



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B.Reddy Nagar, Mylavaram – 521 230, N.T.R. District, Andhra Pradesh, India
Affiliated to JNTUK, Kakinada & Approved by AICTE New Delhi
Accredited by NBA under Tier - I, Accredited by NAAC
An ISO 21001:2018, 500001:2018, 14001:2015 Certified Institution
DEPARTMENT OF AEROSPACE ENGINEERING
Estd.: 1998 Website: <https://www.lbrce.ac.in/ase/index.php> Email: hodaero@lbrce.ac.in Phone: 08659-222933 Ext: 624/623

RECOMMENDATIONS/SUGGESTIONS REPORT

PO/PSO ATTAINMENTS

Batch: 2019-2023

A.Y: 2023-24

POs	Target Level (%)	Attainment Level (%)	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 Level (%)	Attainment Level (%)	Target reached Out of 43 courses, 43 courses are contributing towards PO1. Out of 42 courses, 17 courses are above the PO target level.
	65	68	
	Action 1: Courses with a PO attainment below 65% have been identified, namely Elements of Aerospace Engineering, Fluid Mechanics and Hydraulic Machinery Lab, Probability and Statistics, Elements of Heat Transfer, Aerodynamics-II, and Propulsion – I. These findings have been communicated to the respective course coordinators via module coordinators. Suggestions for necessary improvements in the teaching-learning methodology have been recommended to enhance PO attainment for upcoming batches. Action 2: Fundamental engineering principles and mathematical knowledge are indispensable in the engineering field. These competencies can be enhanced through problem-solving sessions, tutorials, assignments, and the use of display models tailored to the relevant courses.		
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 Level (%)	Attainment Level (%)	Target not reached Out of 42 courses, 42 courses are contributing towards PO2. Out of 42 courses, 18 courses are above the PO target.
	65	64	
	Action 1: Courses with a PO attainment below 65% have been identified, including Propulsion – I, Theory of Machines, Propulsion – II, Aircraft Structures – II, Industrial Engineering and Management, Industrial Aerodynamics, Mini Project, Computational Fluid Dynamics, Instrumentation, Measurements, and Experiments in Fluids, Introduction to Space Technology, and Theory of Vibrations. This information has been communicated to the respective course coordinators through module coordinators. Suggestions for necessary improvements in the teaching-learning methodology have been provided for the aforementioned courses to enhance PO attainment in future batches.		

	Action 2: Emphasis on problem formulation and analysis in the identified courses will be facilitated through classroom and laboratory-based group discussions. Action 3: To enhance students' understanding of complex engineering problems and solutions, opportunities for industry exposure will be provided, including visits to various industries and encouragement for industrial internships.		
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 Level (%)	Attainment Level (%)	Target reached
	60	62	Out of 42 courses, 38 courses are contributing towards PO3. Out of 38 courses, 18 courses are above the PO target.
	Action 1: Courses with a PO attainment below 65%, including Aircraft Structures – II, Instrumentation, Measurements, and Experiments in Fluids, Introduction to Space Technology, Theory of Vibrations, Airport Design, etc., have been identified. These details have been forwarded to the respective course coordinators through module coordinators. Recommendations for necessary improvements in the teaching-learning methodology have been made for the aforementioned courses to enhance PO attainment in upcoming batches. Action 2: Students are encouraged to undertake projects/internships in reputable organizations to actively engage in designing and developing solutions for contemporary issues.		
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 Level (%)	Attainment Level (%)	Target reached
	60	58	Out of 42 courses, 41 courses are contributing towards PO4. Out of 41 courses, 19 courses are above the PO target.
	Action 1: The course and module coordinators are instructed to focus on improving the conduct of problematic courses, particularly in labs, to enhance the attainment level of PO4. Action 2: Enhancing graduates' skill sets to solve complex design problems can be achieved through investigating complex problems using software tools and implementing skill-oriented programs. Action 3: Implementation of student certification programs is necessary to familiarize students with advanced tools, enabling them to better explore complex engineering problems.		
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.			

PO5	Target Level (%)	Attainment Level (%)	Target reached
	60	66	Out of 52 courses, 13 courses are contributing toward PO5. Out of 13 courses, 10 courses are above the PO target
	Action 1: Create case studies or solve numerical problems using freely available software tools like AutoCAD, CATIA, PRO-E, and ANSYS to encourage graduates to utilize modern tools in their academic endeavors. Action 2: Incorporate computer-aided tools or techniques into lectures to provide students with experience in using modern tools. Action 3: Encourage students to utilize available modern tools for their mini projects, major projects, PAL, PBL, etc.		
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.			
	Target Level (%)	Attainment Level (%)	
PO6	65	60	Target not reached Out of 52 courses, only 08 courses are contributing toward PO6. Out of 08 courses, 04 courses are above the PO target.
	Action 1: Courses with a PO attainment below 65%, such as Engineering Economics and Accountancy, Satellite Technology, etc., have been identified. These details have been forwarded to the respective course coordinators through the module coordinators. Recommendations for necessary improvements in the teaching-learning methodology have been made for the aforementioned courses to enhance PO attainment in upcoming batches. Action 2: Increased student participation in co-curricular and extracurricular activities may lead to improvements in PO attainment levels. Action 3: Encouragement is given for students to undertake projects addressing societal needs. Additionally, participation in societal activities through NSS, Blood Donation Camps, and other Student Clubs is encouraged to foster a deeper understanding of societal issues.		
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 Level (%)	Attainment Level (%)	Target not reached
	65	59	Out of 52 courses, only 01 course is contributing toward PO7 and is above the target
	Action 1: Faculty members are directed to incorporate lessons on engineers' responsibilities towards the environment into their teaching methodologies. Action 2: The curriculum now includes courses such as Environmental Science to enhance students' comprehension of societal issues.		
PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			

PO8	Target Level (%)	Attainment Level (%)	Target not reached
	65	63	Out of 52 courses, only 08 courses are contributing toward PO8. Out of 08 courses, 05 courses are above the PO target.
	Action 1: It is strongly advised that students strictly adhere to the code of ethics in their engineering practices. Action 2: Efforts will be intensified to boost student involvement in sports and cultural activities. Action 3: Arrangements will be made for industry expert talks to heighten awareness of the code of ethics in the design and deployment of aircraft components.		
PO9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings			
PO9	Target Level (%)	Attainment Level (%)	Target not reached
	65	61	Out of 52 courses, 09 courses are contributing toward PO9. Out of 09 courses, 05 courses are above the PO target.
	Action 1: Courses with a PO attainment below 65%, including Engineering Economics and Accountancy, Industrial Engineering and Management, Mini Project, and Satellite Technology, have been identified. These details have been forwarded to the respective course coordinators through the module coordinators. Recommendations for necessary improvements in the teaching-learning methodology have been made for the aforementioned courses to enhance PO attainment in forthcoming batches. Action 2: Students are urged to engage in both curricular (such as projects, seminars, internships, etc.) and co-curricular activities as a team. This provides them with opportunities to collaborate within diverse teams and assume different roles. Action 3: Students are encouraged to actively participate in various college-level programs to gain practical experience in teamwork.		
PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.			
PO10	Target Level (%)	Attainment Level (%)	Target not reached
	65	62	Out of 52 courses, 05 courses are contributing towards PO10. Out of 05 courses, 04 courses are above the PO target.
	Action 1: Courses with a PO attainment below 65%, such as Mini Project, have been identified. These details have been communicated to the respective course coordinators through the module coordinators. Recommendations for necessary improvements in the teaching-learning methodology have been made for the aforementioned courses to enhance PO attainment in forthcoming batches. Action 2: Adjustments to the delivery content, such as increasing student involvement in interaction and group discussions, aim to enhance students' communication skills.		

	Action 3: Soft skill training sessions are provided to students to improve various aspects of communication, including technical talks, through group discussions, presentations, and the introduction of new learning outcomes.		
PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.			
PO11	Target Level (%)	Attainment Level (%)	Target reached
	60	66	Out of 52 courses, 05 courses are contributing toward PO11. Out of 05 courses, 02 courses are above the PO target.
	Action 1: Provide students with the necessary knowledge and comprehension of engineering and management principles to effectively undertake projects in multidisciplinary settings. Action 2: Foster student engagement in multidisciplinary projects, encouraging collaboration across various disciplines.		
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 Level (%)	Attainment Level (%)	Target not reached
	65	60	Out of 52 courses, 50 courses are contributing toward PO12. Out of 50 courses, 30 courses are above the PO target.
	Action 1: Instill in students the importance of self-preparation and self-directed learning through various resources such as textbooks, journals, print and electronic media, as well as NPTEL videos. Action 2: Faculty members are tasked with emphasizing the significance of core courses in fostering lifelong learning. Action 3: Association Activities are organized to nurture critical thinking skills, while self-learning modules via SWAYAM & NPTEL courses are introduced to promote the ethos of continuing education among students. The department arranges technical training for graduates to inspire them towards pursuing higher education and embracing lifelong learning.		

PROGRAM SPECIFIC OUTCOMES (PSOs)			
PSO1: To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures, and Flight Dynamics in Aerospace vehicle design.			
PSO1	Target Level (%)	Attainment Level (%)	Target not reached Out of 52 courses, 44 courses are contributing towards PSO1. Out of 44 courses, 28 courses are above the PO target value of 65%.
	65	61	
	Action 1: Enhancing teaching methodologies and increasing the number of assignments related to courses such as Elements of Aerospace Engineering, Aerodynamics-II, Propulsion-I, Propulsion-II, Aircraft Structures-II, Flight Dynamics, Space Mechanics, Industrial Aerodynamics, Mini Project, Computational Fluid Dynamics, Introduction to Space Technology, Satellite Technology, and Airport Design may contribute to improving PSO1 attainment. It is recommended that the PAC and DAC review the course content of those courses that have not met the target and suggest necessary measures to the MCC. Action 2: Engaging in discussions on higher cognitive level problems, particularly in design-oriented courses, should be encouraged in the classroom. Action 3: Addressing application-oriented problems in core subjects is crucial to improving understanding in Aerodynamics, Propulsion, Aircraft Structures, and Flight Dynamics. Action 4: Strengthening modern tool usage is essential to enhance knowledge in aerospace vehicle design.		
PSO2: To prepare the students to work effectively in Aerospace and Allied Engineering organizations.			
PSO2	Target Level (%)	Attainment Level (%)	Target not reached Out of 52 courses, 47 courses are contributing towards PSO2. Out of 47 course, 26 courses are above the PO target value of 65%.
	65	61	
	Action 1: Students are urged to pursue internships at leading defense development organizations to gain experience and explore defense, space research programs, and aerospace-related industries. Action 2: Faculty members should employ various pedagogical techniques to emphasize higher cognitive level problems and their analysis in classroom settings. Action 3: To enhance practical understanding in identified courses, organize industrial guest lecturers featuring industry experts. Action 4: Students are encouraged to acquire advanced skills and pursue higher studies to attain their aspirations and objectives in life.		

Coordinator(s)

Head of the Department