INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal - 500 043, Hyderabad, Telangana

DEPARTMENT OF INFORMATION TECHNOLOGY

Attainment of Program Outcomes (POs & PSOs) of 2021– 2025 batch (IARE – UG20)

Course Code	Course	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
AHSC02	Linear Algebra and Calculus	2.10	2.20													
AHSC06	Chemistry	2.30	2.00					2.90								
AEEC01	Basic Electrical Engineering	1.50	2.20											1.80		
ACSC01	Python Programming	1.80	1.60	1.70		1.80					1.30		1.40	1.80		1.70
ACSC06	Experiential Engineering Education (ExEEd)- Academic Success	3.00		3.00	3.00		3.00	3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00
AEEC04	Basic Electrical Engineering Laboratory	3.00							3.00	3.00	3.00		3.00	3.00		
ACSC02	Python Programming Laboratory	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
AMEC04	Engineering Workshop Practice	3.00		3.00			3.00	3.00		3.00		3.00				3.00
AHSC01	English										2.50					
AHSC08	Probability and Statistics	2.70	2.90		2.60	2.90										
AHSC09	Applied Physics	2.50	2.40		2.20											2.30
ACSC04	Programming for Problem Solving using C	1.80	1.80	1.80		1.80					1.80		1.80	1.80		1.80
AHSC04	English Language and Communication Skills Laboratory									3.00	3.00					
AHSC05	Physics Laboratory	3.00	3.00		3.00											3.00
ACSC05	Programming for Problem Solving using C Laboratory	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
AITC01	Discrete Mathematical Structures	1.90	1.90	2.30										2.00		
ACSC07	Computer Organization and Architecture	1.40	1.20	1.20	1.30						1.40		1.40	1.30		1.50
ACSC08	Data Structures	2.50	2.50	2.60	2.30	2.60					2.60		2.50	2.70	2.30	2.70
AITC02	Programming with Objects	2.00	1.90		1.90	1.90					2.10		1.90	2.00		2.00
AECC08	Analog and Digital Electronics	2.20	2.20	2.20							2.20			2.20		
ACSC09	Experiential Engineering Education (ExEEd) - Prototype / Design Building	3.00	3.00	3.00	3.00	3.00	3.00			3.00	3.00		3.00	3.00	3.00	3.00
ACSC10	Data Structures Laboratory	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
AITC03	Programming with Objects Laboratory	2.30		2.30		2.30					2.30		2.30		2.30	2.30
ACSC11	Advanced Python Programming Laboratory	3.00	3.00	3.00		3.00					3.00		3.00		3.00	3.00
AITC04	Theory of Computation	2.60	2.60	2.60	2.80						2.40			2.60		2.70
ACSC12	Operating Systems	2.50	2.50	2.60	2.30						2.50		2.50	2.60	2.30	2.30
AITC05	Database Management Systems	2.20	2.30	2.20	2.10	1.70					2.30		1.90	2.00	2.00	2.30
ACSC13	Design and Analysis of Algorithms	2.60	2.30	1.30	2.90									2.90		
AITC06	Computer Networks	2.50	2.20	2.60	2.90						2.30		2.60	2.50	2.90	2.90
ACSC14	Experiential Engineering Education (ExEEd) - Fabrication / Model Development	3.00	3.00	3.00	3.00	3.00	3.00			3.00	3.00		3.00	3.00	3.00	3.00
AITC07	Database Management Systems		3.00	3.00		3.00					3.00		3.00		3.00	

	Laboratory															
ACSC15	Design and Analysis of Algorithms Laboratory		3.00	3.00	3.00	3.00	3.00	3.00	3.00		3.00		3.00	3.00	3.00	3.00
AITC08	Linux Internals Laboratory	3.00	3.00	3.00										3.00	3.00	
ACSC40	Compiler Design	2.70	2.50	2.60		2.70					2.30			2.80		2.30
AITC09	Web Application Development	1.90	0.70	1.70	2.80	1.90					1.90		1.90	1.90	1.70	
AITC11	Cryptography and Network Security	1.20	1.20	1.20	1.20						1.20		1.20	1.20	1.20	1.20
ACSC19	Object Oriented Software Engineering	2.10	2.90	1.90		2.30					2.10		2.70	2.60		2.20
AITC13	Fundamentals of Multimedia	2.00	2.30	2.20	2.00	2.10	1.80	2.30	2.20	1.70				2.70	2.00	2.10
ACSC20	Experiential Engineering Education (ExEEd) - Project Based Learning	3.00	3.00	3.00	3.00	3.00	3.00			3.00	3.00		3.00	3.00	3.00	3.00
ACSC21	Object Oriented Software Design Laboratory		3.00	3.00	3.00	3.00							3.00		3.00	3.00
AITC10	Web Application Development Laboratory	3.00	3.00	3.00	3.00	3.00							3.00	3.00	3.00	3.00
AITC17	Data Warehousing and Data Mining	2.40	2.30	2.60	2.70	2.70					2.40		2.00	2.30	2.70	2.10
AITC18	Software Testing Methodologies	2.80	2.80	2.90	2.90	2.90								2.90	2.90	2.90
AHSC13	Business Economics and Financial Analysis	2.90	2.90						2.90	2.90		2.90				
ACIC05	Software Project Management	2.80	2.80	2.80		2.80					2.80		2.80	2.80		2.80
AHSC15	Soft Skills and Interpersonal Communication								2.80	2.80	2.80					
ACSC27	Experiential Engineering Education (ExEEd) Research Based Learning	3.00	3.00	3.00	3.00	3.00				3.00	3.00		3.00	3.00	3.00	3.00
AITC22	Data Warehousing and Data Mining Laboratory	3.00	3.00	3.00		3.00								3.00	3.00	3.00
AITC23	Software Testing Methodologies Laboratory	3.00		3.00		3.00								3.00		3.00
AITC24	Big Data and Business Analytics	2.90	2.90	2.90		2.90					2.90		2.90	2.90	2.90	2.90
AITC25	Cloud Computing	2.60	2.60	2.50		1.80					2.60		2.60	2.30	2.50	2.60
AITC26	Principles of Artificial Intelligence	1.20	1.20	1.20							1.20			1.20	1.20	1.20
ACIC12	Cyber Security	2.40	2.00	2.40	2.90	2.00					2.20		2.10	2.50	2.10	2.10
AECC40	Embedded Systems	2.40	2.30	2.30		2.30					2.40			2.60		
AITC29	Big Data and Business Analytics Laboratory	3.00	3.00	3.00		3.00									3.00	
AITC30	Cloud Computing Laboratory	3.00	3.00	3.00										3.00	3.00	
AITC31	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
ACDC12	Human Computer Interaction (UI & UX)	2.80	2.80	2.80	2.80	2.80								2.80		2.80
ACIC16	E-Commerce	2.70	2.90	2.70	2.60						2.90			2.60	2.90	
ACEC31	Disaster Management	2.90					2.90	2.90		2.90						
AITC32	Project Work (Phase - II)	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
Direct Attainment		2.5	2.5	2.6	2.7	2.6	2.9	2.9	2.9	2.9	2.5	3.0	2.5	2.6	2.7	2.6

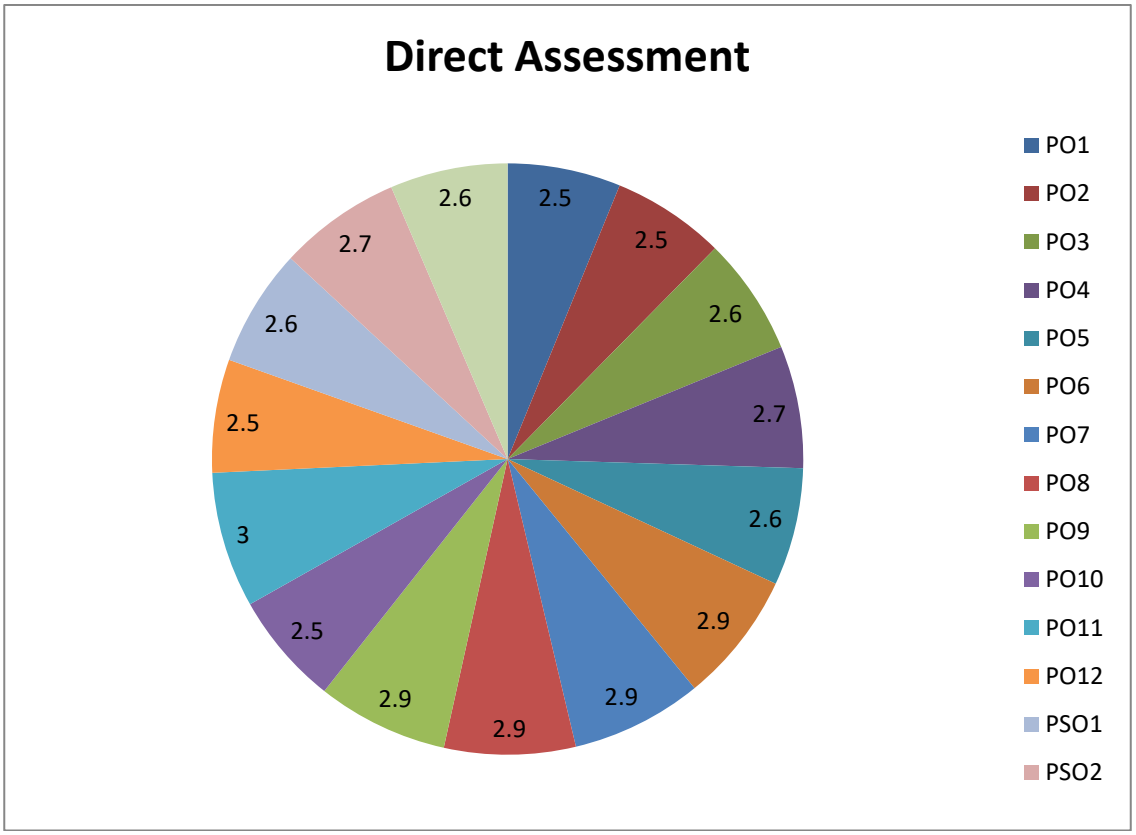

Figure 1: Program Outcomes (PO) Direct Attainment for IT 2021 – 20245 batch

PO & PSO Attainment Overall of 2021– 2025 batch (IARE – UG-20)

Regulation		**R20**														
Branch		**Information Technology**														
Batch		**2021-2025**														
S.No	**Assessment Components (Direct + Indirect)**	**Program Outcomes (POs)**												**Program Specific 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)	2.5	2.5	2.6	2.7	2.6	2.9	2.9	2.9	2.9	2.5	3.0	2.5	2.6	2.7	2.6
2	Program Exit Survey (b)	2.4	2.5	2.6	2.5	2.4	2.4	2.5	2.6	2.5	2.5	2.4	2.4	2.6	2.6	2.6
3	Alumni Survey (c)	2.6	2.5	2.6	2.5	2.5	2.5	2.5	2.6	2.5	2.5	2.5	2.4	2.4	2.5	2.5
4	Employer Survey (d)	2.5	2.4	2.3	2.5	2.5	2.3	2.5	2.5	2.3	2.5	2.4	2.3	2.5	2.4	2.3
Final attainment = a*0.8 + b*0.1 + c*0.05 + d*0.05		**2.5**	**2.5**	**2.6**	**2.7**	**2.6**	**2.8**	**2.8**	**2.8**	**2.8**	**2.5**	**2.9**	**2.5**	**2.6**	**2.7**	**2.6**

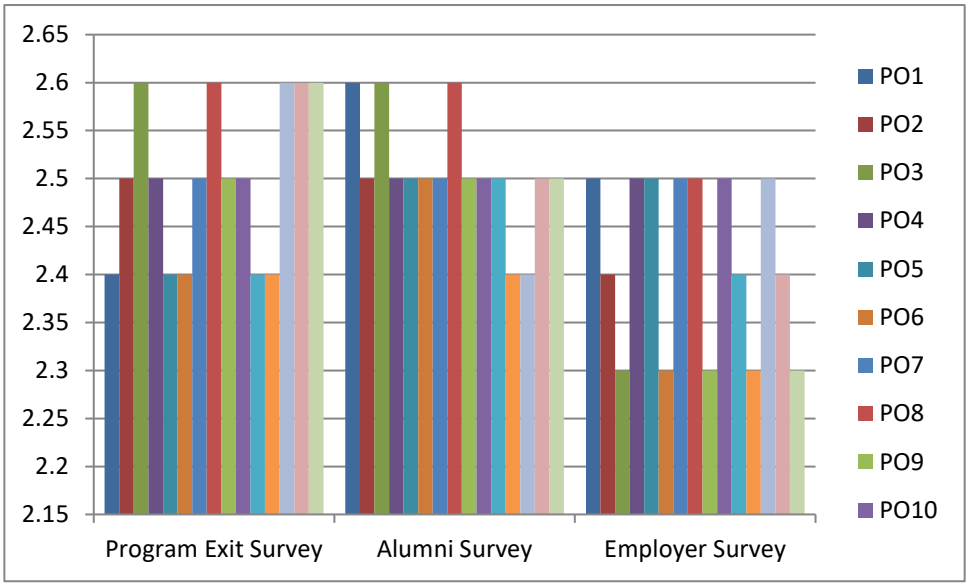

Figure 2: Program Outcomes (PO & PSO) Indirect Attainment for IT 2020 – 2024 batch

Actions Taken Based on the Results of Evaluation of the POs/PSOs Attainment

To ensure the continuous improvement in the program outcomes, the Information Technology department identifies the gaps at micro level. The analysis of the POs and PSOs assist to draw the conclusions of weak areas in the program. The effective measures and implementations are based on those gaps, which enhances both the teaching quality and learning experience.

POs Attainment Levels and Actions for improvement (2021-2025)

POs	Target Level	Attainment Level	Observation
PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	**2.05**	**2.5**	• Target achieved. • Practical approach of teaching programming was adopted to help students to understand the basics of programming.
Action 1: Students will be asked viva questions relating to the basic concepts to refresh their fundamentals in laboratory sessions. **Action 2:** Additional classes will be conducted beyond the regular classes for the courses which has less attainment. **Action 3:** Co-curricular activities are scheduled in the area of information security, Cloud, Cybersecurity and AGILE			
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	**2.05**	**2.5**	• Target achieved. • An additional class conducted for numerical courses beyond the regular planned classes has helped the students to perform better.
Action 1: Additional classes will be conducted beyond the regular classes for the courses which has less attainment. **Action 2:** Conduct Expert lectures, Seminars and Guest lecture to help students in identifying & analysing the real-time problems.			
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	**2.05**	**2.6**	• Target achieved. • Performance of the students in design related subjects, target and activities like

			guest lectures, hands-on training helped to achieve the target.
Action 1: To conduct Expert lectures workshop and hands on training session to understand processs of designing and analysing real life software problems. **Action 2:** Students were encouraged to participate in external inter college technical competitions, coding contests and hackathons.			
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	**2.05**	**2.7**	• Target is achieved. • Students were informed to refer IEEE, Elsevier journal papers/ scopus to enhance their research knowledge, analysis and interpretation of data.
Action 1: National/international conferences are scheduled to promote research culture among students.			
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.			
PO5	**2.05**	**2.6**	• Target is achieved. • Students were exposed to various modern tools like androidkits, Jupyter, Eclipse, Netbean, Pycharm, NS3, which helped to attain the target.
Action 1: Students are motivated to register for webinars/seminars conducted by third party agencies regarding modern 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.			
PO6	**2.05**	**2.8**	• Target is achieved. • Practice will be continued for the next year.
Action 1: Students have to be exposed to various professional engineering practices followed in the industries through industrial visits. **Action 2:** Continue association with professional bodies like CSI, IEEE Student chapters and CSI, IEEE Students chapters will arrange expert talks to create more awareness among the students about professional engineering practice. **Action 3:** To understand the safety concerns and social aspects, students shall visit industry to expand their practical knowledge with the effect of improved practices in engineering. **Action 4:** Students are encouraged to carry out inter domain projects so that they would Realize the importance of a project involving society, safety, health, and the legalities			
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	**2.05**	**.8**	• Target is achieved. • Best practices like Telegram is used for intra department communication to eliminate the need of papers.
Action 1: Students are encouraged to indulge in Mini projects/projects where societal and environmental issues can be addressed. **Action 2:** Students are strictly instructed to switch off all electrical Equipment /Resources when not in use for all the laboratories. **Action 3:** Best Practices like Rain water harvesting, Sewage treatment plants, proper waste management procedure are employed at our college.			
PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO8	**2.05**	**2.8**	• Target is achieved. • It is mandatory that students should submit plagiarism certificate for mini projects / project work.
Action 1: Projects/ mini projects will be scrutinized, code reviews will be conducted, plagiarism check will be done to determine the originality of the project to ensure professional ethics.			
PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO9	**2.05**	**2.8**	• Target is achieved. • Individual work was observed during lab sessions/mini projects/project work. There was an excellent team work observed during peer review presentation/seminars. • Students were encouraged to work as a team in all co-curricular and extracurricular
Action1: Students will be encouraged to participate in various co-curricular and extra-curricular activities in other colleges/sports			

activities/cultural activities. **Action2:** Students are encouraged to participate in Inter College Cultural Fest. **Action3:** Students were encouraged to participate in external intercollege technical competitions, coding contests and hackathons. **Action4:** Department encourages formation of student clubs, participation in technical events/Business ideas/app development.			
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	**2.05**	**2.5**	• Target is achieved. • Soft skills training was imparted to the students to enhance communication through group discussions and presentations. Project and seminar presentations assisted the students to communicate effectively and efficiently.
Action 1: To enhance the employability skills of the students, training programmes will be conducted on the topics: how to face the interview, career development, higher studies, and entrepreneurship development.			
P11: 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	**2.05**	**2.9**	• Target is achieved.
Action 1: Students are encouraged to prepare project proposals with the guidance of faculty for government funding agencies. **Action 2:** Special classes will be organized to understand the principles of financial analysis of projects.			
P12: 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	**2.05**	**2.5**	• Target is achieved. • Mini projects/projects which is part of the curriculum has helped the students to Perform better in placement interviews and higher studies.
Action 1: Students will be motivated to register for GRE/TOEFL/GATE and other competitive examinations.			

PSOs Attainment Levels and Actions for improvement

PSOs	Target Level	Attainment Level	Observation
PSO1: Design next-generation computer systems, networking devices, search engines, soft computing and intelligent systems, web browsers, and knowledge discovery tools.			
PSO1	**2.05**	**2.6**	• Target achieved • Indicating strong student capability in designing next-generation computer systems and networking solutions.
Action 1: Encouraged students to undertake advanced mini-projects and case studies related to intelligent systems, networking, and knowledge discovery tools. **Action 2:** Introduced industry-oriented assignments and project-based learning activities to further strengthen design and implementation skills in emerging computing technologies.			
PSO2: Focus on mobile and web applications development and learn the emerging technologies and frameworks in demand with employers and contemporary challenges.			
PSO2	**2.05**	**2.7**	• Target achieved • Strong student competence in mobile and web application development using emerging technologies and industry-relevant frameworks.
Action 1: Encouraged students to develop real-time mobile and web applications using modern frameworks and tools aligned with current industry and employer requirements.			
PSO3: Practical experience in shipping real world software, using industry standard tools and collaboration techniques will equip to secure and succeed in first job upon graduation in IT industry.			
PSO3	**2.05**	**2.6**	• Target achieved • Strong practical exposure to real-world software development using industry-standard tools and collaborative practices.
Action 1: Promoted project-based learning, internships, and capstone projects emphasizing the use of industry-standard tools, version			

control systems, and collaborative development practices.

Action 2: Organized workshops and hands-on sessions on software development life cycle (SDLC), DevOps tools, and team-based project execution to further enhance employability skills.

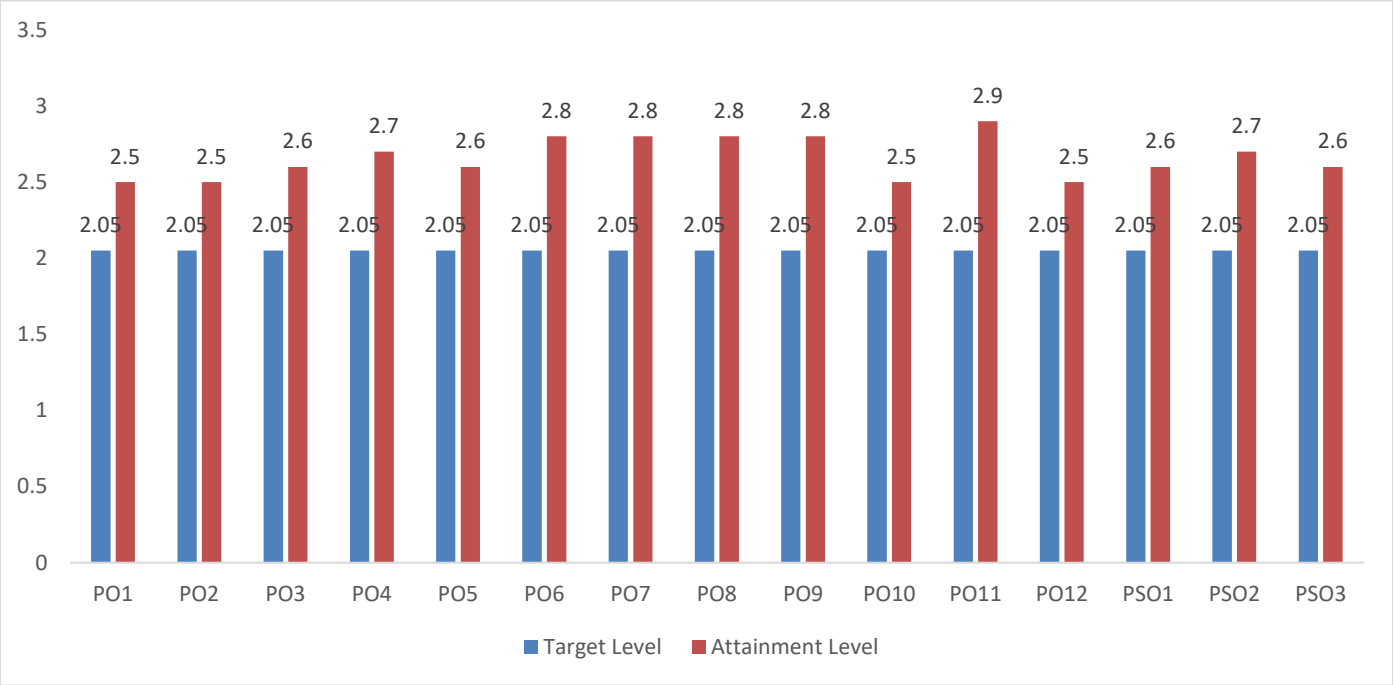

Figure 3: Program Outcomes (PO & PSO) Overall Attainment for IT 2021 – 2025 batch

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