



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 2020-21.

No.	Course Code	Course Name	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
1	20AD01	Computational Programming	43	43	37									
2	20AD51	Computational Programming Lab	72	72	72						72	72		72
3	20AE01	Elements of Aerospace Engineering	62	62	62	62	69		62			62	62	62
4	20CE01	Surveying	62	59	60	60	62	58	60	60	59	61	58	
5	20CE02	Building Materials and Construction	62	61		61								62
6	20CE04	Basic Civil and Mechanical Engineering	58	59	58	59								57
7	20CE03	Applied Mechanics	62											62
8	20CE51	Surveying Lab	65	69	69	69							68	62
8	20CE52	Civil Engineering Drafting Techniques	80	80	89	83					89			
9	20CE53	Basic Civil and Mechanical Engineering Lab	58	59	58	57					57			58
10	20CS01	Programming for Problem Solving using C	55	55	53	51						55		55
11	20CS02	Digital Logic Design	51	51	50	50								54
12	20CS03	Data Structures	58	58										
13	20CS04	Discrete Mathematical Structures	68	67	67									
14	20CS05	Python Programming	64	56	58		57							
15	20CS51	Programming for Problem Solving using C Lab	65	65	65						65	65		65
16	20CS52	Digital Logic Design Lab	85	80	82	82	82	79		87	87	87		
17	20CS53	Data Structures Lab		70	70		70			76	76	76		
18	20CS54	Python Programming Lab	64	66	66	66	66			75	75	75		

19	20CS55	Shell Scripting	67	67	67	67				83	83	83		67
20	20EC01	Electronic Devices & Circuits	71	71	74	75		77	73				71	74
21	20EC02	Digital Logic Circuits	56	55	57	53		58	58				55	56
22	20EC51	Electronic Devices & Circuits Lab	66	66	67						70	70	68	68
23	20EC52	Digital Logic Circuits Lab	71	71	70	71	71			72	72	72		71
24	20EE01	Basic Electrical Engineering	64	64	62	62			56			64		
25	20EE02	Basic Electrical & Electronics Engineering	70	70										70
26	20EE03	Electronic circuits and Devices	45	45										45
27	20EE04	Fundamentals of Electrical Engineering	39	39	41									39
28	20EE51	Basic Electrical Engineering Lab	92	92	92	92					98	95		
29	20EE52	Basic Electrical & Electronics Engineering LAB	69	69		69	69			69	69	69		69
30	20EE53	Electronic circuits and Devices Lab	77	77			77			77	77	77	77	77
31	20FE01	Professional Communication I		62		65		62			65	65		65
32	20FE02	Professional Communication II		57		56		57			56	56		56
33	20FE03	Differential Equations	65	64		64								65
34	20FE04	Linear Algebra and Transformation Techniques	70	70		70								70
35	20FE05	Applied Chemistry	49	48	48	51		49	50					49
36	20FE06	Engineering Chemistry	59	59	59	59		59	59					59
37	20FE07	Applied Physics	66	66	64	66								66
38	20FE08	Engineering Physics	48	49	48	48								48
39	20FE51	Professional Communication Skills Lab					79					79	79	
40	20FE52	Applied Chemistry Lab	82	82	85	77		77	77					
41	20FE53	Engineering Chemistry Lab	88	88	89	85		85	85					
42	20FE54	Applied Physics Lab	79	79	79	79		77		89	81	89		79
43	20FE55	Engineering Physics Lab	77	77	77	77				77				77
44	20IT51	IT Workshop	81							88	88	88		

45	20IT52	Mathematical Applications Lab	62	57			62			93	93	93		
46	20ME01	Engineering Graphics	49	49	50	48	50	51		52	49	49		49
47	20ME02	Engineering Mechanics	32	32	33	38								32
48	20ME51	Engineering Workshop	73	73	73	73		73			73	73		73
49	20ME52	Engineering Mechanics and Fuel Testing Lab	63	62		62					62	62		
50	20ME53	Computer Aided Engineering Drawing	73				72					76		72
51	20ME54	Computer Aided Engineering Graphics	69				68	63						68
52	20MC01	Constitution of India												
		AVERAGE	65	64	64	65	68	66	64	77	74	73	67	62
		TARGET	60	60	60	60	65	65	65	65	65	65	65	60



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MYLAVARAM-521 230, Krishna Dt. A.P



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PO Attainment Levels and Actions for improvement: A.Y. (2020 – 21) :

Mention for relevant POs

The contribution of PO attainments to all POs from all first year courses are analysed and compared with target levels and the actions taken correspondingly are tabulated in the above table. However overall attainments of POs+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 Computational programming, Electric Circuits and devices, Fundamentals of Electrical Engineering, Engineering Mechanics is very low.
<p>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.</p> <p>Action 2: Students should be given more number of assignment questions.</p> <p>Action 3: To enhance Engineering Knowledge Expert Talk on "Speech Enhancement using Machine Learning" in association with IEEE is conducted for this batch of students. The link to the program is given by https://lbrce.ac.in/ece/ece events/events organized for students/2021-22/02%20Expert%20Talk%20on%20Speech%20Enhancement%20using%20Machine%20Learning%20in%20association%20with%20IEEE%20by%20PV%20Shifas,%20University%20of%20Crete,%20Greece.pdf</p>			
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.			

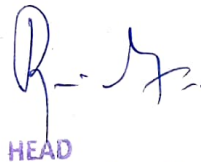
PO2	Target (%)	Attainment (%)	<p>Observations - Target reached The number of courses mapped to this PO are 47 and of those 30 reached the target. The remaining courses 16 theory and 1 laboratory course Mathematical Application Lab CO attainment values are less when compared to the target value. Of the 16 courses, the very low CO attainment value courses are Computational programming, Fundamentals of Electrical Engineering, Engineering Mechanics.</p>
	60	64	
<p>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.</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 The number of courses mapped with the design and development of solutions are 35. Basic Civil and mechanical engineering lab and 12 other theory courses mapped with these PO values are less than the PO target value. The low attainment values are for the courses Computational programming, Fundamentals of Electrical Engineering, 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. Action 2: Two Weeks Hands-On Training Program on "Fundamental Aspects of MEMS for Sensor Applications" has been done for this batch of students in second year. Hands-on expertise in implementing technical projects by means of Design, Modeling ,Analysis and Optimization with the help of COMSOL, Multiphysics software tool was the main aim in conducting the Training Program. Link to the program is given below. https://lbrce.ac.in/ece/ece events/events organized for students/2020-21/04 MEMS%20Event%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. 34 courses are mapped to this PO4. Out of these courses only one laboratory course</p>

	60	65	Basic civil and Mechanical Engineering PO value is less when compared to others. Remaining PO target not reached are 10 which are theory courses. Engineering Graphics and Engineering Mechanics, Engineering Physics, Applied Chemistry, DLD 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: Webinar on Structural Inspection of Aircraft Rudder using NDT Techniques for Aerospace engineering has been conducted. The main purpose of this Webinar is to make the student find the flaws while conducting and then eliminate them. The link in the website is https://lbrce.ac.in/ase/ase_events/events_organized_for_students/2020-21/4.%20Webinar%20on%20Structural%20Inspection%20of%20Aircraft%20Rudder%20using%20NDT%20Techniques,%2011th%20july%202021.pdf</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.			
	Target (%)	Attainment (%)	Observations - Target reached Only 14 courses are mapped to this modern tool usage PO as there are limited courses where modern tools are used at first year courses.
PO5	65	68	10 courses reached the target. The remaining courses like Survey for Civil Engineering, Engineering Graphics, Mathematical Applications lab, Python programming PO attainment values are less.
<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: "One Week Skill Oriented Training Program on PCB DESIGN" is being conducted for the students. The link is provided here https://lbrce.ac.in/eee/eee_events/events_organized_for_students/2021-22/08.Website%20Report%20PCB%20Design%2003-01-22.pdf</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.			
PO6	Target (%)	Attainment (%)	Observations - Target reached. There are 14 courses mapped to this CO and

	65	66	7 of them reached the target. Out of the remaining 7 courses Professional communication I and II and Applied Chemistry and Engineering Chemistry, DLD, Engineering Graphics, Surveying courses attainment levels are lower than the CO target level.
<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>			
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.			
PO7	Target (%)	Attainment (%)	<p>Observations - Target not reached</p> <p>The courses mapped to The Environment and sustainability are only 9 and only 4 reached the targets.</p> <p>Courses like Surveying, Chemistry, Elements of Aerospace Engineering, DLD are lagging behind the target.</p>
	65	64	
<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>Action 3: Prakruthi club conducted a Painting Competition to the LBRCE students in view of International Wetland Day on 2nd Feb, 2022 where more number of first year students were involved.</p> <p>https://www.lbrce.ac.in/clubs/prakruthi_club/prakruthi_events/2021-22/Event%2032%20Prakruthi%20Club%20conducts%20a%20Painting%20Competition.pdf</p>			
PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO8	Target (%)	Attainment (%)	<p>Observations - Target Reached.</p> <p>Only 12 courses are mapped to this PO and 2 courses Engineering Graphics, Surveying are away from the target set for this PO8.</p>
	65	77	
<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 23 courses. 18 courses have attained the target comfortably and 5 courses are lagging behind. Few civil Engineering courses like Surveying, Basic Civil and Mechanical Engineering Lab along with PC II attainment values are less and Engineering Mechanics is very 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. 7 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, Surveying, programming for problem solving using 'C', Basic electrical Engineering, PC II, Engineering Graphics, Fuel testing lab values are few courses whose attainment values are little lower compared to the target.
	65	73	
<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 basic core courses in Aerospace, Civil Engineering and DLD.
	65	67	

<p>Though the target is reached, identify the students having less interest in engineering and management principles and applications. Action 1: Motivate these students to select the projects on management principles and finance related. Action 2: Inspire these students to involve themselves in technical fests related to managing the financial issues.</p>			
<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.</p>			
PO1 2	Target (%)	Attainment (%)	<p>Observations-Target reached Out of 35 courses mapped only 13 courses attainment values are slightly lower than the given target. Except basic civil and mechanical Engineering lab all other courses are theory courses.</p>
	60	62	
<p>Action 1: Students are encouraged to understand the concept of life-long learning by conducting expert lectures/professionals talks. 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. Action 3: Regularly organizing the student association activities at the department level.</p>			



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