INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad – 500 043

DEPARTMENT OF INFORMATION TECHNOLOGY

Attainment of Program Outcomes (POs) of 2017 – 2021 batch (IARE – R16)

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
AHS002	Linear Algebra And Ordinary Differential Equations	1.8	1.4													
AHS003	Computational Mathematics And Integral Calculus	2.5	2.6													
AHS005	Engineering Chemistry	1.8	2.1					1.8								
AHS006	Engineering Physics	1.9	1.9		1.7											1.7
ACS001	Computer Programming	1.9	1.7	1.5		1.9					1.9		1.9	1.9		1.9
ACS101	Computer Programming Laboratory	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6		1.6		1.6	1.6		1.6
AME103	Computer Aided Engineering Drawing	2.3		2.3		2.3				2.3	2.3		2.3			2.3
AHS104	Engineering Physics And Chemistry Laboratory	2.4	2.4		2.4									2.4		
AHS102	Computational Mathematics Laboratory	2.1	2.1		2.1									2.1		
AHS001	English For Communication										2					
AHS010	Probability And Statistics	2.8	2.8		2.8											
AHS009	Environmental Studies	2.5			1.8			2.5								
ACS002	Data Structures	1.7	1.7	1.7	1.7	1.8					1.7		1.8	1.6	1.2	1.6
AEE001	Fundamental Of Electrical And Electronics Engineering	1.9	2.2											1.7		
AHS101	Communication Skills Laboratory									2.1	2.1					
ACS102	Data Structures Laboratory	2.3	2.3	2.3	2.3	2.3	2.3		2.3	2.3	2.3		2.3	2.3	2.3	2.3
AEE101	Electrical And Electronics Engineering Laboratory	2.3	2.3			2.3			2.3	2.3	2.3		2.3	2.3		
ACS112	Engineering Practice Laboratory	2	2	2	2	2	2				2			2		2
AIT001	Design And Analysis Of Algorithms	1.6	1.9	2.4	1.5								1.8	1.5		
AEC020	Digital Logic Design	1.9	1.8	1.7	1.6						1.9				1.6	
AHS013	Discrete Mathematical Structures	1.6	1.4	1.8										1.6		
ACS005	Database Management Systems	1.7	1.6	1.4	1.4						1.6		1.2	1.8		1.5
ACS004	Computer Organization And Architecture	1.2	1.2	1.2	1.1						1.2		1.1	1.2	1.2	1.2
AIT101	Design And Analysis Of Algorithms Laboratory		3	3	3	3	3		3		3		3	3	3	3
ACS104	Database Management Systems Laboratory	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
AEC116	Digital Logic Design Laboratory	2.4	2.4	2.4		2.4				2.4	2.4				2.4	
ACS003	Object Oriented Programming Through JAVA	2.7	2.7	2.7	2.7						2.9		2.7	2.7	2.9	2.8
ACS007	Operating Systems	1.8	1.9	1.9	2.1						1.8		1.5	1.9	1.6	1.4

ACS008	Software Engineering	1.5	1.2	1.5	1.6	1.2					1.2		1.2	1.6	1.2	1.2
AIT002	Theory Of Computation	1.8	1.8	1.9	2.4									2.1		1.8
AIT003	Computer Networks	1.8	1.4	1.6	1.5						1.6		1.2	1.4	1.8	1.4
ACS103	Object Oriented Programming Through JAVA Laboratory	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3		2.3		2.3	2.3	2.3	2.3
ACS106	Operating Systems Laboratory	2.3	2.3	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	2.3	2.3
ACS107	Software Engineering Laboratory	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3		2.3	2.3	2.3	2.3
ACS006	Web Technologies	1.9	1.7	1.8	1.8	1.9					1.9		1.9	1.9	1.5	1.9
ACS009	Object Oriented Analysis And Design	2.1	1.9	2.1	2.1	2				1	1.8		1.8	2.2		1.9
AIT004	Compiler Design	1.7	1.3	1.6		2					1.3			2.1		1.3
AHS012	Optimization Techniques	2.5	2.5	2.5	2.2	2.9					2.6		2.5	2.6		2.5
AHS015	Business Economics And Financial Analysis	1.8	1.7						1.6	1.6		1.6				
ACS105	Web Technologies Laboratory	2.3	2.3	2.3		2.3	2.3		2.3	2.3	2.3		2.3	2.3	2.3	
AIT103	Case Tools Laboratory	3	3	3		3					3		3	3	3	3
AHS106	Research And Content Development	1.6	1.6	1.6	1.6	1.6	1.6		1.6	1.6	1.6		1.6	1.6	1.6	1.6
AIT505	Advanced Databases	1.4	1	1	1.8	1.2							1.2	0.5	1.2	1
ACE551	Disaster Management	2.5					2.6	2.7		2.3						
ACS013	Information Security	2.8	2.8	2.8	2.9		2.8		2.8		2.8		2.8	2.8		2.8
AEC023	Microprocessors Interfacing And Applications	2	1.7	1.7							1.9			1.7		
AIT005	Linux Internals	1.7			1.7	1.7					1.7		1.6	1.8	1.8	1.7
AEC115	Microprocessors And Interfacing Laboratory	2	2	2		2				2	2			2		
ACS510	Internet Of Things (Iot)	2.8	2.8	2.8	2.8	2.8		2.6						2.8	2.8	2.7
AIT105	Linux Internals Laboratory	2	2	2	2	2	2	2	2	2	2		2	2	2	2
AIT102	Data Warehousing And Data Mining Laboratory	2.3	2.3	2.3	2.3	2.3	2.3			2.3	2.3		2.3	2.3	2.3	2.3
AIT201	Ideation And Product Development	2	2	2	2	2	2		2	2	2	2	2	2	2	2
AIT006	Data Warehousing And Data Mining	2.2	2.1	1.9	1.8	1.8					2		2.4	2.3	1.9	2.4
AEE551	Energy From Waste	2.9		2.9			2.9	2.9					2.9			
AIT007	Cloud Computing	2.2	2	1.8		0.6					2.2		2.2	1.5	2.1	1.9
AIT008	Software Testing Methodology	2.2	2.2	1.9	1.3	1.3								1.8	1.3	1.3
ACS012	BIG DATA AND BUSINESS ANALYTICS	1.8	1.8	1.8		1.8					1.8		1.8	1.8	1.7	1.9
AIT512	Software Process And Project Management	2								2.7	2.1			2.1		
ACS110	Cloud Application Development Laboratory	2	2	2	2	2	2	2	2	2	2		2	2	2	2
AIT104	Software Testing Methodology Laboratory	2.1	2.1	2.1	2.1	2.1	2.1			2.1	2.1		2.1	2.1	2.1	2.1
ACS111	Big Data And Business Analytics Laboratory	1.4	1.4	1.4		1.4							1.4	1.4	1.4	1.4
ACS014	Machine Learning	1.8	1.8	1.8							1.8			1.8		1.6
AIT514	E-Commerce	1.9	2.1	2	1.5						2.1			1.8	1.8	
AIT401	Comprehensive Examination	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
AIT302	Project Work	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Direct Attainment Value		2.1	2	2.1	2.1	2.1	2.3	2.4	2.3	2.2	2.1	2.3	2.1	2	2	2

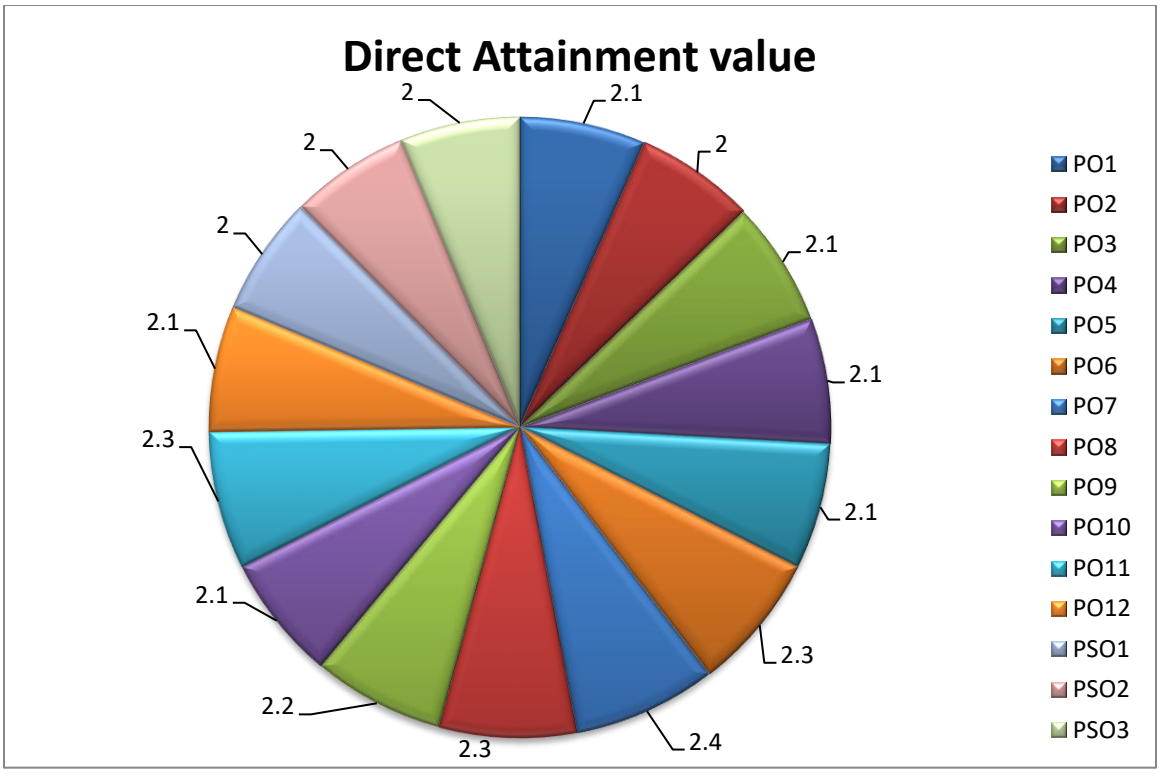

Figure 1: Program Outcomes (PO) Direct Attainment for IT 2017 – 2021 batch

PO Attainment Overall

Regulation		**R16**														
Branch		**Information Technology**														
Batch		**2017-2021**														
		Program Outcomes (POs)												**Program Specific Outcomes (PSOs)**		
S.No	**Assessment Components (Direct + Indirect)**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
1	Direct Assessment (CIA + SEE + Course End Survey) (a)	2.1	2	2.1	2.1	2.1	2.3	2.4	2.3	2.2	2.1	2.3	2.1	2	2	2
2	Program Exit Survey (b)	2.5	2.5	2.6	2.6	2.5	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.6	2.5	2.6
3	Alumni Survey (c)	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5
4	Employer Survey (d)	2.6	2.8	2.5	2.4	2.4	2.7	2.6	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Final attainment = a*0.8 + b*0.1 + c*0.05 + d*0.05		2.2	2.1	2.2	2.2	2.2	2.3	2.4	2.3	2.2	2.2	2.3	2.2	2.1	2.1	2.1

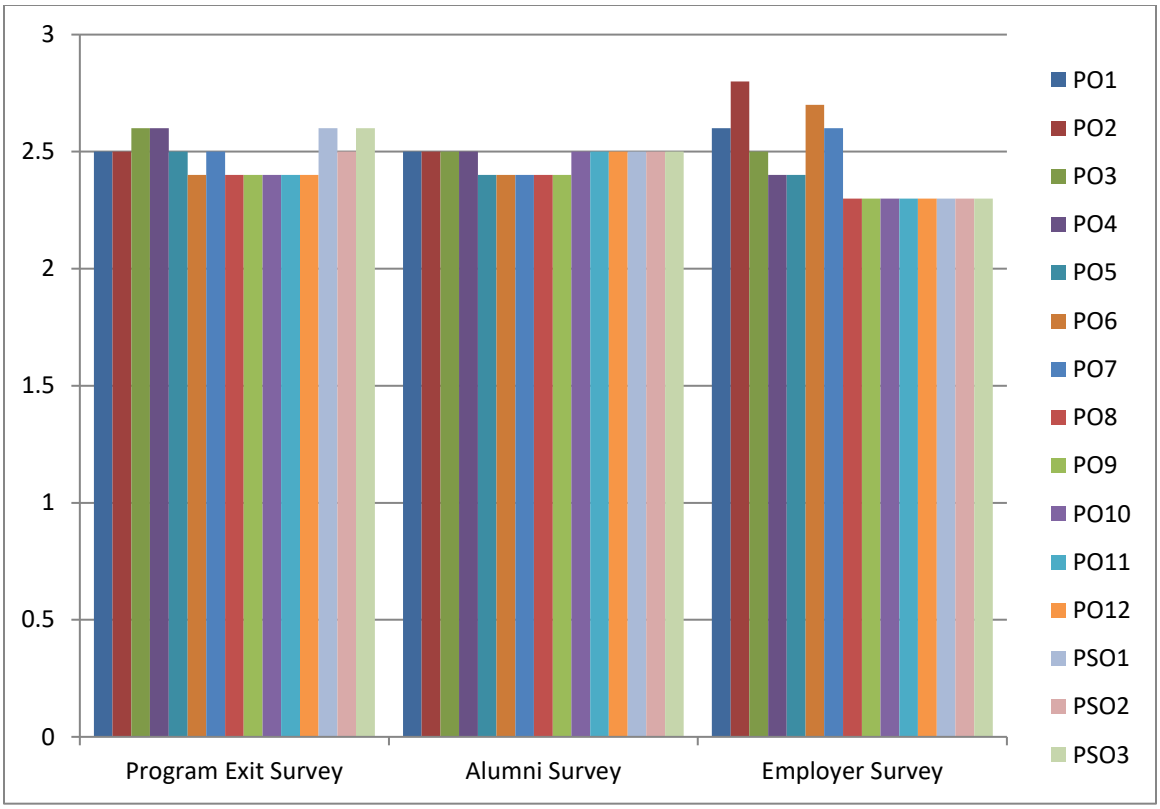

Figure 2: Program Outcomes (PO) Indirect Attainment for IT 2017 – 2021 batch

Action Taken Report

Program Outcomes	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.			
PO 1	**1.85**	**2.2**	Target achieved. Hence the same practice will be continued for the next year. The practical approach of teaching programming was adopted to help students to understand the basics of programming.
Action 1: The target will be retained. Video lectures will be used to explain the concepts for better understanding. **Action 2:** Students will be asked viva questions relating to the basic concepts to refresh their fundamentals in laboratory sessions. **Action 3:** Additional classes will be conducted beyond the regular classes for the courses which have less attainment. **Action 4:** Co-curricular activities are scheduled in the area of NLP, cyber security, IoT, and AI & ML.			
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.			
PO 2	**1.85**	**2.1**	Target achieved. Additional classes

			conducted for numerical courses beyond the regular planned classes have helped the students to perform better.
Action 1: Target will be retained and will be observed for the next academic year. **Action 2:** Additional classes will be conducted beyond the regular classes for the courses which have less attainment. **Action 3:** Conduct Expert lectures, Seminars, and Guest lecturers to help students in identifying & analyzing 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	**1.85**	**2.2**	Target achieved. Performance of the students in design related subjects, targets, and activities like guest lectures, hands-on training helped to achieve the target.
Action 1: Target will be retained and will be observed for the next academic year. **Action 2:** To conduct Expert lectures, workshops, and hands on a training sessions to understand the process of designing and analyzing real life software problems. **Action 3:** Students were encouraged to participate in external intercollege 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.			
PO 4	**1.85**	**2.2**	Target achieved. Students were informed to refer to IEEE, Elsevier journal papers /Scopus to enhance their research knowledge, analysis, and interpretation of data.
Action 1: Target will be retained and will be observed for the next academic year. **Action 2:** 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 modeling to complex engineering activities with an understanding of the limitations.			
PO 5	**1.85**	**2.2**	Target achieved. Students were exposed to various modern tools like android kits, Jupyter, Eclipse, Netbeans, Pycharm, NS3, which helpedto attain the target
Action1: Target will be retained and will be observed for the next academic year**.** **Action2:** Students are motivated to register for webinars/seminars conducted by premier Institutes 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.			
PO 6	**1.85**	**2.3**	Target achieved. Hence the same practice will be continued for the next year**.**
Action1: Target will be retained and will be observed for the next academic year **Action2**:Students have to be exposed to various professional engineering practices followed in the industries through industrial visits. **Action3**: 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. **Action4:**To understand the safety concerns and social aspects, students shall visit the industry to expand their practical knowledge with the effect of improved practices in engineering**.**			

Action5: 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.			
PO 7	**1.85**	**2.4**	Target achieved. Best practices to students should be more exposed to work with projects related to environmental and sustainability
Action1: Students are encouraged to indulge in projects where societal and environmental issues can be addressed **Action2:** Students are strictly instructed to switch off all electrical Equipment /Resources when not in use for all the laboratories **Action3**: Practices like Rainwater harvesting, Sewage treatment plants, proper waste management procedures are employed at our college.			
PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO 8	**1.85**	**2.3**	Target achieved. It is mandatory that students should submit plagiarism certificates for project work**.**
Action1: 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.			
PO 9	**1.85**	**2.2**	Target achieved. Individual work was observed during lab sessions/project work. There was excellent team work observed during the peer review presentation / seminars. Students were encouraged to work as a team in all co-curricular and extracurricular activities.
Action 1: Target will be retained and will be observed for the next academic year. **Action 2:** Students will be encouraged to participate in various co-curricular and extra-curricular activities in other colleges/sports activities/cultural activities. **Action 3:** Students are encouraged to participate in Inter College Cultural Fest. **Action 4:** Students were encouraged to participate in external inter college technical competitions, coding contests, and hackathons. **Action 5:** Department encourages the 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.			
PO 10	**1.85**	**2.2**	Target 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: Target will be retained and will be observed for the next academic year. **Action 2:** To enhance the employability skills of the students, training programs will be conducted on the topics: how to face the interview, career development, higher studies, entrepreneurship development.			
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	**1.85**	**2.3**	Target achieved.
Action 1: Target will be retained and will be observed for the next academic year.			

Action 2: Students are encouraged to prepare project proposals with the guidance of faculty for government funding agencies.			
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	**1.85**	**2.2**	Target achieved. projects which are part of the curriculum have helped the students to perform better in placement interviews and higher studies**.**
Action 1: Target will be retained and will be observed for the next academic year. **Action 2:** Students will be motivated to register for GRE/TOEFL/GATE and other competitive examinations.			
PSO 1: Design next-generation computer systems, networking devices, search engines, soft computing and intelligent systems, web browsers, and knowledge discovery tools.			
PSO 1	**1.85**	**2.1**	Target achieved.
Action 1: Target will be retained and will be observed for the next academic year. **Action2:** To strengthen the domain knowledge and make them job ready graduates, the department is planning to introduce more professional elective courses.			
PSO 2: Focus on mobile and web applications development and learn the emerging technologies and frameworks in demand with employers and contemporary challenges.			
PSO 2	**1.85**	**2.1**	Target achieved.
Action 1: To strengthen the web application knowledge and emerging technologies to develop innovative techniques using Hackathon programs.			
PSO 3: 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.			
PSO 3	**1.85**	**2.1**	Target achieved. All the events conducted by the department have helped the students to work as an indusial, work in a team, communicate effectively with both internal and external stack holders thereby becoming good computer professionals.
Action 1: Department will be encouraging the students to participate in intra collage/ inter college / state level/ national level / International level activities and events.			

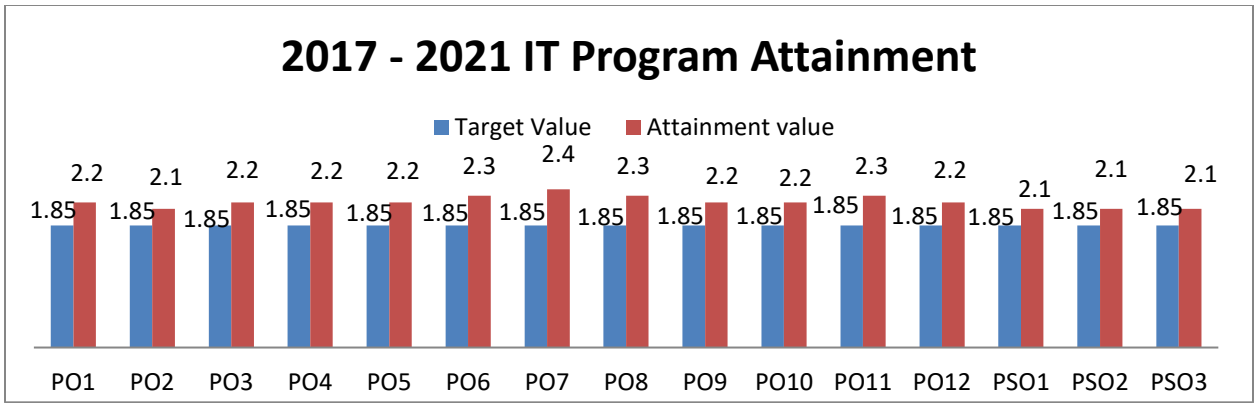

Figure 3: Program Outcomes (PO) Overall Attainment for IT 2017 – 2021 batch

HOD, IT