



## RECOMMENDATIONS AND SUGGESTIONS REPORT ON PO/PSO ATTAINMENTS

Batch: (2017-2021)

A.Y: 2020-21

POs	Target Level (%)	Attainment Level (%)	Observations
<b>PROGRAM OUTCOMES</b>			
<b>PO1: Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	Target Level (%)	Attainment Level (%)	<b>Target not reached</b> Out of 52 courses, 48 courses are contributing towards PO1. Out of 48 courses, 29 courses are above the PO target level. The attainment level is <b>very close</b> to the target level.
	65	64	
<p><b>Action 1:</b> The courses with less than 65% of PO attainment are identified. Those courses are Elements of Aerospace Engineering, Fluid Mechanics and Hydraulic Machinery Lab, Probability and Statistics, Elements of Heat Transfer, Aerodynamics-II and Propulsion – I. These details are forwarded to the concerned course coordinators through module coordinators. Necessary improvements are recommended in teaching-learning methodology for these courses to improve the PO attainment for the forthcoming batches.</p> <p><b>Action 2:</b> Basic engineering principles and knowledge of mathematics are very much essential in the engineering domain. These can be improved by conducting relevant more problem solving sessions, tutorials, assignments and through display models for those courses.</p> <p><b>Action 3:</b> Lateral entry students need more emphasis on mathematical basics to complex engineering problems.</p>			
<b>PO2: Problem analysis:</b> 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 (%)	<b>Target not reached</b> Out of 52 courses, 48 courses are contributing towards PO2. Out of 48 courses, 30 courses are above the PO target.
	65	63	
<p><b>Action 1:</b> The courses with less than 65% of PO attainment are identified. Those courses are 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. These details are forwarded to the concerned course coordinators through the module coordinators. Necessary improvements are recommended in teaching-learning methodology for the above courses to improve the PO attainment for the forthcoming batches.</p> <p><b>Action 2:</b> Formulation of problems and their analysis in the above courses are needed to be practiced in classroom and laboratory through group discussion.</p> <p><b>Action 3:</b> Encourage the students to perform a proper literature survey for analyzing and solving complex engineering problems.</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.

PO3	Target Level (%)	Attainment Level (%)	Target reached Out of 52 courses, 45 courses are contributing towards PO3. Out of 45 courses, 25 courses are above the PO target.
	60	63	

**Action 1:** The courses with less than 65% of PO attainment are identified. Those are Aircraft Structures –II, Instrumentation, Measurements, and Experiments in Fluids, Introduction to Space Technology, Theory of Vibrations, and Airport Design. These details are forwarded to the concerned course coordinators through the module coordinators. Necessary improvements are recommended in teaching-learning methodology for the above courses to improve the PO attainment for the forthcoming batches.

**Action 2:** Students are expected to carry out their internships in reputed organizations so that they will involve in the design and development of solutions for the complex engineering problems.

**Action 3:** Students are encouraged to execute course based group projects.

**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 Out of 52 courses, 45 courses are contributing towards PO4. Out of 45 courses, 26 courses are above the PO target.
	60	63	

**Action 1:** The courses with less than 60% of PO attainment are identified. These details are forwarded to the concerned course coordinators through the module coordinators. Necessary improvements are recommended in teaching-learning methodology for the above courses to improve the PO attainment for the forthcoming batches.

**Action 2:** It is instructed to train the students to interpret the data obtained in experimental and analytical approaches.

**Action 3:** It is encouraged to arrange more industrial visits to improve industry exposure of students.

**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 Out of 52 courses, 13 courses are contributing toward PO5. Out of 13 courses, 09 courses are above the PO target
	60	65	


**Action 1:** The courses with less than 60% of PO attainment are identified. These details are forwarded to the concerned course coordinators through the module coordinators. To motivate the graduates to work in domain based modern tools in academic activities.


**Action 2:** It is advised to explore the computer-aided tools or techniques while delivering lectures so the student will get experience on modern tool usage. It is encouraged to organize more Student Certification programs on modern tools. Modern tools are needed to be incorporated as a part of curriculum.


	<b>Action 3:</b> Students are encouraged to use the modern tools that are available to carry out their mini project, major project, PAL, PBL, etc.,		
<b>PO6: The engineer and society:</b> 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.			
	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	
PO6	65	62	<b>Target not reached</b> Out of 52 courses, only 08 courses are contributing toward PO6. Out of 08 courses, 06 courses are above the PO target.
<p><b>Action 1:</b> The courses with less than 65% of PO attainment are identified. Those are Engineering Economics and Accountancy, and Satellite Technology. These details are forwarded to the concerned course coordinators through the module coordinators. Necessary improvements are recommended in teaching-learning methodology for the above courses to improve the PO attainment for the forthcoming batches.</p> <p><b>Action 2:</b> More students are encouraged to participate in attending co-curricular and extracurricular activities.</p> <p><b>Action 3:</b> Students are encouraged to do projects related to societal needs.</p>			
<b>PO 7: Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO7	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	<b>Target reached</b>
	65	70	Out of 52 courses, only 01 course is contributing toward PO7, and is above the target
<p><b>Action 1:</b> Faculty are instructed to teach the responsibilities of engineers towards the environment while developing engineering solutions.</p> <p><b>Action 2:</b> Courses concerned to environmental and sustainability are recommended to include for forthcoming curriculum.</p> <p><b>Action 3:</b> Students are encouraged to participate in various club activities.</p>			
<b>PO 8: Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO8	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	<b>Target not reached</b>
	65	61	Out of 52 courses, only 08 courses are contributing toward PO8. Out of 08 courses, 05 courses are above the PO target.
<p><b>Action 1:</b> The students are strictly advised to follow the code of ethics in engineering practices, sports and cultural activities.</p> <p><b>Action 2:</b> All the faculty members are instructed to impart ethical attitude and behaviour among all the students</p> <p><b>Action 3:</b> To arrange expert guest lectures to bring the awareness on code of ethics.</p>			
<b>PO 9: Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings			
PO9	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	<b>Target not reached</b>
	65	60	Out of 52 courses, 09 courses are contributing toward PO9. Out of 09 courses, 05 courses are above the PO target.
<b>Action 1:</b> The courses with less than 65% PO attainment are identified. Those are Engineering Economics and Accountancy, Industrial Engineering and Management, Mini Project, and Satellite Technology. These details are forwarded to the concerned course coordinators through the module coordinators.			

	<p><b>Action 2:</b> Students are encouraged to carry out the curricular (Projects, Seminars, internships, etc.) and co-curricular activities as a team. Students are encouraged to conduct and participate in various programs.</p>		
<p><b>PO 10: Communication:</b> 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.</p>			
PO10	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	<p><b>Target not reached</b> Out of 52 courses, 05 courses are contributing towards PO10. Out of 05 courses, 04 courses are above the PO target. The attainment level is <b>very close</b> to the target level.</p>
	65	64	
<p><b>Action 1:</b> The courses with less than 65% PO attainment are identified. These details are forwarded to the concerned course coordinators through the module coordinators.</p> <p><b>Action 2:</b> Soft skill training is imparted to students to enhance various aspects of communication or technical talks through group discussion, presentation. Association activities play an important role.</p>			
<p><b>PO 11: Project management and finance:</b> 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.</p>			
PO11	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	<p><b>Target not reached</b> Out of 52 courses, 05 courses are contributing toward PO11. Out of 05 courses, 02 courses are above the PO target.</p>
	60	57	
<p><b>Action 1:</b> Impart the knowledge and understanding of the engineering and management principles to work out projects in multidisciplinary environments.</p> <p><b>Action 2:</b> Select internship activities based on the work, as a member and leader in a team to acquire knowledge of project management principles and finance.</p> <p><b>Action 3:</b> Improve the teaching-learning process for the identified courses.</p> <p><b>Action 4:</b> Students are encouraged to do multidisciplinary projects.</p>			
<p><b>PO 12: Life-long learning:</b> 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>			
PO12	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	<p><b>Target not reached</b> Out of 52 courses, 50 courses are contributing toward PO12. Out of 50 courses, 31 courses are above the PO target.</p>
	65	61	
<p><b>Action 1:</b> Inculcate the habit of self-preparation and self-learning through textbooks, journals, print media, electronic media, Self-learning modules through SWAYAM &amp; NPTEL courses videos.</p> <p><b>Action 2:</b> Faculty are advised to bring awareness on the importance of core courses in life-long learning.</p>			
<p><b>PROGRAM SPECIFIC OUTCOMES</b></p>			
<p><b>PSO 1:</b> To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures, and Flight Dynamics in Aerospace vehicle design.</p>			
	<b>Target Level (%)</b>	<b>Attainment Level (%)</b>	<p><b>Target not reached</b> Out of 52 courses, 44 courses are contributing towards PSO1. Out of 44 courses, 25 courses are above the PO target value of 65%.</p>
	65	62	

<p><b>Action 1:</b> To Improve the teaching methodology as well as provide more assignments related to the courses, which are 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 help in the improvement of the PSO1 attainment.</p> <p><b>Action 2:</b> It is advised to solve the application-oriented problems in the core subjects to improve the knowledge of Aerodynamics, Propulsion, Aircraft structures, and Flight Dynamics. Higher cognitive level problems especially in design orientation courses are to be discussed in the classrooms.</p> <p><b>Action 3:</b> Modern tool usage needs to improve to strengthen the knowledge in the design of aerospace vehicle design.</p>		
<p><b>PSO 2:</b> To prepare the students to work effectively in Aerospace and Allied Engineering organizations.</p>		
	<p><b>Target Level (%)</b></p> <p>65</p>	<p><b>Attainment Level (%)</b></p> <p>62</p>
<p><b>Target not reached</b> Out of 52 courses, 47 courses are contributing towards PSO2. Out of 47 course, 28 courses are above the PO target value of 65%.</p>		
<p><b>Action 1:</b> Students are encouraged to take the internship in the leading organizations. Industrial visits need to be improved to explore the working environment of aerospace organizations.</p> <p><b>Action 2:</b> Faculty are encouraged to implement various pedagogical techniques to focus on higher cognitive level problems and their relevant analysis in the classrooms.</p>		

  
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