



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

Department of Civil Engineering

Attainment of Program Outcomes (POs) and Program Specific Outcomes (PSOs) of 2018 - 2022 batch (IARE - R18)

Course Code	Subject Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C101	AHSB01	English	-	-	-	-	-	-	-	-	-	2.50	-	-	-	-	-
C102	AHSB02	Linear Algebra and Calculus	1.60	1.50	-	-	-	-	-	-	-	-	-	-	-	-	-
C103	AEEB01	Fundamentals of Electrical Engineering	2.00	1.80	-	-	-	-	-	-	-	-	-	-	-	-	-
C104	AHSB08	English Language and Communication Skills Laboratory	-	-	-	-	-	-	-	-	3.00	3.00	-	-	-	-	-
C105	AEEB05	Fundamentals of Electrical Engineering Laboratory	3.00	-	-	-	3.00	-	-	3.00	3.00	3.00	-	3.00	-	-	-
C106	AMEB02	Engineering Graphics and Design Laboratory	3.00	-	3.00	-	3.00	-	-	-	-	-	-	-	-	-	3.00
C107	AHSB11	Mathematical Transform Techniques	1.90	1.30	-	2.40	-	-	-	-	-	-	-	-	2.10	-	-
C108	AHSB03	Engineering Chemistry	1.00	1.20	-	-	-	-	1.00	-	-	-	-	-	-	-	-
C109	AHSB04	Waves and Optics	2.10	2.30	-	2.50	-	-	-	-	-	-	-	-	-	-	-
C110	ACSB01	Programming for Problem Solving	0.60	0.60	0.70	0.60	0.60	-	-	-	-	0.60	-	0.70	-	-	-
C111	AHSB09	Engineering Chemistry Laboratory	3.00	3.00	-	-	-	-	-	-	-	-	-	-	-	-	-
C112	AHSB10	Engineering Physics Laboratory	3.00	3.00	-	3.00	-	-	-	-	-	-	-	-	-	-	-
C113	ACSB02	Programing for Problem Solving Laboratory	0.90	-	-	-	0.90	-	-	-	-	0.90	-	-	-	-	-
C114	AMEB01	Workshop Manufacturing Practices Laboratory	3.00	-	3.00	-	3.00	-	-	-	-	-	3.00	-	-	-	3.00

C201	ACEB01	Surveying and Geomatics	2.50	2.60	-	-	2.40	-	-	-	-	-	-	-	2.60	-	-
C202	AMEB03	Engineering Mechanics	1.30	1.30	-	1.1	-	-	-	-	-	-	-	-	-	-	-
C203	ACEB02	Building Materials Construction and Planning	2.50	2.10	2.60	-	-	-	-	-	-	-	-	-	2.30		
C204	AECB01	Basic Electronic Engineering	1.30	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-
C205	ACSB03	Data Structures	1.60	1.50	1.70	1.50	1.70	-	-	-	-	1.70	-	1.50	-	-	-
C206	ACEB03	Surveying and Geomatics Laboratory	3.00	3.00	-	-	3.00	-	-	-	3.00	-	-	-	1.50	-	-
C207	ACEB04	Civil Engineering Drawing Laboratory	3.00	3.00	-	-	3.00	-	-	-	-	-	-	-	-	3.00	-
C208	ACSB05	Data Structure Laboratory	2.30	2.30	2.30	2.30	2.30	2.30	-	2.30	2.30	2.30	-	2.30	-	-	-
C209	ACEB05	Engineering Geology	2.70	-	2.90	2.50	-	-	2.70	-	-	-	-	-	2.80	2.70	-
C210	ACEB06	Fluid Mechanics	1.90	1.90	1.30	1.50	-	-	-	-	-	1.30	-	-	1.80	2.90	-
C211	ACEB07	Strength of Materials	1.80	1.90	-	-	-	-	-	-	-	-	-	0.80	1.90	0.80	-
C212	AHSB12	Probability and Statistics	2.70	2.70	-	2.60	-	-	-	-	-	-	-	-	-	-	-
C213	ACEB08	Materials, Testing and Evaluation	2.60	2.90	2.50	2.70	2.60	-	-	-	-	-	-	-	2.80	2.60	-
C214	ACEB09	Engineering Geology Laboratory	3.00	3.00	-	3.00	-	-	-	-	-	-	-	-	-	-	-
C215	ACEB10	Fluid Mechanics Laboratory	3.00	-	3.00	3.00	-	-	3.00	-	-	-	-	-	3.00	-	3.00
C216	ACEB11	Strength of Materials Laboratory	3.00	3.00	-	-	3.00	-	-	-	-	-	-	-	-	3.00	-
C301	ACEB12	Mechanics of Material	2.50	2.50	-	2.70	-	-	-	-	-	-	-	-	2.40	-	-
C302	ACEB13	Structural Engineering	1.50	1.50	1.20	-	-	-	-	-	-	-	-	0.50	1.30	-	-
C303	ACEB14	Hydraulic Engineering	2.00	1.70	-	1.80	-	-	-	-	-	2.00	-	-	2.20	-	-
C304	AHSB14	Business Economics and Financial Analysis	1.60	1.60	-	-	-	-	-	1.40	1.50	-	1.00	-	-	-	-

C407	ACEB25	Transportation Engineering Laboratory	3.00	3.00	-	-	3.00	-	-	-	3.00	-	-	-	3.00	-	-
C408	ACEB54	Project Work (Phase I)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C409	ACEB46	Prestressed Concrete Structures	1.50	1.40	1.20	1.20	-	-	-	-	-	-	-	-	1.40	-	-
C410	AEEB56	Non-Conventional Energy Sources	2.30	1.70	1.10	-	-	-	1.30	-	-	-	-	-	-	-	-
C411	ACEB55	Project Work (Phase II)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Direct Attainment Value			2.30	2.10	2.20	2.20	2.40	2.40	2.40	2.50	2.70	2.10	2.60	1.90	2.30	2.40	2.70

Overall Attainment

S No.	Assessment Component(Direct + Indirect)	Program Outcomes												PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1.	Direct Assessment (CIA + SEE + Course End Survey) (a)	2.10	2.20	2.20	2.40	2.40	2.40	2.40	2.50	2.70	2.10	2.60	1.90	2.30	2.40	2.70
2.	Student Program exit surveys (b)	2.60	2.50	2.50	2.50	2.40	2.40	2.50	2.20	2.20	2.30	2.30	2.4	2.30	2.20	2.20
3.	Employer surveys (c)	2.60	2.50	2.50	2.50	2.40	2.50	2.50	2.50	2.60	2.50	2.50	2.50	2.60	2.50	2.50
4.	Alumni Survey (d)	2.40	2.30	2.30	2.30	2.20	2.20	2.20	2.00	2.00	2.10	2.10	2.20	2.20	2.20	2.20
Overall attainment = a*0.8 + b*0.1 + c*0.05 + d*0.05		2.40	2.20	2.30	2.30	2.40	2.40	2.40	2.40	2.60	2.10	2.50	2.00	2.30	2.40	2.60

Action taken to improve the attainment of POs and PSOs:

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	1.8	2.40	Target Achieved. Following courses were identified which didn't meet the attainment target AHSB03, ACSB01, ACSB02, AMEB03, AECB01, ACEB13, ACSB34, , ACEB22, ACEB38, ACEB46.
Action:			
<ol style="list-style-type: none"> 1. Additional tutorial classes were conducted to the students to enhance the skills in mathematical fundamentals. 2. Tutorial classes are conducted to the students on basics of engineering mechanics, strength of materials for understanding complex civil 			
PO 2: Problem Analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO 2	1.8	2.20	Target Achieved. Following courses were identified which didn't meet the attainment target AHSB11, AHSB03, ACSB01, AMEB03, AECB01, ACEB18, ACSB34, ACEB22, ACEB38, ACEB42.
Action:			
<ol style="list-style-type: none"> 1. Additional focus is given on problem solving topics for analyzing complex engineering problems in the tutorial classes. 2. Students are encouraged for writing the assignments on various concepts for better understanding. 			

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.			
PO 3	1.8	2.30	Target Achieved. Following courses were identified which didn't meet the attainment target ACSB01, ACSB02, ACEB06, ACEB13, ACEB18, ACEB19, ACSB34, ACEB22, ACEB38, ACEB42, ACEB46, AEEB56.
Action: 1. Interactive-sessions were organized to students with experts to improve skills in current and upcoming technologies. 2. Societal and environmental design problems were given as self-study to students in open elective courses.			
PO 4: 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.			
PO 4	1.8	2.30	Target Achieved. Following courses were identified which didn't meet the attainment target ACSB01, AMEB03, ACSB03, ACEB06, ACEB14, ACSB34, ACEB22, ACEB38, ACEB42, ACEB46.
Action: 1. Students were encouraged on designing of structural elements with modern approach. 2. Research based Courses will be included, syllabi to be updated to include and inculcate the analysis, research skills.			
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.			
PO 5	1.8	2.40	Target Achieved. Following courses were identified which didn't meet the attainment target ACSB01, ACSB02, ACSB03, ACEB17.
Action: 1. Students were motivated to use latest software for modelling and designing of structures. 2. Workshops were conducted on drafting tools, structural designs problems and analysis.			

PO 6: 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.

PO 6	1.8	2.40	Target Achieved. Following courses were identified which didn't meet the attainment target ACEB17, AHSB21.
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Action:

1. Awareness program on clean and renewable energy was organized to inculcate a strong sense of responsibility among the budding student engineers.
2. Students will be encouraged to participate in social clubs like sports club, cultural club.

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.

PO 7	1.8	2.40	Target Achieved. Following courses were identified which didn't meet the attainment target AHSB03, AEEB56.
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Action:

1. Real time waste management systems were presented to encourage sense of responsibility among the students and also to promote sustainable environment.
2. Proper guidance was given to the students to utilize low carbon cement based materials for promoting sustainability.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 8	1.8	2.40	Target Achieved. Following courses were identified which didn't meet the attainment target AHSB14.
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Action:

1. Guest lectures were arranged on topics related to professional ethics / value-based education.
2. Students were encouraged to get their major project and internship reports for plagiarism check to ensure proper practice of professional 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.			
PO 9	1.8	2.60	Target Achieved. Following courses were identified which didn't meet the attainment target AHSB14.
Action:			
<ol style="list-style-type: none"> 1. Institute has initiated Program which provides a platform to work in individual as well as a group in the fields of Engineering. It helps the students to groom the skills like leadership or as an effective team member. There are a number of societies and clubs where the students learn to work both as individuals and in a team work environment. 2. The laboratory work of the students is conducted by framing student groups so that students learn to work in a team environment. 			
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.			
PO 10	1.8	2.10	Target Achieved. Following courses were identified which didn't meet the attainment target ACSB01, ACSB02, ACEB06, ACSB34.
Action:			
<ol style="list-style-type: none"> 1. Students were motivated to participate in various club activities where they will learn to function effectively both as individuals and as team members in a group. 2. Students were encouraged to participate in class room presentations and national/international conferences/seminars/symposia/ hackathon / 			
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.			
PO 11	1.8	2.50	Target Achieved. Following courses were identified which didn't meet the attainment target AHSB14.
Action:			
<ol style="list-style-type: none"> 1. Students were encouraged to do multidisciplinary project involving allied departments. 2. Students are encouraged to take up full semester internship program in various organizations to take up industry-oriented project works. 			

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.

PO 12	1.8	2.00	Target Achieved. Following courses were identified which didn't meet the attainment target ACSB01, ACEB07, ACEB13, ACEB17, ACSB34.
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Action:

1. Students were motivated to enroll NPTEL certification courses on coding such as python, and programming courses which adds benefit for their future learning.
2. Highly motivated students are encouraged to pursue higher studies on specialized areas of civil engineering in premier institutions.

PSO 1 Design and Supervise Sub-Structures and Super Structures for Residential and Public Buildings, Industrial Structures, Irrigation Structures, Power Houses, Highways, Railways, Airways, Docs and Harbors.

PSO 1	1.8	2.30	Target Achieved. Following courses were identified which didn't meet the attainment target ACEB13, ACEB17, ACEB18, ACEB22, ACEB38, ACEB42, ACEB46.
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Action:

1. Workshops are organized on modern software to improve skill-set of students in designing of various structures.
2. Students are motivated to take up the real-life problems during their project work so that they can design, analyze and find solution which gives exposure to latest technologies.

PSO 2: Focus on Improving Performance of Structures with reference to Safety, Serviceability and Sustainable Green Building Technology.

PSO 2	1.8	2.40	Target Achieved. Following courses were identified which didn't meet the attainment target ACEB07, ACEB18, ACEB22.
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Action:

1. Expert lectures were arranged on safety, serviceability, and importance of modern structural engineering concepts.
2. Students were encouraged to participate in industry-related projects in order to have a better understanding of advanced industrial

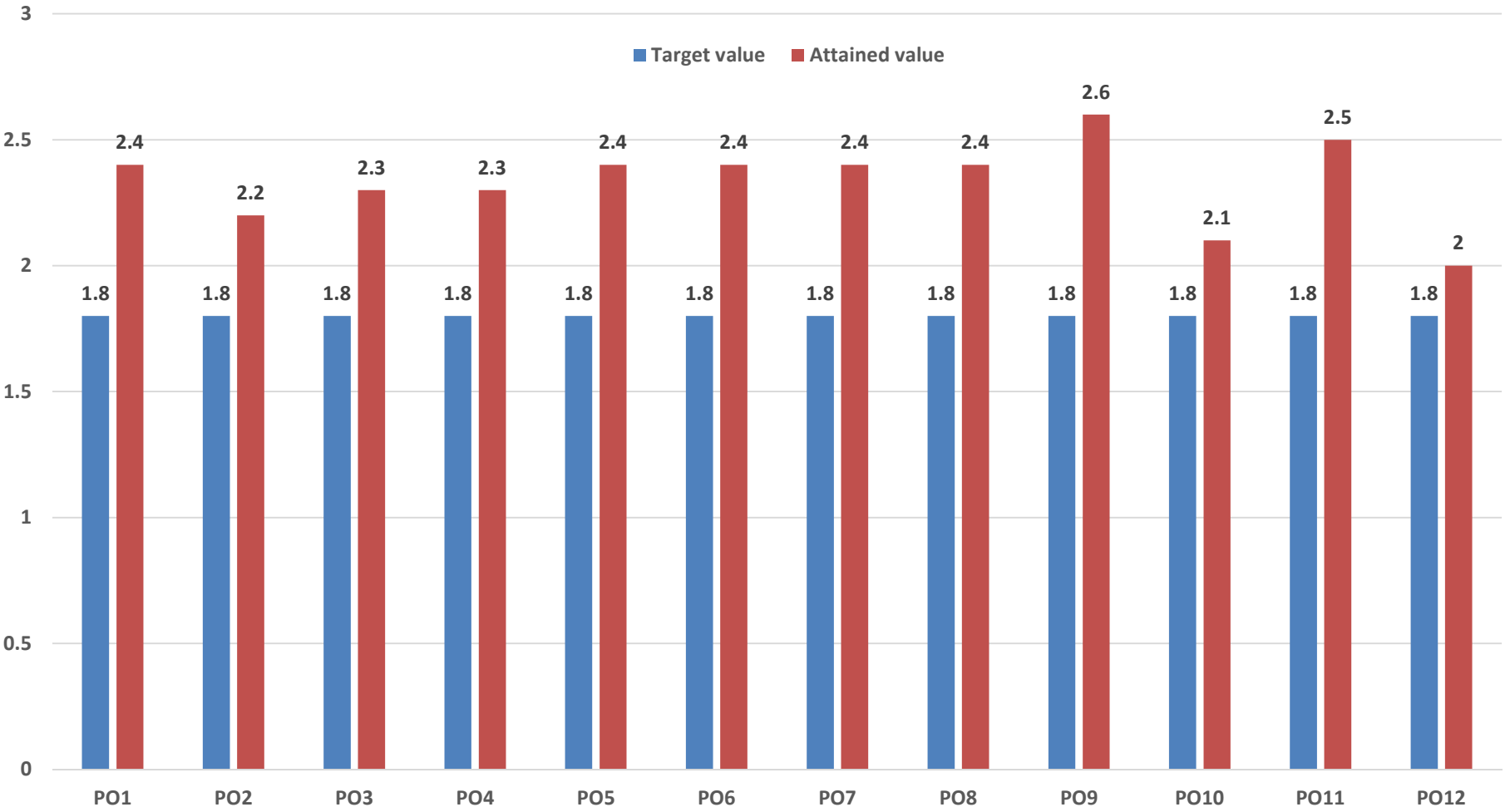
PSO 3: Make use of Advanced Structural Analysis and Project Management Software for creating Modern Avenues to succeed as an Entrepreneur, Pursue Higher Studies and Career Paths.

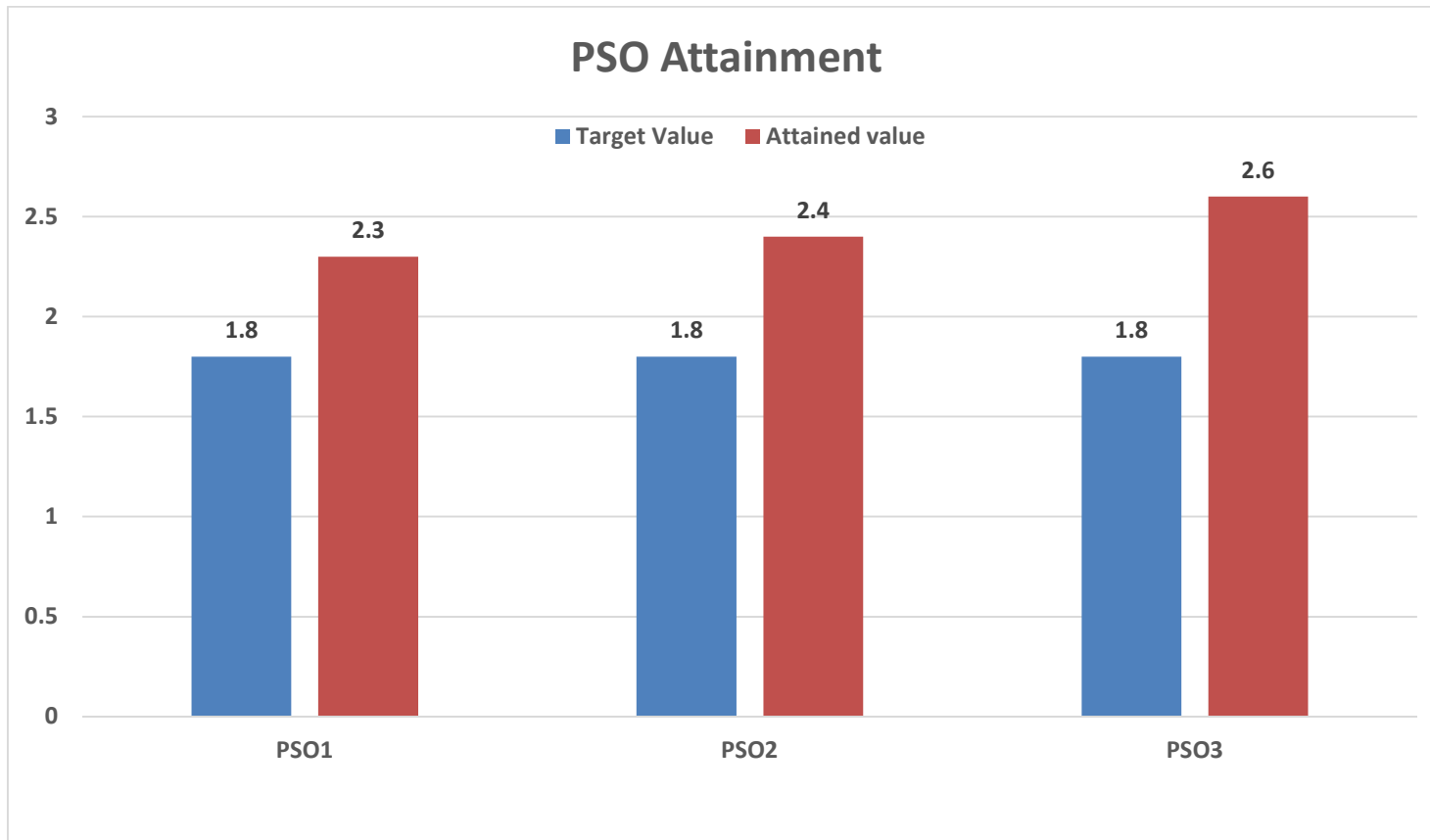
PSO 3	1.8	2.60	Target Achieved. Following courses were identified which didn't meet the attainment target ACEB17.
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Action:

1. Hands-on workshops were conducted by industry experts on latest technologies and software implementations for getting real-time exposure.
2. Short term training program were conducted on program specific courses.

PO Attainment





HOD, CE

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