LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India
DEPARTMENT OF INFORMATION TECHNOLOGY

POs Attainment Levels and Actions for improvement: Admitted Batch 2017-21
A.Y:2020-21

POs	Target Level (%)	Attainment Level (%)	Observations
PO-1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO 1	70	71	The number of courses mapped to this PO1 is 65. The number of courses with formidable reach of target levels is 38, almost reached were 20, and 7 courses attainments were considerably less than the target levels. i.e., Electronic Devices and Circuits(17FE04), Electronic Devices and Circuits Lab(17EC61), Environmental Science(17FE03), Operating System Principles Lab (17IT60), Microprocessors and Microcontrollers Lab (17EC70), Software Engineering (17CI10), R Programming Lab(17IT63) After analysing results and interacting with students, it was attributed that still they need more practice (specially in Lab related courses) on problem solving with the help of mathematical logic/knowledge. For the benefit of students, need to demonstrate vividly more through practical examples for the courses having less attainment levels.

Action Taken:

Action 1: Conducted one day Orientation Programme on "Importance of engineering in the Society" on 28th June 2018 to improve the Engineering fundamentals and role of engineers in the current society.

Action 2: Conducted Alumni guest lecture related to Discipline -Career on "Job opportunity and higher education" on 6th and 14th May 2018 to give career guidance

Action 3: For the theory courses the faculty are instructed to give more assignments for the students.

Action 4: The faculties of the laboratory courses were advised to conduct more demonstration classes.

POs	Target Level (%)	Attainment Level (%)	Observations
PO-2.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	65	72	64courses were mapped to this PO2. 52 courses including laboratory and theory target levels were comfortably reached. 5 courses have almost reached. Other 7 courses which were lagged to attain the target levels and have to be improved. The list of courses missing the targets with far-reach were Professional Communication-II(17FE02), Environmental Science(17FE03), Software Engineering(17CI10), Microprocessors and Microcontrollers Lab(17EC70), Image processing(17CI24), R Programming(17IT03), R Programming Lab(17IT03). After analysis of results, it is observed that students are required to concentrate more on core subjects i.e. In GATE point of view. To strengthen PO2, need to add problem based learning courses in next curriculum.
Action Taken: **Action 1:** Conducted a four-day Python Workshop from 6th to 9th December, 2017 **Action 2:** To Strengthen coding & problem-solving skills one week training on problem solving using python from 6th to 11th Jan- 2020 **Action 2:** For the theory courses the faculty are instructed to give more assignments for the students. **Action 3:** The faculty of the laboratory courses was advised to conduct more demonstration classes.			

POs	Target Level (%)	Attainment Level (%)	Observations
PO-3. 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	65	72	60 courses are mapped to this PO3. Total 49courses reached the target level including theory and laboratory. 4 Courses were just at par to the target levels. The target levels and attainment levels are considerably low for 7 courses. i.e., Electronic Devices and Circuits Lab (17EC61), Environmental Science (17FE03) , Software Engineering (17CI10) , Microprocessors and Microcontrollers Lab (17EC70), Mini Project (17PD04) R Programming (17IT03),R Programming Lab (17IT63) After analysis of results, it is observed that students are doing laboratory experiments without enough preparation i.e., in terms of designing experiment, analyzing and interpretation of results. To improve the performance of students under innovative teaching and learning new course need to add in next curriculum.

Action Taken:
Action 1: More number of classes/tutorials were conducted for the courses which are contributing design &development of solutions.
Action 2: Conducted a seminar on "**SDLC and latest emerging trends in software industry**" on 30th July2020
Action 3: Conducted a three-day Workshop on "**Industry Expectations on Data Engineers**" on 4th,5th, 6th of June 2021 to improve the research methods including design of experiments.

POs	Target Level (%)	Attainment Level (%)	Observations
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	65	71	45 courses are mapped to this PO4. Out of 45 courses 35 are attained 5 course targets were just below the target level and 5 courses were not reached. i.e., Microprocessors and Microcontrollers Lab (17EC70),Mini Project (17PD04),R Programming (17IT03),R Programming Lab (17IT63),Android Programming(17IT07). After analysis of results, it is observed that students are feeling difficult to analyse the problem statements i.e., in terms of project planning , experimental design . To strengthen PO4, more emphasis has to be given in teaching methodologies related to design and implementation of problem solving through programming
Action Taken: **Action 1:** To improve practicality, Hands-on Sessions/Demonstration classes were conducted before executing the experiment. **Action 2:** Conducted workshop on Python Programming 6th to 9th Dec 2017 to improve student's problem-solving and programming skills **Action 3:** Conducted Two days' workshop on "Chat bots Using Python" on 7th and 8th of August 2020.			

POs	Target Level (%)	Attainment Level (%)	Observations
PO-5. 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	65	69	Out of 70 courses, 38 courses are mapped to this PO5.Out of which 30 courses reached the target level. 3 courses were in and around the target levels where as 5 courses were missing the target attainments. After analysis Electronic Devices and Circuits Lab (17EC61), Professional Communication-II(17FE02), Microprocessors and Microcontrollers Lab (17EC70), Mini Project (17PD04), R Programming Lab (17IT63) were the courses which are missing the targets considerably. After analysis of results, it is observed that students are to be guided about the various tools implemented in industries in

			terms of designing experiment, analyzing and interpretation of results. To Strengthen PO5, introduce more these courses have to include the tools of modern era which simplifies the project implementation.

Action Taken:

Action 1: Tutorials were conducted for the courses which contributed less. In addition to that tutorial hours are handled by two faculty members.

Action 2: Conducted workshop on "5G Technologies" 7th Sep 2018 to improve the modern tool usage.

Action 3: Conducted Three Day Workshop on "IOT and 5G Technology" from 27-05-2021 to 29-05-2021

POs	Target Level (%)	Attainment Level (%)	Observations
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	60	71	Number of courses mapped to PO6 are 24. The courses that reached the target level are 22 and 2 courses attainment level were missing the target levels i.e. Environmental Science (17FE03) ,and Electronic Devices and Circuits Lab (17EC61). It is suggested to continue the necessary steps taken for the uplift of PO6 attainment levels.

Action Taken:

Action 1: Motivated the students by explaining the importance of doing internship and project work.

Action 2: The faculty are instructed to give practical examples relevant to engineering practices to enhance skills to handle problems in the societal context.

Action 3: The faculty are advised to allot a few topics for seminar related to society and the course content to present in the class room.

Action 4: Conducted Guest Lecture on "Influence Of Technology In Financial Industry" 4th Sep 2018 to improve the practical knowledge on society demand.

POs	Target Level (%)	Attainment Level (%)	Observations
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	60	65	11 courses mapped to this PO7.Target was reached by all the mapped courses except one course .i.e. Environmental Science (17FE03) which needs to be improved. As almost all the courses have reached the target comfortably, more courses which maps to this PO are to added in the next curriculum.

Action Taken:
Action 1: The faculty are instructed to teach and give practical approach of the topics in view of long-term goals like environment and sustainability.
Action 2: It is advised to involve a greater number of students in the Environmental club activities**.**
Action 3: Inculcate the students to solve the problems on environmental oriented projects.

POs	Target Level (%)	Attainment Level (%)	Observations
PO-8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO 8	60	68	22 courses are mapped to this PO8. Allthe courses were comfortably reached the target levels. After analysis of results and interacting with students, additional efforts required to improve knowledge on professional ethics and moral values. For the benefit of students, need to add new course related to ethical values in next curriculum.
Action Taken: **Action 1**: Faculty are advised to instruct the students about the importance of ethics in the engineering profession. **Action 2**: Motivate the students on real life case study problems to debate on ethical decision and judgments. **Action 3:** Faculty is advised to instruct students to follow ethical values while doing the programs, writing records and paper publications. **Action 4**: Conducted Alumni guest lecture on "Discipline and Career" 14th May 2020 to learn Ethical values.			

POs	Target Level (%)	Attainment Level (%)	Observations
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	60	69	29 courses are contributing to PO9.Complete list of mapped courses had achieved target levels. After interacting with students, it was identified there should be more emphasis on project management and have to give clear picture regarding the software development process. Still there should be additional sessions required on development of team work skills. For the benefit of students introduce new course problem based learning, in addition to that more association activity clubs are introduced in future.
Action Taken: **Action 1:** Awareness on leadership qualities was created by project assessment and evaluation committee. **Action 2:** Create awareness on teamwork by preparing the posters. **Action 3:** Focus is given to motivate the students by conducting ICCIDE conference with in the Institution. So most of the students actively involved individually as well as team to make the event success. **Action 4:** Conducted association activities to improve the teamwork/leadership qualities and communication skills. **Action 5**: Organized National Level Technical Symposium "Lakshya 2K19" to improve the leadership qualities as well as teamwork of the students.			

POs	Target Level (%)	Attainment Level (%)	Observations
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	60	71	30 courses were mapped to this PO10. Total 29 courses reached the target levels and for laboratory courses the attainment levels were just up to the mark. The only Course which was slightly less to target level was Seminar (17PD07) . After interacting with students, it was identified that additional focus required on development of communication skills. To strengthen PO10 and to improve communication skills among students introduce new soft skills course in next curriculum.
Action Taken: **Action 1:** Group discussion / Role play/ Debate/ Quiz/Essay Writing competitions are encouraged at regular intervals. **Action 2:** Classes on communication and soft skills, analytical aptitude, and technical skills are arranged by the college every year apart from regular classes as per schedule. **Action 3:** Conducted association activities to improve the teamwork/leadership qualities and communication skills. **Action4:** Conducted National Level Online Technical Online Quiz Competition 3rd June 2020. **Action5:** Conducted Awareness Program on "Cyber Crime" on 26-05-2021			

POs	Target Level (%)	Attainment Level (%)	Observations
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	60	66	PO11 is mapped with only 11 courses. Out of which 8 courses reached the target and 3 courses missed the target levels. i.e. Electronic Devices and Circuits Lab (17EC61), Environmental Science(17FE03), Software Engineering (17CI10). To strengthen PO11, need to introduce problem-based learning and problem assisted learning courses in next curriculum.
Action Taken: **Action 1:** Focus is given to motivate the students by explaining the importance of doing internship and project work. **Action 2:** Create awareness on project management by project assessment and evaluation committee. **Action 3:** Conducted association activities to improve the teamwork/leadership qualities & communication skills. **Action 4:** Conducted one day guest lecture on "Influence of Technology in Financial Industry" on 04-09-18 to enhance the knowledge on project and Industry financial related components. **Action 5:** Introduced plagiarism checking (40%) for Main Project to maintain the quality of project. **Action 6 :** Conducted One day guest lecture on "Technical trends in IT and it's allied Industries" on 29th Jan 2019			

POs	Target Level (%)	Attainment Level (%)	Observations
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	60	71	62 courses are contributing to PO12.Totally 59 courses including theory and laboratory attained the target. Only 3 Courses were not attained. Electronic Devices and Circuits Lab (17EC61), Environmental Science(17FE03) and R Programming Lab (17IT63), After interacting with students, it was identified that additional focus required on development of programming skills. To strengthen PO12, need to introduce skill oriented and skill advanced courses in next curriculum.
Action Taken: **Action 1:** Conducted two-day workshop on digital marketing on 30th Aug and 31st Aug 2018 to enhance the employability skills of the students. **Action 2:** Conducted Alumni Guest Lecture on placements on 06-05-2020 to create awareness on software Industry. **Action 3:** Conducted one day workshop on SDLC and latest emerging trends in software industry on 30th June 2020			

Head Of The Department

Prof.B.SrinivasaRao

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PSOs Attainment Levels and Actions for improvement: Admitted Batch 2017-21
A.Y:2020-21

PSOs	Target Level (%)	Attainment Level (%)	Observations
PSO1: Organize, Analyze and interpret the data to extract meaningful conclusions.			
PSO 1	60	72	49 courses are contributing to PSO1.Total 49 courses including theory and laboratory have attained the target. For the benefit of students, new courses related to the industry needs if any are to be added in next curriculum.
Action Taken: **Action 1: T**utorial hours were made to handle by two faculty members. **Action 2:** The faculty of the laboratory courses who are just at the verge of attainment levels are advised to conduct more demonstration classes before attending laboratory. **Action 3:** Organized one day guest lecture on "Influence of Technology in Financial Industry" on 4th Sep 2018 to create awareness on industrial requirements. **Action 4:** Three-day Workshop on "Industry Expectations on Data Engineers" from 04th June 2021 to 06th June 2021			

PSOs	Target Level (%)	Attainment Level (%)	Observations
PSO2: Design, Implement and Evaluate a computer-based system to meet desired needs.			
PSO 2	65	72	49courses are contributing to PSO2.Totally 45 courses including theory and laboratory attained the target. 4 Courses have failed by just narrow margin to attain the target levels. Those subjects are Operating System Principles Lab (17IT60), Software Engineering (17CI10), R Programming (17IT03), R Programming Lab (17IT63), After analysing the results and interacting with students, it was identified that additional focus required on development of problem analysis and solving skills. To strengthen PSO2 courses, which emphasise skill development through programming are to taught with simulation tools .

Action Taken:

Action 1: More examples on R Programming are practiced by students in R- Laboratory courses.

Action 2: The faculty of the laboratory courses who failed to attain the target are instructed to demonstrate experiments using video lectures in order to motivate students.

Action 3: Organized Two-day Workshop on Python Programming, APSSDC, 7th to 9th Dec 2017.

Action 4: A two-week summer Internship Training program is conducted on "Python for everybody" on from 14th -27th May 2019

PSOs	Target Level (%)	Attainment Level (%)	Observations
PSO3: Develop IT application services with the help of different current engineering tools.			
PSO 3	65	72	48 courses are contributing to PSO3.Totally 45 courses including theory and laboratory attained the target. 3 Courses failed to attain i.e., Operating System Principles Lab (17IT60), Software Engineering (17CI10), R Programming Lab (17IT63), To strengthen PSO3 new practical oriented courses, with the usage of advanced tools are to be added in next curriculum.

Action Taken:

Action 1: The faculty of courses whose target were low are instructed to conduct more tutorials to improve the performance.

Action2: To improve the development and Programming skills a **workshop** is conducted on Web Trends on 13th Dec 2017.

Action 3: A two-day Workshop on “Digital Marketing” is conducted on 29 June 2018

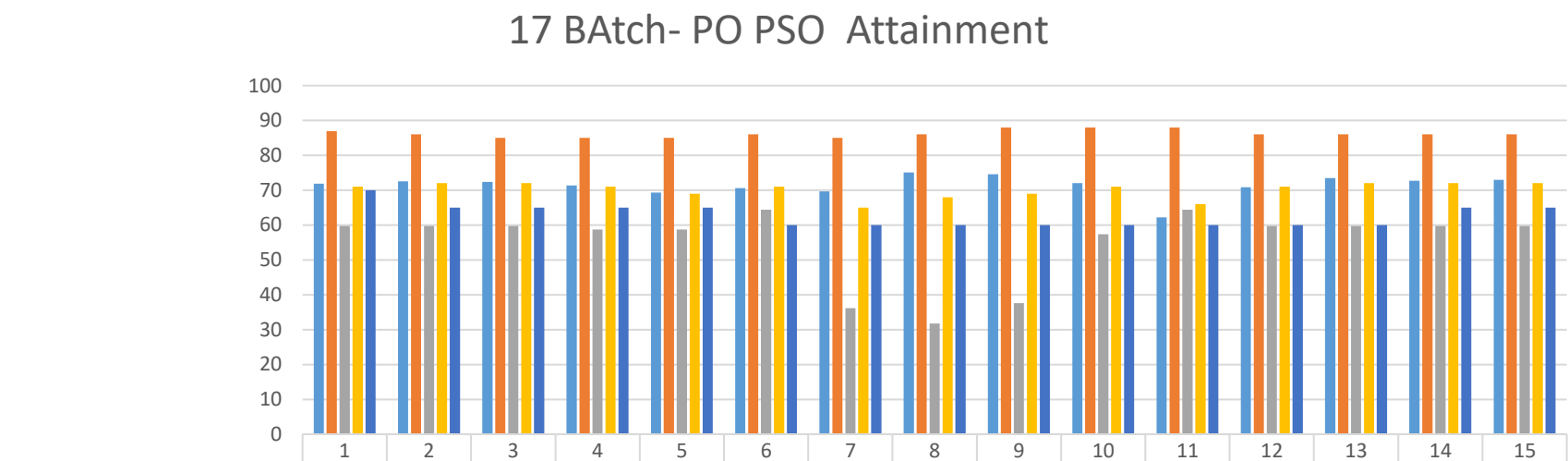
Action 4 : A week day is conducted workshop on Blockchain Technology from 17th Jun 2021 to 19th June, 2021

Table B.7.1POs & PSOs Attainment Levels and Actions for improvement

Head Of The Department

Prof.B.SrinivasaRao

Observations and Action Taken Report:



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Direct Attainment	72	73	72	71	69	71	70	75	75	72	62	71	73	73	73
Program Exit Survey	87	86	85	85	85	86	85	86	88	88	88	86	86	86	86
Student Portfolio Component	60	60	60	59	59	64	36	32	38	57	64	60	60	60	60
% Attainment	71	72	72	71	69	71	65	68	69	71	66	71	72	72	72
% Target	70	65	65	65	65	60	60	60	60	60	60	60	60	65	65

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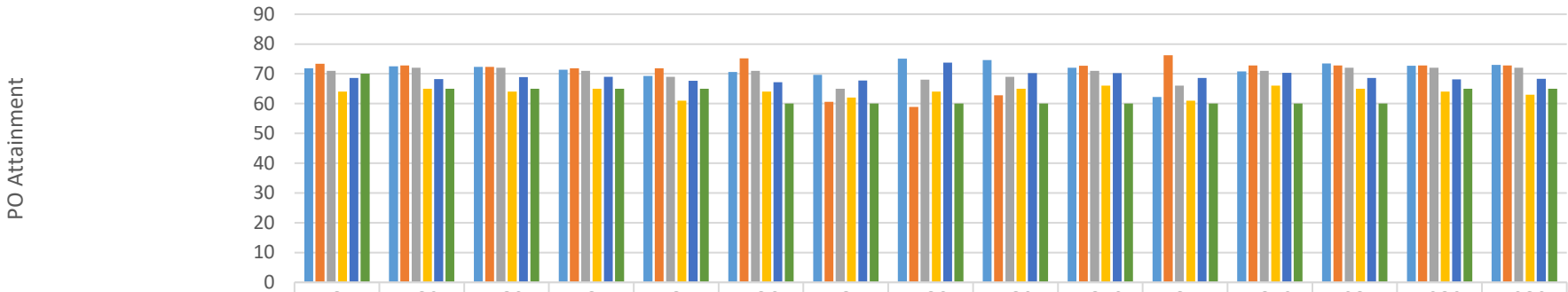

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Direct Attainment(%)	72	73	72	71	69	71	70	75	75	72	62	71	73	73	73
Indirect Attainment(%)	73	73	72	72	72	75	61	59	63	73	76	73	73	73	73
Final Attainment(%) Batch 17	71	72	72	71	69	71	65	68	69	71	66	71	72	72	72
Final Attainment(%) Batch 16	64	65	64	65	61	64	62	64	65	66	61	66	65	64	63
Final Attainment(%) Batch 15	69	68	69	69	68	67	68	74	70	70	69	70	69	68	68
Target(%)	70	65	65	65	65	60	60	60	60	60	60	60	60	65	65

Direct Attainment(%) Indirect Attainment(%) Final Attainment(%) Batch 17 Final Attainment(%) Batch 16 Final Attainment(%) Batch 15 Target(%)

It is observed that the skills of admitted graduates of 2017-21 batch were improved in the following PO's i.e., PO1, PO2, PO3, PO4,PO5,PO6,PO7,PO8,PO9,PO10,PSO11,PO12,PSO1,PSO2 and PSO3 when compared to 2016-20 batch.

Head Of The Department

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