



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(Autonomous)

Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada
Accredited by NAAC with "A" Grade and NBA (CSE, IT, ECE, EEE & ME) under Tier - I



Freshman Engineering Department

The attainment of Program Outcomes of R20 regulation all first year courses for the academic year 2022-23.

SNo.	Course Code	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	20AD01	Computational Programming	42	42	43									
2	20AD51	Computational Programming Lab	83	83	83						83	83		83
3	20AE01	Elements of Aerospace Engineering	67	67	67	67	64		67			67	67	67
4	20CE01	Surveying	69	70	74	66	74	72	66	66	70	68	72	
5	20CE02	Building Materials and Construction	50	54		54								50
6	20CE04	Basic Civil and Mechanical Engineering	65	65	68	64								66
7	20CE03	Applied Mechanics	39											39
8	20CE51	Surveying Lab	68	68	68	68							68	
8	20CE52	Civil Engineering Drafting Techniques	58	58	55	57					55			
9	20CE53	Basic Civil and Mechanical Engineering Lab	63	63	60	62					62			57
10	20CS01	Programming for Problem Solving using C	53	53	53	47						53		53
11	20CS02	Digital Logic Design	56	56	54	53								64
12	20CS03	Data Structures	68	67										
13	20CS04	Discrete Mathematical Structures	54	53	54									
14	20CS05	Python Programming	68	62	63		62							
15	20CS51	Programming for Problem Solving using C Lab	69	69	69					77	77	77		
16	20CS52	Digital Logic Design Lab	80	77	79	79	79	88		100	100	100		
17	20CS53	Data Structures Lab		76	76		76			94	94	94		
18	20CS54	Python Programming Lab	71	68	68	69	69			80	80	80		
19	20CS55	Shell Scripting	74	74	75	74				99	99	99		74

SNo.	Course Code	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
20	20EC01	Electronic Devices & Circuits	58	59	58	58		58	58				60	59
21	20EC02	Digital Logic Circuits	58	58	59	62		58	58				58	58
22	20EC51	Electronic Devices & Circuits Lab	66	65	68						68	68	69	69
23	20EC52	Digital Logic Circuits Lab	70	70	70	70	70			91	91	91		73
24	20EE01	Basic Electrical Engineering	56	55	56	55			46					
25	20EE02	Basic Electrical & Electronics Engineering	67	67										67
26	20EE03	Electronic circuits and Devices	40	40										40
27	20EE04	Fundamentals of Electrical Engineering	46	46	37						82	80		46
28	20EE51	Basic Electrical Engineering Lab	78	77	78	77								
29	20EE52	Basic Electrical & Electronics Engineering LAB	59	59		62	59			59	59	59		59
30	20EE53	Electronic circuits and Devices Lab	63	63			63			63	63	63	63	63
31	20FE01	Professional Communication I		54		59		54			59	59		59
32	20FE02	Professional Communication II		62		61		62			61	61		61
33	20FE03	Differential Equations	62	61		61								62
34	20FE04	Linear Algebra and Transformation Techniques	59	59		59								59
35	20FE05	Applied Chemistry	46	45	46	46		45	46					46
36	20FE06	Engineering Chemistry	60	59	59	60		58	59					60
37	20FE07	Applied Physics	60	60	58	60								60
38	20FE08	Engineering Physics	58	59	58	58								58
39	20FE51	Professional Communication Skills Lab					67					67	67	
40	20FE52	Applied Chemistry Lab	76	78	79	74		74	74					
41	20FE53	Engineering Chemistry Lab	87	87	91	82		82	82					
42	20FE54	Applied Physics Lab	75	75	75	75		72		86	77	86		75
43	20FE55	Engineering Physics Lab	71	71	71	71								71
44	20IT51	IT Workshop						85		88	88	88		
45	20IT52	Mathematical Applications Lab	72	70			72			66	66	66		

SNo.	Course Code	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
			54	54	54	53	54	56		56	53	54		54
46	20ME01	Engineering Graphics	46	46	45	50								46
47	20ME02	Engineering Mechanics	79	79	79	79		79			79	79		79
48	20ME51	Engineering Workshop												
49	20ME52	Engineeing Mechanics and Fuel Testing Lab	73	72		72					72	72		
50	20ME53	Computer Aided Engineering Drawing	73				72					73		72
51	20ME54	Computer Aided Engineering Graphics	65				65	66						65
			64	63	64	64	69	66	62	79	74	74	65	61
		AVERAGE												
		Target R20	60	60	60	60	65	65	65	65	65	65	65	60

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Freshman Engineering Department

PO Attainment Levels and Actions for improvement: A.Y. (2022 – 23) :

Mention for relevant POs

The contribution of PO attainments to all POs from all first year courses are analyzed and compared with target levels and the actions taken correspondingly are tabulated in the above table. However overall attainments of POs and PSOs depend on all the remaining courses of study in the specific UG program.

POs	Target (%)	Attainment (%)	Observations
PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.			
PO1	Target (%)	Attainment (%)	Observations - Target Reached
	60	64	Applications of engineering knowledge for some of the courses have not reached the target. It is observed that out of 48 courses contributing to PO1. 30 courses reached the target. 15 theory and 3 laboratory courses attainment values are less than the target value. The contribution of Computational programming, Electronic circuits and Devices and Applied mechanics is very low.
Action 1: The courses whose attainments are very low are almost new for the first year students. Fundamentals should be taught in Bridge course in depth. Action 2: Students should be given more number of assignment questions. Action 3: To enhance basic engineering knowledge, two day workshop on "Red Hat Linux Administration" was conducted. Here is the link to the program. https://lbrce.ac.in/cse/cse_events/events_organized_for_students/2022-23/12_22_23_RED_HAT_LINUX_WORKSHOP.pdf			
PO2: Problem analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.			
PO2	Target (%)	Attainment (%)	Observations - Target reached
	60	63	The number of courses mapped to this PO are 47 and of those 29 reached the target. The remaining courses 17 theory and 1 laboratory course Civil Engineering Drafting Techniques attainment values are less when compared to the target value. Of the 17 courses, the very low CO attainment value courses are Applied chemistry, Engineering mechanics and Electronic circuits and Devices.

	<p>Action 1: The faculty are instructed to include more analysis level problems in the assignments.</p> <p>Action 2: The faculty are instructed to conduct more tutorials to improve the student performance.</p>		
<p>PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.</p>			
PO3	Target (%)	Attainment (%)	<p>Observations- Target Reached</p> <p>The number of courses mapped with the design and development of solutions are 35 out of which 20 courses reached the target. 15 courses have got less than the target.</p> <p>The low attainment values are for the courses Fundamentals of Electrical Engineering, Computational programming & Engineering Mechanics.</p>
	60	64	
<p>Action 1: The attainments of the courses with complex engineering problems are to be improved by giving more assignments with follow up action.</p> <p>Action 2: To discuss the design and development pre-fabricated structures, two week workshop on "Skill Advanced Course" was conducted from 05-09-2022 to 10-09-2022. Here is the link.</p> <p>https://lbrce.ac.in/mech/mech_events/events_organized_for_students/2022-23/02%20Skill%20Advanced%20Course%20Report.pdf</p>			
<p>PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.</p>			
PO4	Target (%)	Attainment (%)	<p>Observations- Target reached.</p> <p>34 courses are mapped to this PO4. 21 courses reached the target and 13 courses have less than target. Engineering Mechanics and Applied Chemistry, are few courses whose attainment value is less.</p>
	60	64	
<p>Action 1: The faculty of theory courses are instructed to conduct more tutorials and try to analyse complex problems.</p> <p>Action 2: To create awareness on investigations of complex problems, three day workshop on "PCB Circuit Design". Here is the link.</p> <p>https://lbrce.ac.in/ece/ece_events/events_organized_for_students/2022-23/08%20PCB%20Design%20Workshop%20dated%2027.03.23%20to%2029.03.23.pdf</p>			
<p>PO5: Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.</p>			
PO5	Target (%)	Attainment (%)	Observations - Target reached

	65	69	<p>Only 15 courses are mapped to this modern tool usage PO as there are limited courses where modern tools are used at first year courses.</p> <p>10 courses reached the target and 5 courses have got less than target. Engineering graphics PO attainment values are less.</p>
<p>Action 1: More workshops to be conducted by Engineering departments to make students understand the modern tools usage in Engineering and real life problems.</p> <p>Action 2: To make students equipped with modern tool usage a guest lecture on "NANO MATERIALS FOR ENERGY AND ENVIRONMENTAL APPLICATION" was conducted on 13th April 2023. Here is the link. https://lbrce.ac.in/mech/mech_events/events_organized_for_students/2022-23/11%20Guest%20Lecture%20Report%2013-04-23.pdf</p>			
<p>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.</p>			
PO6	Target (%) 65	Attainment (%) 66	<p>Observations - Target reached.</p> <p>There are 15 courses mapped to this PO and 7 of them reached the target.</p> <p>Out of the remaining 8 courses Applied chemistry and Professional communication courses attainment levels are lower than the PO target level.</p>
<p>Action 1: A zero credit course Engineer and Society is being introduced in the first year itself in R20 regulation to make students aware of the responsibilities relevant to the professional Engineering practice.</p> <p>Action 2: Constitution of India course is also introduced to students with zero credits.</p> <p>Action 3: Students are encouraged to participate in various NSS activities.</p>			
<p>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.</p>			
PO7	Target (%) 65	Attainment (%) 62	<p>Observations - Target not reached</p> <p>The courses mapped to The Environment and sustainability are only 10 and only 4 reached the targets.</p> <p>Courses like Applied Chemistry and Basic electrical engineering are lagging behind the target.</p>
<p>Action 1: Various activities have been conducted by Prakruthi club to create awareness among the students regarding Environment and how to preserve it.</p> <p>Action 2: Along with second year students, first year students were also included in the Environmental club activities.</p>			
<p>PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</p>			

PO8	Target (%)	Attainment (%)	Observations - Target Reached. Only 14 courses are mapped to this PO and 4 courses Engineering Graphics and Basic Electrical & Electronics Engineering LAB are away from the target set for this PO8.
	65	79	
<p>Action 1: A zero credit course Engineer and Society is being introduced in the first year itself in R20 regulation to make students aware of the responsibilities relevant to the professional Engineering practice.</p> <p>Action 2: Motivate the students on real life case study problems to debate on ethical decision and judgements.</p>			
PO 9: Individual and team work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.			
PO9	Target (%)	Attainment (%)	Observations - Target reached Total courses mapped to this PO are 22 courses. 15 courses have attained the target comfortably and 7 courses are lagging behind. Few courses like Engineering graphics and Civil Engineering Drafting Techniques attainment values are less when compared with others.
	65	74	
<p>Action 1: Students are encouraged to participate in team/group activities in laboratory sessions.</p> <p>Action 2: Students are encouraged to participate in individual and team activities in Environmental and Literary clubs activities.</p> <p>Action 3: Individual and group activities are conducted by different clubs like Saheli, Spoorthi, etc.</p>			
PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.			
PO10	Target (%)	Attainment (%)	Observations - Targets reached. 8 courses are a little bit away from the CO attainment value as the remaining 18 courses have reached the target comfortably. programming for problem solving using 'C', Engineering Graphics are the few courses whose attainment values are little lower compared to the target.
	65	74	
<p>Action 1: Classes on communication and soft skills, analytical aptitude, and technical skills are arranged by the college every year apart from regular classes as per schedule.</p> <p>Action 2: Group discussion / Role play/ Debate/ Quiz/Essay Writing /Elocution competitions are encouraged at regular intervals by various club activities.</p> <p>Action 3: Spoorthi, the literary club, NSS unit of LBRCE, Saheli conducted different events to enhance the communication skills.</p>			
PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member and leader in a team to manage projects and in multidisciplinary environments.			
PO11	Target (%)	Attainment (%)	Observations

	65	65	There are 8 courses mapped with this PO and the 3 courses whose attainment values are low are the Digital Logic Circuits and Electronic Devices & Circuits.
	<p>Though the target is reached, identify the students having less interest in engineering and management principles and applications.</p> <p>Action 1: Motivate these students to select the projects on management principles and finance related.</p> <p>Action 2: Inspire these students to involve themselves in technical fests related to managing the financial issues.</p>		
PO 12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			
PO12	Target (%)	Attainment (%)	<p>Observations-Target reached</p> <p>Out of 34 courses mapped only 17 courses attainment values are slightly lower than the given target.</p> <p>Applied chemistry, Electrical devices and circuits and Engineering Mechanics PO attainment values are very low when compared to the others.</p>
	60	60	
<p>Action 1: Students are encouraged to understand the concept of life-long learning by conducting expert lectures/professionals talks.</p> <p>Action 2: Alumni meet is being conducted by the departments and students are made to interact with the Alumni to learn about the industrial requirement and learning of courses to sustain in the software industry. Alumni interaction is done for first as well as second year students by EEE department on 30-01-2022 and 28-12-21.</p> <p>Action 3: Regularly organizing the student association activities at the department level.</p>			

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