LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade, ISO 9001:2015 Certified Institution

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

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

Department of Mechanical Engineering

Programme Assessment Committee (PAC)

Recommendations/Suggestions Report

PO attainment level **Batch: (2014-18) A.Y:2017-18**

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.			
	67	71	**Target reached** Out of 72 courses, only 66 courses are contributing to this PO1. Out of 66, 39 courses including labs and seminars, mini projects, internships are the courses above average PO attainment value of 68%.Because of added basic mechanical engg. Course, Estimation, Costing and Engineering Economics PO1 attainment levels have been improved.
	Action 1: It is instructed to the concerned faculty members that the target not reached courses have a look to improve the program outcomes by changing the delivery methods and content presentations. **Action 2:** The courses having less than 60% POs attainment are identified and marked in yellow colour These details are forwarded to the concerned course coordinators and module coordinators. **Action 3:** Knowledge of mathematics in application of mechanical subjects are to be improved by giving more assignments.		
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.			
	65	72	**Target reached** Out of 72 courses, 65 courses are contributing to this PO2. Out of 65, 34 courses including labs and miscellaneous courses have reached the above average PO attainment of 69%. Because of added course on Fluid Mechanics and Hydraulic Machinery the PO2 attainment levels have been improved.
	Action 1: It is instructed to the concerned course and module coordinators that the target not reached courses have to look to improve the program outcome by changing the different pedagogical methods. **Action 2:** The courses having less than 60% are identified and marked in yellow colour. **Action 3:** Formulation of problems and its analysis should be done in the class by making discussion with students.		

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.			
	64	72	**Target reached** Out of 72 courses, only 53 courses are contributing to this PO3. Out of 53, only 30 courses including labs and miscellaneous courses have reached the above average PO attainment of 65%. Because of added Renewable Energy Sources, IC Engines and Gas Turbines, the target of PO3 could have been reached.
	Action 1: It is instructed to the concerned faculty members that the target not reached courses have once again to take a look to improve the program outcome. **Action 2:** Certain courses are identified with less than 60% PO attainment levels. **Action 3:** Change the teaching methodology such that higher cognitive level problems especially design orientation like model developments related to mechanical engineering are to be discussed in the class rooms.		
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.			
	66	72	**Target reached** Out of 72 courses, only 51 courses are contributing to this PO4. Out of 51, only 28 courses including labs and miscellaneous courses have reached the above average PO attainment of 69%. Basic Mechanical Engineering Lab, Machine Tools and Dynamics Lab, Metal Cutting and Machine Tools, the PO4 attainment levels have been improved.
	Action 1: It is instructed to the concerned course and module coordinators that the target not reached courses have to think for improvement of conduct and investigations of problems especially in labs. **Action 2:** Some courses are having seriously very low program outcomes which is less than 60% especially mini project and project management. **Action 3:** Special care has to be taken to improve the analysis and investigation of problems using ANSYS and software tools.		
PO5: Modern tool usage: 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.			
	66	70	**Target reached** Out of 72 courses, only 39 courses are contributing to this PO5. Out of 39, only 24 courses including labs have reached the target greater than equal to 65%. Production Technology and Modeling Lab, shifting of robotics from VIII sem to VI sem the PO5 attainment levels have been reached.
	Action 1: Prepare some case studies or solve some numerical problems using freely available software tools.		

	Action 2: Some video lectures are to be given based on the criticality of the course in software tool usage.		
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.			
	67	73	**Target reached** Out of 72 courses, only 33 courses are contributing to this PO6. Out of 33, only 17 courses including labs are more than 71% average PO attainment. Because of participation of improvement in attending co-curricular and extracurricular activities the PO6 targeted value has been reached.
	Action 1: Frequent conducting workshops as a part of course work can develop skills and will try to make some models based on societal issues. **Action 2:** The some courses are identified and marked as yellow in colour which is less than 60%. **Action 3:** Motivate the students to actively participate in social services and the interaction between industry and society.		
PO 7: 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.			
	64	72	**Target reached** Out of 72 courses, only 27 courses are contributing to this PO7. Out of 27, only 15 courses including lab courses have reached the above average attainments more than 72%. Introduction on Environmental Studies caused the PO7 has attained the targeted value.
	Action 1: More practical oriented projects are to be modeled. **Action 2:** Environmental activities like plantation, energy waste heat recovery model developments are initiated.		
PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
	67	75	**Target reached** Out of 72 courses, only 9 courses are contributing to this PO8. Out of 9, only 4 courses are crossed the average PO attainment of 75%. Professional Ethics and Human Values is the course added to this curriculum, so the gap has filled the earlier PO attainment of R11 regulation.
	Action 1: Encouraging more students to participate more on sports and cultural activities. **Action 2:** While solving the engineering practice oriented problems graduates have to follow the code of ethics.		
PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
	64	77	**Target reached** Out of 72 courses, only 16 courses are contributing to this PO9. Out of 16, only 7

			courses including labs have reached the average PO attainment 77%.
	Action 1: Increasing emphasis on seminars/ group discussions and to carry out the lab experiments individually or in some cases as team members. **Action 2:** The below subjects are having seriously very low program outcomes which is less than 50% and also includes various labs. Production Technology and Modeling Lab, Various activities like participation of workshops and seminars, AMEL activities caused the improvement in PO9.		
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.			
	65	75	**Target reached** Out of 72 courses, only 18 courses are contributing to this PO10. Out of 18, only 9 courses including labs have reached the average PO attainment level equal to 73%. Communication and Presentation Skills Laboratory have been added and probably this may be the reason for improvement of PO 10.
	Action 1: Change the delivery content like involving the more students in interaction to improve the communication skill of the students **Action 2:** Some courses are identified with low program outcomes which are less than 60%.		
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.			
	67	70	**Target reached** Out of 72 courses, only 17 courses are contributing to this PO11. Out of 17, only 8 courses including labs have reached the target greater than or equal to 70%. Project Management (OE-II) is the course added to this curriculum and targeted value has slightly reached.
	Action 1: Impart the knowledge and understanding of the engineering and management principles to work out projects on multidisciplinary environments. **Action 2:** Select internship activities based on to work, as a member and leader in a team.		
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.			
	67	71	**Target reached** Out of 72 courses, only 71 courses are contributing to this PO12. Out of 71, 38 courses including labs have reached the target greater than more than above average PO attainment equal to 71%. Continuous motivation on higher studies and self learning like MOOCS course on AE have given the strength to the attainment of this PO12
	Action 1: Encourage/Motivate the students about the importance of engineering courses importance in higher studies		

	Action 2: Inculcate the students to develop the habit of self preparation and life is nothing but learning new information. **Action 3:** Periodic reading is required in engineering courses		
PSO 1: To apply the principles of thermal sciences to design and develop various thermal systems.			
	68	74	**Target reached** Out of 72 courses, only 29 courses are contributing to this PSO1. Out of 29, only 15 courses including labs and miscellaneous courses have reached the target greater than equal to average PSO1 attainment level of 71%. Final year students have done their experimental works like fabrication and design of experiments caused the improvement of this subject.
	Action 1: Though the target is reached the quality of developing the models on thermal systems is to be improved. **Action 2:** There is lack of fuel cell development activities and focus some attention on this side is also important		
PSO 2: To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.			
	66	70	**Target reached** Out of 72 courses, only 33 courses are contributing to this PSO2. Out of 33, only 18 courses including labs have reached the average PSO2 attainment than equal to 65%. Addition of Modern Machining Process, Robotics courses caused the slight improvement in PSO2.
	Action 1: Instructing the production engineering faculty members for doing some project works on newly purchased Algair lathe machine and go for some optimization procedures. **Action 2:** Apply tribological procedures for finding the microstructures of wear and tear of machinery components.		
PSO 3: To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.			
	65	72	**Target reached** Out of 72 courses, only 31 courses are contributing to this PSO3. Out of 31, only 16 courses including labs and miscellaneous subjects have reached the target greater than equal to 65%. Energy Conservation and Management, Renewable Energy Sources caused the improvement of this PSO3.
	Action 1: Instructing the design faculty members for conducting the design oriented project works relating to transmission of motion and power		

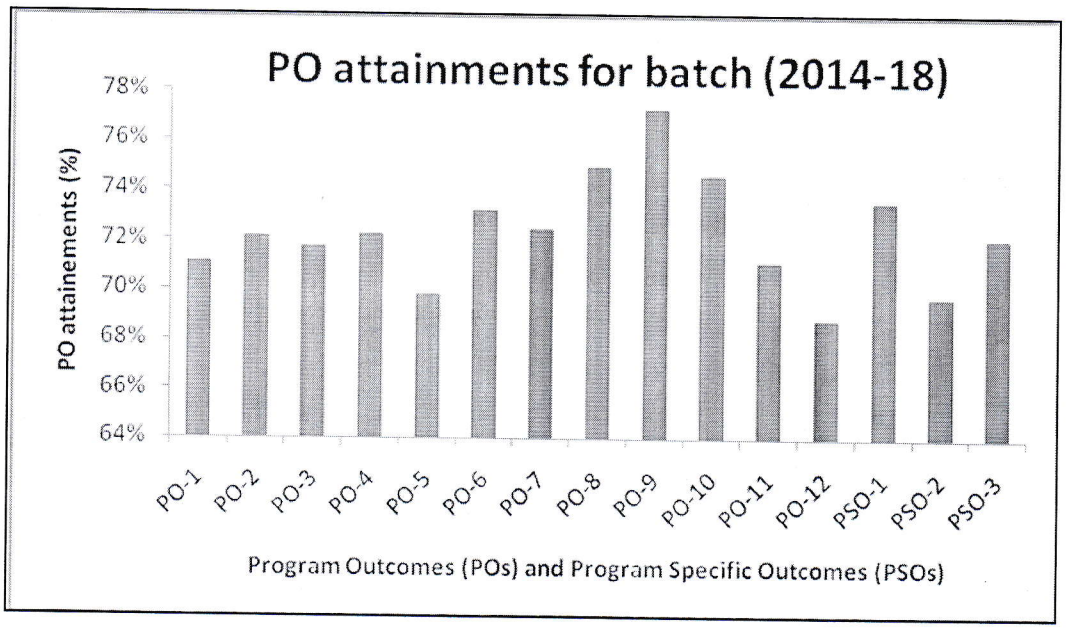

Figure 1: Representation of attainment levels of Program Outcomes (POs) and Program Specific Outcomes (PSOs) for the batch (2014-18)

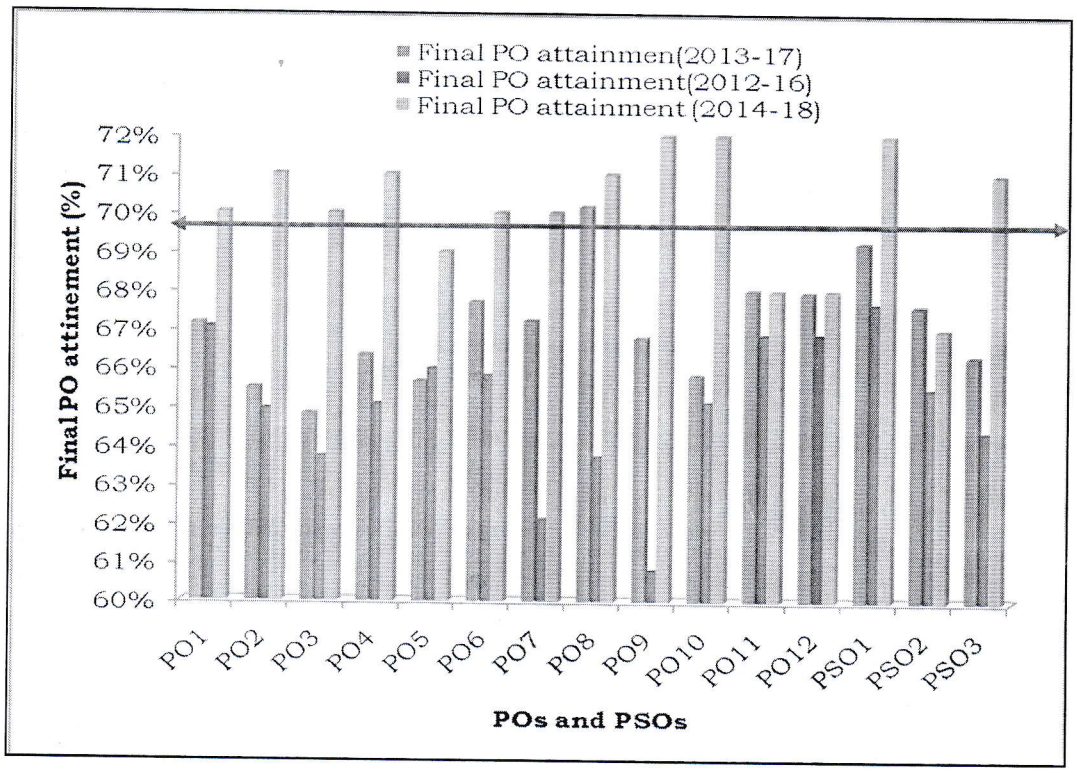

Figure 2: Comparison of attainment levels of Program Outcomes (POs) and Program Specific Outcomes (PSOs) for the last three batches (2012-16),(2013-17) and (2014-18)

PAC Signatures

HOD