



# 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 2021-22.

SN o.	Course Code	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	20AD01	Computational Programming	52	52	52									
2	20AD51	Computational Programming Lab	74	74	74						74	74		74
3	20AE01	Elements of Aerospace Engineering	60	60	60	60	57		60			60	60	60
4	20CE01	Surveying	74	75	73	74	75	67	74	74	75	74	67	
5	20CE02	Building Materials and Construction	41	46		46								42
6	20CE04	Basic Civil and Mechanical Engineering	65	65	68	64								66
7	20CE03	Applied Mechanics	27											27
8	20CE51	Surveying Lab	66	66	66	66							66	
8	20CE52	Civil Engineering Drafting Techniques	73	73	74	73					74			
9	20CE53	Basic Civil and Mechanical Engineering Lab	75	75	74	75					75			76
10	20CS01	Programming for Problem Solving using C	54	54	53	50						54		54
11	20CS02	Digital Logic Design	61	61	61	61								62
12	20CS03	Data Structures	64	64										
13	20CS04	Discrete Mathematical Structures	52	54	54									
14	20CS05	Python Programming	65	61	62		62							
15	20CS51	Programming for Problem Solving using C Lab	69	69	69					76	76	76		
16	20CS52	Digital Logic Design Lab	91	91	91	91	91	94		100	100	100		
17	20CS53	Data Structures Lab		75	75		75			84	84	84		
18	20CS54	Python Programming Lab	72	70	70	71	70			83	83	83		
19	20CS55	Shell Scripting	73	73	74	73				94	94	94		73
20	20EC01	Electronic Devices & Circuits	66	62	68	71		67	67				59	63
21	20EC02	Digital Logic Circuits	53	51	53	54		50	53				50	50
22	20EC51	Electronic Devices & Circuits Lab	78	78	78						85	85	77	77
23	20EC52	Digital Logic Circuits Lab	78	78	78	78	78			86	86	86		79
24	20EE01	Basic Electrical Engineering	62	61	61	60			60			62		
25	20EE02	Basic Electrical & Electronics Engineering	47	47										47
26	20EE03	Electronic circuits and Devices	64	64										64
27	20EE04	Fundamentals of Electrical Engineering	56	56	45									56
28	20EE51	Basic Electrical Engineering Lab	87	87	87	87					86	87		

29	20EE52	Basic Electrical & Electronics Engineering LAB	59	59		59	59			59	59	59		59
30	20EE53	Electronic circuits and Devices Lab	73	73			73			73	73	73	73	73
31	20FE01	Professional Communication I		56		56		56			56	56		56
32	20FE02	Professional Communication II		57		60		57			60	60		60
33	20FE03	Differential Equations	57	58		58								57
34	20FE04	Linear Algebra and Transformation Techniques	70	70		70								69
35	20FE05	Applied Chemistry	38	38	38	39		37	38					38
36	20FE06	Engineering Chemistry	63	63	63	63		62	63					63
37	20FE07	Applied Physics	66	66	65	66								66
38	20FE08	Engineering Physics	49	49	49	49								49
39	20FE51	Professional Communication Skills Lab						75					75	75
40	20FE52	Applied Chemistry Lab	67	69	69	69		69	69					
41	20FE53	Engineering Chemistry Lab	86	86	88	81		81	81					
42	20FE54	Applied Physics Lab	76	76	76	76		72		87	78	87		76
43	20FE55	Engineering Physics Lab	71	71	71	71								71
44	20IT51	IT Workshop	84					81			80	80	80	
45	20IT52	Mathematical Applications Lab	69	70				69			70	70	70	
46	20ME01	Engineering Graphics	49	50	48	49	49	44		49	50	50		50
47	20ME02	Engineering Mechanics	38	38	41	43								39
48	20ME51	Engineering Workshop	73	73	73	72		73			73	73		73
49	20ME52	Engineering Mechanics and Fuel Testing Lab	72	72		72					72	72		
50	20ME53	Computer Aided Engineering Drawing	76					76					79	76
51	20ME54	Computer Aided Engineering Graphics	74					72	69					72
		AVERAGE	65	65	66	65	71	64	63	78	76	74	66	61
		Target R20	60	60	60	60	65	65	65	65	65	65	65	60

  
HEAD

**Freshman Engineering Dept**  
Takireddy Bali Ruddy College of Engg  
MYLAVARAM-5x1 230, Krishna Dt. A.P



# 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

### PO Attainment Levels and Actions for improvement: A.Y. (2021 – 22) :

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	65	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. 34 courses reached the target. 13 theory and 1 laboratory courses attainment values are less than the target value. The contribution of Engineering mechanics, Applied chemistry 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, one day webinar on "Artificial intelligence and data science" was conducted. Here is the link to the program. <a href="https://lbrce.ac.in/ai/ai_events/events_organized_for_students/2021-22/Event%20Report.pdf">https://lbrce.ac.in/ai/ai_events/events_organized_for_students/2021-22/Event%20Report.pdf</a>			
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 The number of courses mapped to this PO are



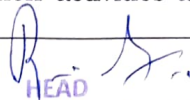
	60	65	47 and of those 32 reached the target. The remaining courses 14 theory and 1 laboratory course Basic Electrical & Electronics Engineering lab CO attainment values are less when compared to the target value. Of the 15 courses, the very low CO attainment value courses are Applied chemistry, Applied mechanics and Building materials and construction.
Action 1: The faculty are instructed to include more analysis level problems in the assignments. Action 2: The faculty are instructed to conduct more tutorials to improve the student performance.			
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.			
PO3	Target (%)	Attainment (%)	Observations- Target Reached The number of courses mapped with the design and development of solutions are 35 out of which 26 courses reached the target. 9 courses have got less than the target.
	60	66	The low attainment values are for the courses Fundamentals of Electrical Engineering, Applied chemistry & Engineering Mechanics.
Action 1: The attainments of the courses with complex engineering problems are to be improved by giving more assignments with follow up action. Action 2: To discuss the design and development pre-fabricated structures, one week workshop on "AUTOCAD" was conducted from 6 <sup>th</sup> to 11 <sup>th</sup> sept-2021. Here is the link. <a href="https://lbrce.ac.in/civil/civil%20events/events%20organized%20for%20faculty/2021-22/Online%20Webinar%20on%20Prefabricated%20Structures%20organized%20by%20Department%20of%20Civil%20Engineering%20on%2025th%20April,%202021.pdf">https://lbrce.ac.in/civil/civil events/events organized for faculty/2021-22/Online%20Webinar%20on%20Prefabricated%20Structures%20organized%20by%20Department%20of%20Civil%20Engineering%20on%2025th%20April,%202021.pdf</a>			
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.			
PO4	Target (%)	Attainment (%)	Observations- Target reached. 34 courses are mapped to this PO4. 24 courses reached the target and 10 courses have less than target.
	60	65	Engineering Mechanics and Applied Chemistry, are few courses whose attainment value is less.

	<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, a guest lecture on “ Investigation on influence of refrigerated air and high transfer rate MQL in turning of Aluminum silicon carbide metal matrix composite”. Here is the link.  <a href="https://lbrce.ac.in/mech/mech_events/events_organized_for_students/2021-22/05%20Guest%20Lecture%20Report%2029-01-2022.pdf">https://lbrce.ac.in/mech/mech_events/events_organized_for_students/2021-22/05%20Guest%20Lecture%20Report%2029-01-2022.pdf</a></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 (%)	<p>Observations - Target reached</p> <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>11 courses reached the target and 4 courses have got less than target. Engineering graphics PO attainment values are less.</p>
	65	71	
	<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 “ Floating solar power plant” was conducted on 2<sup>nd</sup> December 2021. Here is the link.  <a href="https://lbrce.ac.in/mech/mech_events/events_organized_for_students/2021-22/04%20Guest%20Lecture%20Report%2022-12-2021.pdf">https://lbrce.ac.in/mech/mech_events/events_organized_for_students/2021-22/04%20Guest%20Lecture%20Report%2022-12-2021.pdf</a></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 (%)	Attainment (%)	<p>Observations - Target reached.</p> <p>There are 15 courses mapped to this PO and 8 of them reached the target.</p> <p>Out of the remaining 7 courses Applied chemistry and engineering graphics courses attainment levels are lower than the PO target level.</p>
	65	64	
	<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 (%)	Attainment (%)	Observations - Target not reached The courses mapped to The Environment and sustainability are only 10 and only 4 reached the targets. Courses like Applied Chemistry and Engineering graphics are lagging behind the target.
	65	63	
<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>			
PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO8	Target (%)	Attainment (%)	Observations - Target Reached. Only 14 courses are mapped to this PO and 2 courses Engineering Graphics and Basic Electrical & Electronics Engineering LAB are away from the target set for this PO8.
	65	78	
<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. 18 courses have attained the target comfortably and 4 courses are lagging behind. Few courses like Engineering graphics and professional communication-I attainment values are less when compared with others.
	65	76	
<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.

	65	74	8 courses are a little bit away from the CO attainment value as the remaining 18 courses have reached the target comfortably. Fundamentals of Aerospace Engineering, programming for problem solving using 'C', Basic electrical Engineering, Engineering Graphics are the few courses whose attainment values are little lower compared to the target.
<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 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.
	65	66	
<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 (%)	Observations-Target reached Out of 34 courses mapped only 13 courses attainment values are slightly lower than the given target. Applied chemistry, Applied mechanics and Engineering Mechanics PO attainment values are very low when compared to the others.
	60	61	
<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>			

  
HEAD