2										2	3		
	CO5	74.16	3	2										2	3		
AIC	CO1	84.09	2	3	1									2		2	
	CO2	81.61	3	3	1									2		2	
	CO3	79.79	1	2	3									2		2	
	CO4	83.55	3	2	1									1		2	
	CO5	82.42	2	2	3									2		2	

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO	CO1	77.99	1	1	1									1		2	
	CO2	83.33	1	2	1									2		2	
	CO3	87.30	1	2	3									2		2	
	CO4	88.52	2	2	2									2		2	
	CO5	85.49	1	1	1									1		2	
CS	CO1	79.76	1	2	1									2			1
	CO2	81.15	1	3	2									2			2
	CO3	86.04	1	3	2									2			2
	CO4	87.55	1	3	2									2			2
	CO5	86.43	1	3	3									2			2
DSP	CO1	72.89	3	3	1	1								2			2
	CO2	70.19	3	3	2									2			2
	CO3	72.19	3	3	2									2			2
	CO4	65.46	3	3	3	2								2			3
	CO5	67.29	3	3	3	2								2			3
EMFW	CO1	86.08	2	2	1			2						2	3		
	CO2	80.90	2	2	1			2						2	3		
	CO3	89.06	3	3	1			2						2	3		
	CO4	86.82	1	1	1			1	1					2	3		
	CO5	83.66	1	1	1									1	2		
ES	CO1	89.13	3	2	1	2								1			
	CO2	78.10	3	2	1	2								1			
	CO3	91.33	2	3	1	3								1			
	CO4	92.02	2	3	1	3								1			
	CO5	91.37	2	3	1	3								1			
AIC LAB	CO1	71.00	2	2	3	2	2									3	
	CO2	71.00	2	1	2	1	1									3	
	CO3	73.00	2	2	3	1	1									3	
	CO4	100.00								1	2	3		1			
SSP LAB	CO1	71.00	1	1			3										3
	CO2	69.00	2	3		1	3										3
	CO3	74.00	2	2	3	2	3										3
	CO4	100.00								1	2	3		1			
DC	CO1	85.50	1	1										1	2		
	CO2	84.90	1	2										2	2		
	CO3	90.10	1	2	2									2	3		
	CO4	87.30	3	2	3									2	2		
	CO5	82.20	2	2	2									3	2		
DSD - VHDL	CO1	77.80	1		1									1		3	
	CO2	82.80	1		2		2							2		3	
	CO3	81.90	3	2	2		2							2		3	
	CO4	85.90	3	2	3		2							2		3	
	CO5	89.30	2	2	3									2		3	

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
DSOOP	CO1	94.10	3	2			2							2	1		
	CO2	77.20	3	2			2							2	1		
	CO3	80.40	3	2			2							2	1		
	CO4	77.40	3	2			2							2	1		
	CO5	75.40	3	2			2							2	1		
VLSID	CO1	75.40	1	2										1		2	
	CO2	68.20	2	2	3									1		2	
	CO3	68.90	2	2	3									2		3	
	CO4	69.40	2	2	3									2		3	
	CO5	63.30	2	2	2									1		3	
DIP	CO1	73.30	1											1			1
	CO2	74.20	2	2	1									1			2
	CO3	70.20	2	3	3									2			3
	CO4	74.80	1	1	1									1			2
	CO5	72.10	1	1	1									2			2
ESD	CO1	73.40	1	1										1		1	
	CO2	69.00	1		1									1		1	
	CO3	74.20	1	2	2									1		2	
	CO4	65.40	1	1	2									1		2	
	CO5	75.20	2	2	3									1		3	
DSOOP LAB	CO1	76.86	3	2			2							2	1		
	CO2	69.00	3	2			2							2	1		
	CO3	71.08	3	2			2							2	1		
	CO4	71.08	3	2			2							2	1		
	CO5	68.72	3	2			2							2	1		
	CO6	100.00								1	2	3		1			
CPS LAB	CO1	66.00		1		3		2			3			2			
	CO2	66.00		1		3		2			3			2			
	CO3	66.00		1		3		2			3			2			
	CO4	66.00		1		3		2			3			2			
	CO5	66.00		1		3		2			3			2			
	CO6	100.00								1	2	3		1			
MINI PROJECT	CO1	85.94	2	3				3						3	3	3	3
	CO2	78.02	2	3	3	3	3	3	2					3	3	3	3
	CO3	73.48	2	3	3	2	2	3	2				3	3	3	3	3
	CO4	66.56										3		3			
	CO5	78.58								3	3			3			
	CO6	68.40										3		3			
IM	CO1	83.20	2							2	1			2			
	CO2	78.70					2							2			
	CO3	81.70												2			
	CO4	81.60								3	2			2			
	CO5	79.00				2							1	2			

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
MWE	CO1	72.10	1											1	1		
	CO2	61.90	1	2										1	2		
	CO3	73.50	1	1										1	2		
	CO4	58.70	2	2	2									1	3		
	CO5	49.10	1	2										1	2		
OC	CO1	72.00	1											1	2		
	CO2	70.80	1	2	1			1	1					1	2		
	CO3	56.10	1	2	1			1	1					1	1		
	CO4	58.40	2	3	2									1	3		
	CO5	53.00	3	3	2			2	2					1	3		
CMC	CO1	59.30	2	1	1									1	1		
	CO2	58.00	2	3	1									1	2		
	CO3	65.70	1	2	3									1	3		
	CO4	59.00	1	1	1									1	2		
	CO5	69.00	1	1	1									1	2		
CN	CO1	68.00	1	2										1	2		
	CO2	53.90	2	2	3									2	3		
	CO3	46.80	2	2	3									2	3		
	CO4	53.70	1											1	1		
	CO5	43.40	2	2	3					1				1	3		
PLD	CO1	73.60	1	1										1		1	
	CO2	62.10	1	2	1									1		1	
	CO3	57.70	1	2	2									2		3	
	CO4	57.70	1	3	2									1		2	
	CO5	37.70	1	2	3									2		3	
DSD LAB	CO1	78.00	2	2	3	3	3									3	
	CO2	72.00	1	2	3	3	3									2	
	CO3	72.00	1	2		2	2									2	
	CO4	93.00								1	2	3		1			
MWOC LAB	CO1	76.00	1	1	1	1	1								2		
	CO2	73.00	1	1		1	1								2		
	CO3	70.00	2	2	1	2	2								3		
	CO4	70.00	2	2	1	2	2								3		
	CO5	71.00	1	1		1	1								1		
	CO6	96.70								1	2	3		1			
INTERSHIP	CO1	72.20	3	3	2	3		2	2		3			3	3	3	3
	CO2	78.40	3	3	3	3	3	2			3			3	3	3	3
	CO3	81.70									3	3		3			
	CO4	66.10					1			3	3	3		3			
RS	CO1	64.40	1	1										1	2		
	CO2	63.50	1	2										1	1		
	CO3	57.50	1	2										1	2		
	CO4	53.10	1	2										1	2		
	CO5	51.50	1	2										1	2		

Course	COs	CO Attainment Value (%)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
SC	CO1	62.40	1	2										1	1		
	CO2	44.30	1	2	1									1	2		
	CO3	39.30	2	2	1									1	3		
	CO4	53.50	1	2										1	2		
	CO5	81.90	1											1	2		
AE	CO1	52.50	1	1										1		1	
	CO2	80.20	1	1										1		2	
	CO3	54.10	1	2	1									1		2	
	CO4	81.90	1	1										1		1	
	CO5	84.60	1	1										1		1	
WT	CO1	37.90	2	1	3		2	1						1	2	3	2
	CO2	23.50	2	1	3		2	1						1	2	3	2
	CO3	37.30	2	2	3		2	1						1	2	3	2
	CO4	32.50	2	2	3		2	1						1	2	3	2
	CO5	41.40	2	2	3		2	1						1	2	3	2
MAIN PROJECT	CO1	69.30	2	3				3						3	3	3	3
	CO2	68.90	2	3	3	3	3	3	2					3	3	3	3
	CO3	63.80	2	3	3	2	2	3	2				3	3	3	3	3
	CO4	62.06										3		3			
	CO5	74.25								3	3			3			
	CO6	60.38										3		3			
CVV	CO1	76.90	3	3	3									2	3	3	3
	CO2	72.64									3	3		2			
Direct Attainment (%)			72.00	71.60	70.12	70.83	67.67	68.74	71.78	81.20	77.71	80.99	68.96	73.04	68.46	70.67	70.12

Indirect Attainment (2016 Batch):

1. Exit Survey (2016 Batch):

POs/PSOs	Excellent (4)	Very Good (3)	Good (2)	Poor (1)	Total No of Students Participated	Attainment Value (%)
PO1	52	92	63	1	208	73.44
PO2	54	85	66	3	208	72.84
PO3	50	77	75	6	208	70.55
PO4	46	82	78	2	208	70.67
PO5	50	76	77	5	208	70.55
PO6	56	88	63	1	208	73.92
PO7	59	85	60	4	208	73.92
PO8	62	88	57	1	208	75.36
PO9	63	94	51	0	208	76.44
PO10	69	89	50	0	208	77.28
PO11	63	82	59	4	208	74.52
PO12	59	83	65	1	208	74.04
PSO1	56	89	60	3	208	73.80
PSO2	46	88	70	4	208	71.15
PSO3	51	84	73	0	208	72.36

2. Student Portfolios (2016 Batch):

2.1. Co-curricular Details:

Component	No. of students		Total No. of Final Year Students	%	Weightage	Attainment (%)
Workshops	Participated	123	212	58.02	0.2	11.7
Certification Programs	Participated	93	212	43.87	0.05	2.2
	Certified	93	212	43.87	0.15	6.6
NPTEL	Successfully Completed	146	212	68.87	0.1	6.9
	(ELITE+GOLD) + ELITE	18	212	8.5	0.05	0.5
Technical Fest (Paper Presentation, Poster Presentation, Quiz, Project Expo, etc.)	Participated	98	212	46.23	0.2	9.3
	Awards	14	212	6.61	0.1	0.7
Journal Publications	Involved	204	212	96.23	0.1	9.7
Industrial Visit	Participated	173	212	81.61	0.05	4.1
Attainment (%)						51.7

2.2. Extra-curricular Details (2016 Batch):

Component	No. of students		Total No. of Final Year Students	%	Weightage	Attainment (%)	
Sports & Games	Participated	State Level	0	212	0	0.05	0
		International/National Level	0	212	0	0.1	0
		University & Institute Level	149	212	70.29	0.1	7.1
	Awards	State Level	0	212	0	0.1	0
		International/National Level	0	212	0	0.2	0
		University & Institute Level	53	212	25	0.05	1.3
Yoga	Participated	20	212	9.44	0.1	1	
	Awards	20	212	9.44	0.1	1	
Cultural Activities	Participated	60	212	28.31	0.1	2.9	
	Awards	1	212	0.48	0.1	0.1	
Attainment (%)						13.4	

2.3. Extension Activities (NSS, NCC) Details (2016 Batch):

Component	No. of students			Total No. of Final Year Students	%	Weightage	Attainment (%)
NSS	Participated	Adopted Villages	7	212	3.31	0.2	0.7
		Institute Level /Local Community	121	212	57.08	0.3	17.2
	Awards			26	212	12.27	0.2
NCC	Participated			30	94	31.92	0.1
	Awards ('B' & 'C' certificates)			29	94	30.86	0.2
Attainment (%)							29.8

2.4. Placements & Higher Studies Details (2016 Batch):

Component	No. of students		Total No. of Final Year Students	%	Weightage	Attainment (%)
Placement	Placed	141	212	66.51	0.8	53.3
Higher Studies	Qualified in Competitive Examinations	09	212	4.25	0.2	0.9
Attainment (%)						54.2

Student Portfolio Attainment:

Component	% Attainment	Program Outcomes (%)												Program Specific Outcomes (%)		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
COCURRICULAR ACTIVITIES	51.7	3	3	3	2	2	2	2	3	3	1	1	3	3	3	3
EXTRA CURRICULAR ACTIVITIES	13.4								3	3						
NSS and NCC	29.8							3	3	3						
PLACEMENT & HIGHER STUDIES	54.2	3	3	3	3	3				3	3		3	3	3	3
% Pos and PSOs Attainment		52.95	52.95	52.95	53.20	53.20	51.70	38.56	31.63	37.28	53.58	51.70	52.95	52.95	52.95	52.95

The Following Table depicts the POs & PSOs Indirect Attainment.

Assessment Tool	Program Outcomes (%)												Program Specific Outcomes (%)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Program Exit Survey (%)	73.44	72.84	70.55	70.67	70.55	73.92	73.92	75.36	76.44	77.28	74.52	74.04	73.80	71.15	72.36
Portfolio Component (%)	52.95	52.95	52.95	53.20	53.20	51.70	38.56	31.63	37.28	53.58	51.70	52.95	52.95	52.95	52.95
Indirect Attainment (%)	17.93	17.87	17.65	17.71	17.70	17.73	15.10	13.86	15.10	18.44	17.79	17.99	17.97	17.71	17.83

The overall attainment of the 2016-20 batch is depicted in the following table

Assessment Tool	Program Outcomes (%)												Program Specific Outcomes (%)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Target (%)	66.00	66.00	65.00	66.00	67.00	64.00	64.00	64.00	66.00	67.00	61.00	64.00	67.00	67.00	65.00
Direct Attainment (%)	72.00	71.60	70.12	70.83	67.67	68.74	71.78	81.20	77.71	80.99	68.96	73.04	68.46	70.67	70.12
Indirect Attainment (%)	17.93	17.87	17.65	17.71	17.70	17.73	15.10	13.86	15.10	18.44	17.79	17.99	17.97	17.71	17.83
PO Attainment (%)	68.33	67.99	66.73	67.29	65.06	65.85	65.35	70.7	69.5	75.14	66.06	69.12	65.89	67.17	66.91

Date: 14.12.2020

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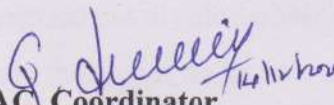
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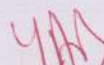
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

Department of ECE

PO – PSO Attainments for Last 3 Batches			
PO / PSO	2014 Batch	2015 Batch	2016 Batch
PO1:Engineering knowledge	68.77	70.96	68.33
PO2:Problem analysis	68.6	71.31	67.99
PO3:Design/development of solutions	67.83	70.13	66.73
PO4:Conduct investigations of complex problems	68.27	69.08	67.29
PO5:Modern tool usage	64.93	67.28	65.06
PO6:The engineer and society	67.46	69.82	65.85
PO7:Environment and sustainability	66.81	73.27	65.35
PO8:Ethics	74.99	74.45	70.7
PO9:Individual and team work	70.87	70.44	69.5
PO9:Communication	72.62	73.3	75.14
PO10:Project management and finance	69.59	67.78	66.06
PO11:Life-long learning	70.44	71.79	69.12
PSO1: Communications	70.37	74.35	65.89
PSO2: VLSI & Embedded Systems	65.49	70.28	67.17
PSO3: Signal Processing	70.51	73.43	66.91

Date: 14/12/2020


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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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Dt:16.12.2020

Department of Electronics & Communication Engineering

POs& PSOs Attainment Levels for 2016 Admitted Batch and Actions Taken for improvement


PO	Target	Attained	Observation
PO1: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems	66	68.33	1. Out of 69 courses, 62 courses are contributing to PO1. Among these 69 courses, contribution by 10 courses is less. 2. Contribution through indirect attainment is bit lagging
<p>Action 1: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives.</p> <p>Action 2: The theory course attainments can be enhanced by preparing the students for test items with more knowledge based questions.</p>			
PO	Target	Attained	Observation
PO2: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences	66	67.99	63 out of 69 courses are contributing for PO2. Lesser values of CO attainments are observed for 12 courses. Contribution through indirect attainment is slightly low.
<p>Action1: It was observed that attainment values that are less in theory courses corresponds to application oriented courses and thus can be enhanced by organizing guest lectures , symposiums in the relevant domain</p> <p>Action2: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackathon etc.</p>			
PO	Target	Attained	Observation
PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	65	66.73	1. The number of course mapped to this PO is 54. Eleven courses have not reached the desired attainment level.

<p>Action1: It was observed that attainment values that are less in theory courses corresponds to application oriented courses and thus can be enhanced by organizing guest lectures , symposiums in the relevant domain.</p> <p>Action2: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackthon etc.</p> <p>Action3: The attainment in the courses that are more mathematics based can be improved by practicing more problems as well as giving assignments involving derivative questions.</p>			
PO	Target	Attained	Observation
PO4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	66	67.29	1. Two out of 27 courses that are correlated to this PO have not got significant attainment values.
<p>Action 1: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives.</p> <p>Action 2: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackthon etc.</p>			
PO	Target	Attained	Observation
PO5: 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.	67	65.06	Out of 24 courses that are contributing to PO5, three got less attainment.
<p>Action1: It was observed that attainment in web technologies is very less and can be strengthened by conducting more practical sessions involving more real time problems.</p> <p>Action 2: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives.</p> <p>Action 3: To strengthen the portfolio components students need to be encouraged to undergo certification programs, participate in workshops, hackthon etc.</p>			
PO	Target	Attained	Observation
PO6: 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	64	65.85	Out of 13 courses that are contributing to PO6, two got less attainment.
<p>Action1: The usages of ICT tool are suggested for theoretical courses.</p> <p>Action2: Students are encouraged to participate in co curricular activities.</p>			
PO	Target	Attained	Observation
PO7: Understand the impact of the professional engineering solutions in	64	65.35	Out of 7 courses that are

societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development			contributing to PO6, one got less attainment. Contribution through extension activity is lagging
<p>Action1: The usages of ICT tool are suggested for theoretical courses. Action2: The students will be encouraged to participate in activities that contribute to the society like NCC and NSS.</p>			
PO	Target	Attained	Observation
PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice	64	70.7	Out of 15 courses that are contributing to PO7, one got less attainment. Contribution through extension activity is lagging
<p>Action1: The usages of ICT tool are suggested for theoretical courses Action2: Student should be more encouraged towards participation in portfolio components like Co curricular and Extra-curricular activities.</p>			
PO	Target	Attained	Observation
PO9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	66	69.5	Contribution of one laboratory course is slightly low.
<p>Action1: The faculty of the laboratory courses was advised to conduct more demonstration classes Action2: Student should be more encouraged towards participation in extracurricular activities, co curricular activities, and NCC & NSS activities.</p>			
PO	Target	Attained	Observation
PO10: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions	67	75.14	Contribution of one laboratory course is slightly low.
<p>Action1: Further improvement can be achieved by upgrading the student's knowledge in computer programming. Action2: Student should be more encouraged towards participation in co- curricular activities.</p>			
PO	Target	Attained	Observation
PO11: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	61	66.06	Contribution through Co curricular activities is lagging

Action1: Student should be more encouraged towards participation in co- curricular activities			
PO	Target	Attained	Observation
PO12: 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.	64	69.12	24 out of 69 courses that are mapped to this PO. 9courses bit lagging in the attainment level. Contribution by co- curricular activities is slightly low.
<p>Action1: The theory course attainments can be enhanced by preparing the students for test items with more knowledge based questions.</p> <p>Action2: The attainment in the courses that are more mathematics based can be improved by practicing more problems as well as giving assignments involving derivative questions.</p> <p>Action3: The faculty of the laboratory courses was advised to conduct more demonstration classes.</p> <p>Action4: Student should be more encouraged towards participation in co- curricular activities</p>			
PSO	Target	Attained	Observation
PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.	67	65.89	1. Out of 69 courses, 28courses are mapped to this PSO. Only for 5 courses the attainment levels are away from the targets. 2. Contribution by indirect attainment is slightly low.
<p>Action1: It was observed that attainment values that are less in theory courses corresponds to application oriented courses and thus can be enhanced by organizing guest lectures , symposiums in the relevant domain.</p> <p>Action 2::The attainment in the courses that are more mathematics based can be improved by practicing more problems as well as giving assignments involving derivative questions</p> <p>Action 3: Student should be more encouraged towards participation in co-curricular activities</p>			
PSO	Target	Attained	Observation
PSO2: Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools	67	67.17	12 courses are mapped to this PO among 69 courses. Only for 5 courses the attainment levels are away from the targets.

			Contribution by indirect attainment is slightly low.
<p>Action1: The attainment in the laboratory courses can be further improved by redefining the experiments with quality objectives</p> <p>Action2: Application oriented concepts can emphasize with help of examples and ICT tools.</p>			
PSO	Target	Attained	Observation
PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.	65	66.91	<p>12 courses are mapped to this PO among 69 courses. Only for one courses the attainment levels are away from the targets.</p> <p>Contribution by indirect attainment is slightly low.</p>
<p>Action1: It was observed that attainment in web technologies is very less and can be strengthened by conducting more practical sessions involving more real time problems</p> <p>Action2: Students will be motivated to undergo certification programs in relevant domain.</p>			


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