6.5.2 The institution reviews its teaching learning process, structures & methodologies of operations and learning outcomes at periodic intervals through IQAC set up as per norms and recorded the incremental improvement in various activities

IQAC works effectively towards quality achievement, enhancement and sustenance by establishing all procedures in curricular aspects, teaching-learning processes, research activities, learning resources, student support services and progression, governance, leadership and management activities etc. and ensures the implementation, review and evaluation of all the policies, procedures and contributes significantly

Hereunder given IQAC minutes of meeting, various quality initiative contributions during the year and annual report are attached.

IQAC Constitution and Minutes for the AY: 2021- 22

ADITYA COLLEGE OF ENGINEERING

Approved by AICTE, Permanently Affiliated to JNTUK & Accredited by NAAC
Recognized by UGC under Sections 2(f) and 12(B) of UGC Act, 1956
Aditya Nagar, ADB Road, Surampalem - 533 437, E.G.Dist., Ph: 99631 76662.

Ref: ACOE/IQAC/2021-22/Constitution

CIRCULAR

11-08-2021

The undersigned is pleased to constitute the Internal Quality Assurance Cell (IQAC) with the following members:

S. No.	Name of the person	Designation	Role
1	Dr A. Ramesh	Principal	Chairman
3	Dr N. Satish Reddy	Vice Chairman	Management Member
4	Dr M. Srinivasa Reddy	Educationist	Member
5	Dr Pullela S.V.V.S. R. Kumar	Dean (A & A)	Member
6	Dr G. Rama Krishna	HoD-ECE	Member
7	Prof. K. Manoj Kumar Reddy	HoD-EEE	Member
8	Dr Y.K.S. Subba Rao	HoD-ME	Member
9	Prof. Ch. Naresh	HoD-CE	Member
10	Dr G.S.N. Murthy	HoD-CSE	Member
11	Dr V. Anil Kumar	HoD-PT	Member
12	Prof. N. Punnapu Chandrudu	HoD-Management Studies (MBA)	Member
13	Prof. M. Srinivasu	HoD-H&BS	Member
15	Sri T. Veeraaju	Associate Professor-CSE	Senior staff Member
16	Sri Kunche Raja	Sarpanch/Secretary-Gandepalli Panchayat	Local Community Member
17	Sri Karri Rama Reddy	General Manager, Vinayaka Boards, Peddapuram	Industry Member
18	Smt. Pilli Sumalatha	Asst. Manager, Poornima Textiles, Peddapuram	Industry Nominee
19	Sri Bh. Vara Prasad	--	Parent Member
20	Ms. Ch. V. Ch. S. Sahiti	IV year B. Tech. (CSE)	Student Member
21	Mr K. Vivek Santhosh	III year B. Tech. (ECE)	Student Member
22	Mr P. Aditya Sashank	Alumni	Member
23	Dr DVSSSV Prasad	Professor-ME	Coordinator

Functions of the committee:

1) Development and application of quality benchmarks/parameters for various academic and administrative activities of the institution.

2) Facilitate the creation of a learner-centric environment conducive to quality education and faculty members to adopt the required knowledge and technology for the participatory teaching and learning process.

3) Arrangement for feedback response from students, parents and other stakeholders on quality-related processes of institution.

4) Dissemination of information on various quality parameters of higher education.

5) Organize inter and intra institutional workshops, seminars on quality related themes and promotion of quality circles.

6) Documentation of the various programmes/activities leading to quality improvement.

7) Act as nodal agency of the institution for coordinating quality-related activities including adoption and dissemination of best practices.

8) Development and maintenance of institutional database through MIS for the purpose of maintain/enhance the institutional quality.

9) Development of quality culture in the institution.

10) Preparation of the Annual Quality Assurance Report (AQAR) as per the guidelines and parameters of NAAC and to be submitted to NAAC.

PRINCIPAL

PRINCIPAL
Aditya College of Engineering
SURAMPALEM - 533 437

Cc to: All the members of IQAC

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Ref: ACOE/IQAC/2021-22/1/Circular

CIRCULAR

11.08.2021

This is to inform all the members of IQAC that a meeting will be held on 16th August 2021 at 10.30 AM in the Principal's chamber, Ramanujan Bhavan with the following agenda:

AGENDA

1) Review of agenda points discussed in previous meetings
2) Review of pandemic situation
3) Review of academic calendars issued by JNTUK and class work
4) Review of seminars/workshops/certificate courses/internships/industrial visits
5) Courses from T-Hub
6) Requirement of faculty and facilities based on new regulations
7) Proposal to apply for NBA accreditation
8) Organize meetings with stakeholders either online or offline as per convenience
9) Ratification of faculty members at JNTUK
10) Preparation of AQAR 2020-21
11) Any other point

The members are requested to come prepared with relevant data.

PRINCIPAL
PRINCIPAL
Aditya College of Engineering
SURAMPALEM - 533 437

Cc to: All members of IQAC

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Ref: ACOE/IQAC/2021-22/1/Minutes

MINUTES OF IQAC
AY 2021-22

16.08.2021

Date of meeting	16th August 2021	Duration	10.30 AM to 11.30 PM
Venue	Principal's chamber, Ramanujan Bhavan		
Reference	ACOE/IQAC/2021-22/1/Circular dated 11th August 2021		

The meeting of IQAC of Aditya College of Engineering held on 16th August 2021 with the following agenda:

1) Review of agenda points discussed in previous meetings
2) Review of pandemic situation
3) Review of academic calendars issued by JNTUK and class work
4) Review of seminars/workshops/certificate courses/internships/industrial visits
5) Courses from T-Hub
6) Requirement of faculty and facilities based on new regulations
7) Proposal to apply for NBA accreditation
8) Organize meetings with stakeholders either online or offline as per convenience
9) Ratification of faculty members at JNTUK
10) Preparation of AQAR 2020-21
11) Any other point

The meeting of IQAC was commenced with the welcome note by the Coordinator-IQAC. The Coordinator presented the agenda and requested the Chairman-IQAC to start the meeting based on the points of agenda for discussion and the resolutions made are presented here.

The Chairman-IQAC welcomed all the members to the meeting and discussed the points of the agenda.

MINUTES AND RESOLUTIONS

1) The Chairman reviewed the point of agenda discussed in previous meetings.

2) The Chairman reviewed the pandemic situation and advised all the members to take every care of them and their family members and reiterated that proper measures are to be implemented within the class rooms, laboratories etc.

3) The members reviewed the academic calendars issued by affiliating university, JNTUK and discussed thoroughly the same and about the commencement of class work.

4) Heads of the departments submitted the details of seminars/workshops/certificate courses/internships/industrial visits conducted/organized for the AY 2020-21. The Chairman advised to follow the same trend in organizing various activities and the members resolved the same.
The Chairman further advised to identify the gaps in the curriculum and organize seminars/workshops/guest lectures to fill those gaps along with IPR and gender sensitization programmes etc.

5) Members discussed about the course offered by T-Hub during AY 2020-21 and submitted that T-Hub conducted the training programmes/courses online during pandemic situation to all the students successfully. Chairman advised the members to organize training programmes offline/online for the students and the members resolved the same.

6) The Chairman reviewed the current scenario of faculty strength and facilities in the college and advised the heads of the departments to submit the information and requirements soon.

7) The Chairman notified that our college should apply for NBA accreditation and pre-qualifier format was distributed to all the heads of the departments and enquired about the pre-qualifier filled-in formats and eligibility. Chairman reviewed the pre-qualifier formats department wise and thoroughly discussed about the eligibility.
Depending on the eligibility conditions, it was decided that CSE, ECE, EEE and ME departments are eligible for NBA accreditation and NBA related work shall be initiated immediately. The Chairman of the committee approved and all the members resolved the same.

8) The Chairman enquired about the meetings of stakeholders for this year and advised to conduct either offline or online and it is resolved to conduct as per convenience.

9) Coordinator-IQAC submitted that our college should apply for ratification of faculty members which is also part of quality sustenance. The Chairman accepted the proposal and advised to check with the University and apply whenever the University issues the notification and resolved the same.

10) The Chairman enquired and discussed about the AQAR 2020-21 which is to be submitted to NAAC and advised to collect the data and arrange it in the format of AQAR soon and it is resolved to collect and prepare AQAR 2020-21.

11) No other point to discuss.

The Chairman advised all the members to focus on academic matters both theory and laboratory sessions and obtain best results by giving proper inputs to students and further added counselling/proctoring should be carried out periodically to improve further.

Finally, the Coordinator and the Chairman thanked all the members present.

The meeting was concluded with thanks to the Chair.

Members present in the meeting held on 16.08.2021

S. No.	Name of the person	Role	Signature
1	Dr A. Ramesh	Chairman	
3	Dr N. Satish Reddy	Management Member	
4	Dr M. Srinivasa Reddy	Member	
5	Dr Pullela S.V.V.S. R. Kumar	Member	
6	Dr G. Rama Krishna	Member	
7	Prof. K. Manoj Kumar Reddy	Member	
8	Dr Y.K.S. Subba Rao	Member	
9	Prof. Ch. Naresh	Member	
10	Dr G.S.N. Murthy	Member	
11	Dr V. Anil Kumar	Member	
12	Prof. N. Punnapu Chandrudu	Member	
13	Prof. M. Srinivasu	Member	
15	Sri T. Veeraaju	Senior staff Member	
16	Sri Kunche Raja	Local Community Member	
17	Sri Karri Rama Reddy	Industry Member	
18	Smt. Pilli Sumalatha	Industry Nominee	
19	Sri Bh. Vara Prasad	Parent Member	
20	Ms. Ch. V. Ch. S. Sahiti	Student Member	
21	Mr K. Vivek Santhosh	Student Member	
22	Mr P. Aditya Sashank	Member	
23	Dr DVSSSV Prasad	Coordinator	

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Ref: ACOE/IQAC/2021-22/2/Circular

CIRCULAR

03.01.2022

This is to inform all the members of IQAC that a meeting will be held on 06th January 2022 at 10.30 AM in the Principal's chamber, Ramanujan Bhavan with the following agenda:

AGENDA

1) Review of agenda points discussed in previous meetings.
2) Review of academic calendars, class work and examinations.
3) Review of results.
4) Review and the status of NBA work.
5) Status of AQAR 2020-21.
6) Any other point.

The members are requested to come prepared with relevant data.

PRINCIPAL
Aditya College of Engineering
SURAMPALEM - 533 437

Cc to: All members of IQAC

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Ref: ACOE/IQAC/2021-22/2/Minutes

MINUTES OF IQAC
AY 2021-22

06.01.2022

Date of meeting	06th January 2022	Duration	10.30 AM to 11.30 PM
Venue	Principal's chamber, Ramanujan Bhavan		
Reference	ACOE/IQAC/2021-22/2/Circular dated 03.01.2022		

The meeting of IQAC of Aditya College of Engineering held on 06th January 2022 with the following agenda:

1) Review of agenda points discussed in previous meetings.
2) Review of academic calendars, class work and examinations.
3) Review of results.
4) Review and the status of NBA work.
5) Status of AQAR 2020-21.
6) Any other point.

The meeting of IQAC was commenced with the welcome note and started the meeting based on the points of agenda for discussion and the resolutions made are presented here.

The Chairman-IQAC welcomed all the members to the meeting and discussed the points of the agenda.

MINUTES AND RESOLUTIONS

1) The Chairman reviewed the point of agenda discussed in previous meetings and noted the points.

2) Members reviewed the academic calendars issued by JNTUK. The consolidated statement is presented here.

   The members opined that 3rd and 4th Year UG programmes are having the same dates but 2nd year and 1st year dates of academic calendar are differed. The Chairman discussed the same

and advised the members that there may be further changes in the calendar, therefore, follow the dates as mentioned and all the members resolved the same.

ACADEMIC CALENDAR - 2021-22

I B.Tech. - I Semester (21 Batch)

Description	From	To
Commencement of Class Work		22.11.2021
Induction Classes	22.11.2021	27.11.2021
I Unit of Instruction	29.11.2021	15.01.2022
I Mid Examinations	17.01.2022	22.01.2022
II Unit of Instructions	24.01.2022	12.03.2022
II Mid Examinations	14.03.2022	19.03.2022
Preparation & Practical	21.03.2022	26.03.2022
End Examinations	28.03.2022	09.04.2022
Commencement of II Sem Class Work		11.04.2022

I B.Tech. - II Semester (21 Batch)

Description	From	To
I Unit of Instructions	11.04.2022	28.05.2022
I Mid Examinations	30.05.2022	04.06.2022
II Unit of Instructions	06.06.2022	23.07.2022
II Mid Examinations	25.07.2022	30.07.2022
Preparation & Practical	01.08.2022	06.08.2022
End Examinations	08.08.2022	20.08.2022
Commencement of next Year Class Work: 22-08-2022		

II B.Tech. - I Semester (20 Batch)

Description	From	To
Commencement of Class Work		01.10.2021
I Unit of Instruction	01.10.2021	20.11.2021
I Mid Examinations	22.11.2021	27.11.2021
II Unit of Instructions	29.11.2021	05.02.2022
II Mid & Practicals	07.02.2022	12.02.2022
End Examinations	14.02.2022	26.02.2022
Commencement of II Semester Class Work		28.02.2022

II B.Tech. - II Semester (20 Batch)

Description	From	To
I Unit of Instructions	28.02.2022	23.04.2022
I Mid Examinations	18.04.2022	23.04.2022
II Unit of Instructions	25.04.2022	18.06.2022
II Mid Examinations	13.06.2022	18.06.2022
Preparation & Practical	20.06.2022	25.06.2022
End Examinations	27.06.2022	09.07.2022
Commencement of next Year Class Work - 11-07-2022		

III B.Tech. - I Semester (19 Batch)

Description	From	To
Commencement of Class Work		01.10.2021
I Unit of Instruction	01.10.2021	20.11.2021
I Mid Examinations	22.11.2021	27.11.2021
II Unit of Instructions	29.11.2021	15.01.2022
II Mid Examinations	17.01.2022	22.01.2022
Preparation & Practical	24.01.2022	29.01.2022
End Examinations	31.01.2022	12.02.2022
Commencement of II Semester Class Work		14.02.2022

III B.Tech. - II Semester (19 Batch)

Description	From	To
I Unit of Instructions	14.02.2022	02.04.2022
I Mid Examinations	04.04.2022	09.04.2022
II Unit of Instructions	11.04.2022	28.05.2022
II Mid Examinations	30.05.2022	04.06.2022
Preparation & Practical	06.06.2022	11.06.2022
End Examinations	13.06.2022	25.06.2022
Commencement of next Year Class Work		

IV B.Tech. - I Semester (18 Batch)

Description	From	To
Commencement of Class Work		01.10.2021
I Unit of Instruction	01.10.2021	20.11.2021
I Mid Examinations	22.11.2021	27.11.2021
II Unit of Instructions	29.11.2021	15.01.2022
II Mid Examinations	17.01.2022	22.01.2022
Preparation & Practical	24.01.2022	29.01.2022
End Examinations	31.01.2022	12.02.2022
Commencement of II Semester Class Work		14.02.2022

IV B.Tech. - II Semester (18 Batch)

Description	From	To
I Unit of Instructions	14.02.2022	02.04.2022
I Mid Examinations	04.04.2022	09.04.2022
II Unit of Instructions	11.04.2022	28.05.2022
II Mid Examinations	30.05.2022	04.06.2022
Preparation & Practical	06.06.2022	11.06.2022
End Examinations	13.06.2022	25.06.2022

3) The Chairman enquired about the results and heads of the departments submitted that results are to be declared by the University and they are expected soon.

4) The Chairman reviewed the status of NBA work with heads of the departments. Heads of the departments of CSE, ECE, EEE and ME presented the status that more than 90% work is

completed and the attainments of few courses is pending and further, the data of all metrics in the criteria is to be validated.

The Chairman advised the members to complete the NBA work soon and upload the contents to NBA website and further said that separate meetings will be organized with regard to NBA.

5) The Chairman enquired about the status of AQAR 2020-21 and the deadline for submission. Coordinator-IQAC submitted that the data is being collected by the criteria coordinators and the same is to be validated and the date of submission is extended to 31st March. All the members resolved that the AQAR is to be submitted soon and focus on NBA work.

6) No other point to discuss.

The Chairman advised all the members to focus on academic matters both theory and laboratory sessions and obtain best results by giving proper inputs to students and further added counselling/proctoring should be carried out periodically to improve further.

Finally, the Coordinator and the Chairman thanked all the members present and appreciated their effort and commitment exhibited towards accreditation process and anticipated the same in future also.

The meeting was concluded with thanks to the Chair.

Members present in the meeting held on 06.01.2022

S. No.	Name of the person	Role	Signature
1	Dr A. Ramesh	Chairman	
3	Dr N. Satish Reddy	Management Member	
4	Dr M. Srinivasa Reddy	Member	
5	Dr Pullela S.V.V.S. R. Kumar	Member	
6	Dr G. Rama Krishna	Member	
7	Prof. K. Manoj Kumar Reddy	Member	
8	Dr Y.K.S. Subba Rao	Member	
9	Prof. Ch. Naresh	Member	
10	Dr G.S.N. Murthy	Member	
11	Dr V. Anil Kumar	Member	
12	Prof. N. Punnapu Chandrudu	Member	
13	Prof. M. Srinivasu	Member	
15	Sri T. Veeraaju	Senior staff Member	
16	Sri Kunche Raja	Local Community Member	
17	Sri Karri Rama Reddy	Industry Member	
18	Smt. Pilli Sumalatha	Industry Nominee	
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20	Ms. Ch. V. Ch. S. Sahiti	Student Member	
21	Mr K. Vivek Santhosh	Student Member	
22	Mr P. Aditya Sashank	Member	
23	Dr DVSSSV Prasad	Coordinator	

IQAC contribution & Implementations and reviews

IQAC quality Initiatives, Strategies and Implementations

In pursuance of the action plan for performance evaluation assessment and accreditation and quality up gradation of institutions established internal Quality Assurance Cell (IQAC) on 09-06-2016 with an aim to check and improve the quality in the system. IQAC is constituted with all the stakeholders include Students, Alumni, HoDs, Senior Staff Members from both teaching and non- teaching, Management members, members from industry and their nominee, local community. IQAC has been the driving force in all the activities of the Institute

IQAC works effectively towards quality achievement, enhancement and sustenance by establishing all procedures in curricular aspects, teaching-learning processes, research activities, learning resources, student support services and progression, governance, leadership and management activities etc. and ensures the implementation, review and evaluation of all the policies, procedures and contributes significantly

IQAC Objectives:

- Develop and maintain consistent system
- Improve academic performance
- Improve administrative performance
- Create quality conscious internally
- Work to remove deficiencies
- Utilize full potential to improve quality
- Channelize efforts towards excellence

IQAC Quality Initiatives:

- To conduct orientation programme for the first year students
- Signing of MOAs/MOUs with Industries/NGOs/Research Institutions
- To participate in NIRF Ranking
- To establish Centre of Excellences in various departments
- To organize Workshops/Guest Lectures/FDPs/Conferences/Sports Activities
- Technical Skill Trainings to Students for Placements
- To implement Mentor Mentee System

- To conduct SWAYAM/MOOCs workshop on how to create ICT lectures
- To conduct soft skill training for UG Students
- To conduct gender sensitization to all the faculty and students
- Signing of MOAs/MOUs with Industries/NGOs/Research Institutions
- Laboratory equipment and library procurements
- Preparation of research project proposals & writing scientific/research articles
- Review of result analysis of first semester
- Internships for pre-final year students
- Placement for the pre-final year students and higher education
- Start-ups and Incubation centers to all the UG Students
- Redressel of grievances received by stake holders
- To take the Performance Appraisals of Teaching and Non-Teaching Members
- Preparation of annual report and conduct of Academic Administrative Audit

IQAC Strategies:

- Ensure quality enhancement and sustenance
- Ensure progressive performance of academic, administrative and financial tasks
- Integrate modern methods in pedagogy
- Ensure effective support services
- Ensure transparent evaluation system
- Encourage research activities
- Establish connectivity with premier institutes and industry in India and abroad

IQAC Implementations:

IQAC periodically collects reports from various departments/units holding several discussions with the concerned authorities for preparing AQAR on various criteria of the Teaching-Learning Process. In order to review the teaching-learning process, IQAC verifies some contextual review items periodically to ensure the quality of various academic aspects. The nature of the data collection by IQAC from various institutional departments/units for review is outlined below:

The following reports/information/data items are collected from the each department:

- Course files containing lesson plans in alignment with the Academic Calendar, Time Table,
- Availability of learning resources are collected at the beginning of the semester.
- Syllabus coverage, availability of course materials, number of conducted classes, attendance
- Reports, course assignments, and the respective student performance reports are collected.

- Reports regarding slow-learner and advanced learner are collected for active measures.
- Reports on extracurricular events conducted by the departments and the achievements of the students are also collected.
- Reports on CO, PO & PSO attainment are collected and analyzed.
- CO mapped question papers
- Results of the students at the end of the semester.

Training & Placement (T & P):

The following are collected from T & P cell at the end of the academic session.

- Consolidated report on placement records.
- Report on special training programs for the students conducted by T & P cell.
- Feedbacks of employers.

Research & Development (R & D):

- Reports on R & D activities (publications, patents, funded projects, collaborations, etc.) are collected.

Alumni Association:

- Feedback on the teaching-learning process is collected from Alumni.
- Activity reports of Alumni interactions.

Annual Report and Academic and Administrative Audit:

- IQAC conducts year based Academic and Administrative audits at department level
- On the data collected from various departments/units. Subsequently, the IQAC analyses Academic and Administrative audits report for necessary action.
- Prepared Annual report of the institution.

Principal

PRINCIPAL
Aditya College of Engineering
SURAMPALEM-533 437

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OBE – OBA faculty manual

OUT COME - BASED EDUCATION

Outcomes-based Education (OBE): It is a comprehensive approach to organizing and operating a curriculum that is focused on and defined by the successful demonstrations of learning sought from each learner. The term clearly means focusing and organizing everything in an education system around "what is essential for all learners to be able to do successfully at the end of their learning experiences".

OBE ultimately implies emerging with a vivid idea of what is important for learners to be able to do thereafter developing the programmes for learning, implementing it and assessing the learner on a continuous basis to ensure that learning has ultimately taken place. The outcomes-based approach to education requires developing a clear set of outcomes organized into the system's subjects and Establishing conditions and opportunities within the system to enable and encourage learners to achieve these outcomes.

The Shift from Content-based Education to Outcome-based Education The aim of education is to prepare learners for life in society and for performing tasks. It is the intention of the outcomes-based approach to focus as much on the process of learning and the final outcome or result, as on the knowledge and skills. In this way, the process of achieving outcomes during the process of learning can be related directly to the way in which outcomes are achieved in the world of work. The purpose of OBE is to increase the knowledge and skills of the learners. By introducing OBE, opportunities may arise for who's academic or career paths were stifled due to their prior knowledge not being assessed and certified.

Focus and Benefits of OBE: OBE addresses the following key questions:

- What do we want the students to have or be able to do?
- How can we best help students achieve it?
- How will we know whether they students have achieved it?
- How do we close the loop for further improvement (Continuous Quality Improvement?

Benefits of OBE:

- Graduates will be more "relevant" to industry & other stakeholders (more well rounded graduates)
- Continuous Quality Improvement (CQI) is in place. OBE shifts from measuring input and process to include measuring the output (outcome).

OBE System

Some important aspects of the Outcome Based Education:

1. Course: It is defined as a theory, practical or theory cum practical subject studied in a semester. For Eg. Engineering Mathematics

2. Course Outcome (CO): Course outcomes are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course. Generally three or more course outcomes may be specified for each course based on its weightage.

3. Programme: It is defined as the specialization or discipline of a Degree. It is the interconnected arrangement of courses, co-curricular and extracurricular activities to accomplish predetermined objectives leading to the awarding of a degree. For Example: B.E., Marine Engineering

4. Programme Outcomes (POs): Program outcomes are narrower statements that describe what students are expected to be able to do by the time of graduation. POs are expected to be aligned closely with Graduate Attributes.

5. Program Educational Objectives (PEOs): The Programme Educational Objectives of a program are the statements that describe the expected achievements of graduates in their career, and also in particular, what the graduates are expected to perform and achieve during the first few years after graduation.

6. Programme Specific Outcomes (PSO): Programme Specific Outcomes are what the students should be able to do at the time of graduation with reference to a specific discipline. Usually there are two to four PSOs for a programme.

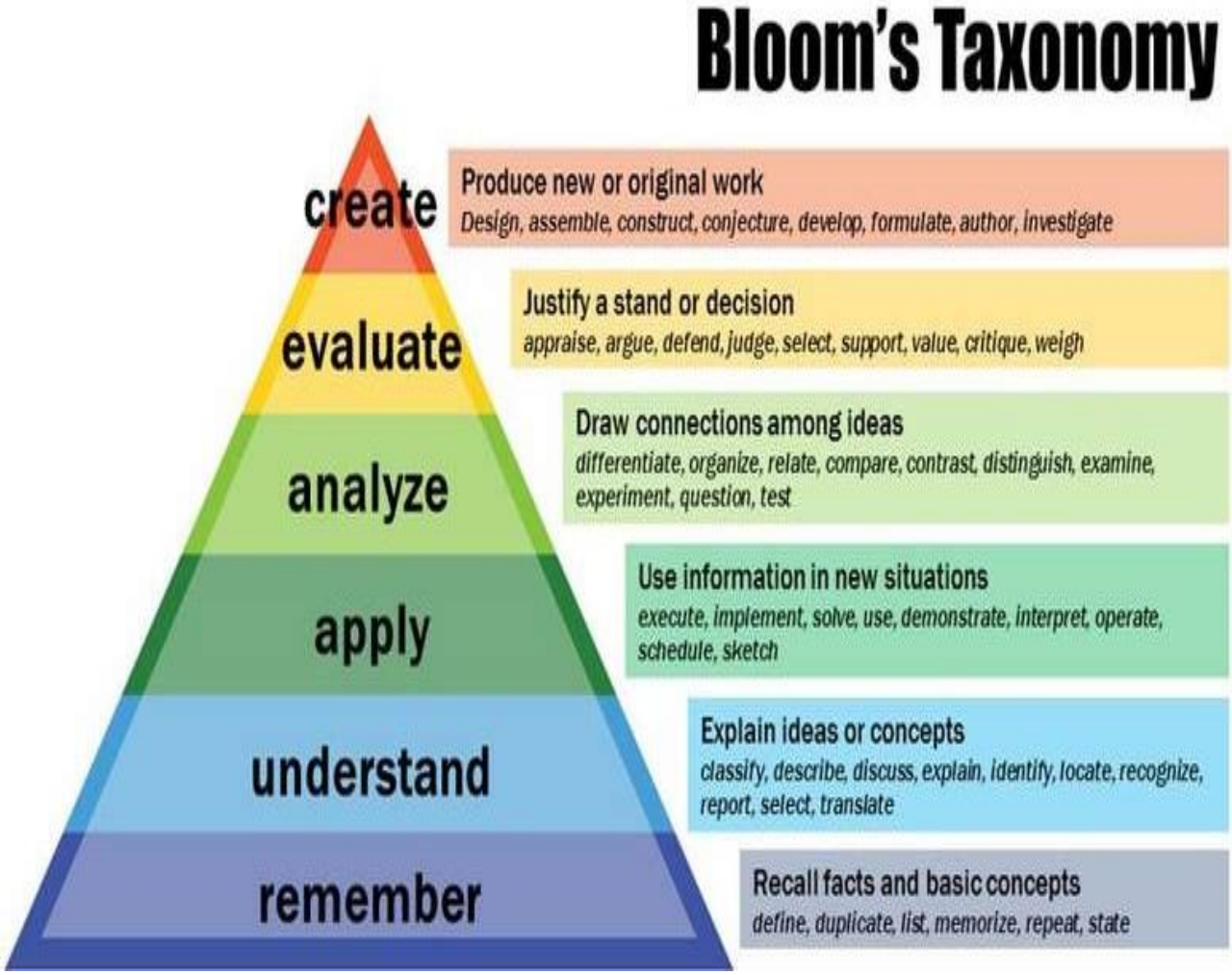
7. Graduate Attributes (GA): The graduate attributes, 12 in numbers are exemplars of the attributes expected of a graduate from an accredited programme

PROGRAM OUTCOMES (POs):

PO1	Engineering knowledge	An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
PO2	Problem analysis	An ability to design, simulate and conduct experiments, as well as to analyze and interpret data including hardware and software components.
PO3	Design / development of solutions	An ability to design a complex electronic system or process to meet desired specifications and needs.
PO4	Conduct investigations of complex Problem	An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
PO5	Modern tool usage	An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
PO6	The engineer and society	An understanding of professional, health, safety, legal,
PO7	Environment and sustainability	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and demonstrate the knowledge need for sustainable development
PO8	Ethics	Apply ethical principles, responsibility and norms of the engineering practice.
PO9	Individual and team work	An ability to function on multi-disciplinary teams.
PO10	Communication	An ability to communicate and present effectively
PO11	Project management and finance	An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multi- disciplinary environments
PO12	Life-long learning	A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning

BLOOM'S TAXONOMY

Bloom's Taxonomy was created in 1956 under the leadership of educational psychologist Dr Benjamin Bloom in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. It is most often used when designing educational, training, and learning processes.



Domain	Keywords	Example
Remembering: Recall or retrieve previous learned information.	defines, describes, identifies, knows, labels, lists, matches, names, outlines, recalls, recognizes, reproduces, select, state.	Recite a policy. Quote Prices from memory to a customer. Recite the safety rules.
Understanding: Comprehending the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.	comprehends, converts, defends, distinguishes, estimates, explains, extends, generalizes, gives an example, infers, interprets, paraphrases, predicts, rewrites, summarizes, translates	Rewrite the principles of test Writing. Explain in one's own words The steps for performing a complex task. Translate an equation into a Computer spread sheet.
Analyzing: Separates material or concepts into component parts so that its Organizational structure may be understood. Distinguishes between facts and inferences.	analyzes, breakdown, compares, contrasts, diagrams, deconstructs, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, relates, selects, separates	Troubleshoot a piece of equipment By using logical deduction. Recognize logical fallacies in reasoning. Gathers information from a department and selects the required tasks for training.

Evaluating: Make judgments about the value of ideas or materials.	appraises, compares, concludes, contrasts, criticizes, critiques, defends, describes, discriminates, evaluates, explains, interprets, justifies, relates, summarizes, supports	Select the most effective solution. Hire the most qualified candidate. Explain and justify a new budget.
Creating: Build a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.	categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes	Write a company operations or process manual. Design a machine to perform as specific task. Integrate straining from several sources to solve a problem. Revises and process to improve the outcome.

COURSE OUTCOME STATEMENT

Course Outcomes (COs):

Statements indicating what a student can do after the successful completion of a course. Every Course leads to some Course Outcomes. The CO statements are defined by considering the course content covered in each module of a course. For every course there may be 5 or 6 COs. The keywords used to define COs are based on Bloom's Taxonomy.

CO – PO AND CO – PSO MAPPING OF COURSES

All the courses together must cover all the POs (and PSOs). For a course we map the COs to POs through the CO-PO matrix and to PSOs through the CO-PSO matrix as shown below. The various correlation levels are:

"1" – Slight (Low) Correlation

"2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation

"-" indicates there is no correlation.

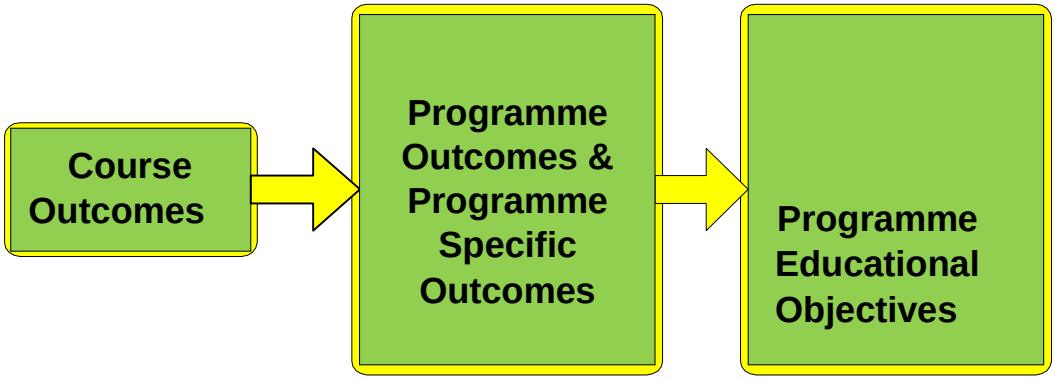
Levels of Outcomes

There are four levels of outcome such as Course Outcome (CO), Program Outcome (PO), Program Specific Outcome (PSO) and Program Educational Objective (PEO). Course Outcomes are the statements that declare what students should be able to do at the end of a course. POs are defined by Accreditation Agencies of the country (NBA in India), which are the statements about the knowledge, skills and attitudes, graduate attributes of a formal engineering program should have. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the program. The NBA laid down the graduate attributes relating to program outcomes and is to be derived by program.

The Program outcomes reflect the ability of graduates to demonstrate knowledge in fundamentals of Basic Sciences, Humanities and Social Sciences, Engineering Sciences and apply these principles in understanding and practically apply the knowledge in professional core subjects, electives and projects which enables the graduates to be competent at the time of graduation. The graduates must adhere to professional and ethical responsibilities in the pursuit of their careers and also for the benefit of the society.

The proper definition and the attainment of POs contribute to the attainment of Program Educational Objectives which will help the graduate to perform his/ her duties, professional responsibilities, design, development, production and testing of novel products, ability to deal with finances and project management during his/her early professional careerof 3 to 4 years.

Program Specific Outcomes are the statements that assert what the grandaunts of a specific engineering program should do what they can able to do. Program Educational Objectives are the broad statements which describe in detail about the career and professional accomplishments after significant years of graduation that the program prepares thegrandaunts to achieve.



Relating the outcomes (CO-PO&PSO-PEO)

After CO statements are developed by the course in-charge, CO will map with any possible PO's based on the relationship exist between them. But the PO's are not necessarily mapped with any one CO and it may be left blank. Anyhow, it is mandatory that all POs should be mapped with any one of PSO and PEO which are specified in the program.

Process involved in CO-PO Mapping

After the course (subject) allotment from the department, the course in-charge of the course has to write appropriate COs for their corresponding course. It should be narrower and measurable statements. By using the action verbs of learning levels, CO's will be designed. CO statements should describe what the students are expected to know and able to do at the end of each course, which are related to the skills, knowledge and behavior that students will acquire through the course.

After writing the CO statements, CO will be mapped with PO of the department. If the department is having more than one section in a year or the same course is available for more than one program of the same institute in a semester, the

subject expert will be nominated as course coordinator of the corresponding course. The role of the course coordinator is to review the CO statements and the CO-PO mapping which has been done by course in-charge. The year wise coordinator has to consolidate the CO's of the respectiveyear and maintain the documentation of the CO attainment level of the respective year courses as well as documentation of the individual student's extra-curricular and co- curricular activities. These details will hand over to the Department Academic Committee in order to evaluate PO attainment of the individual student as well as individual course at the end of the eighth semester. The Department Academic Committee has to evaluate the PO attainment of individual student through direct and indirect method after the student completing their program.

Assessment process:

Assessment Process for CO Attainment:
For the evaluation and assessment of CO's and PO's, rubrics are used. The rubrics consideredhere are given below:

(i). CO Assessment Rubrics:

Course Outcome is evaluated based on the performance of students in internal assessments and in university examination of a course. Internal assessment contributes 30%and university assessment contributes 70% to the total attainment of a CO.

(ii) CO-Assessment Process:

- Assessment Parameters: The performance of a student in each semester shall be evaluated course - wise with a maximum of 100 marks for theory course and 100 marks for laboratory.

1. Theory course:

- ✓ Pattern for Internal Midterm Examinations: For theory courses of each semester there shall be two midterm descriptive & objective exams. Each descriptive & objective exam consists of 80 minutes. The mid exams will be taken for the assessment of internal marks. The first Midterm examination will be conducted usually after 7 weeks of instruction; the second Midterm examination will be conducted at the end of the semester.
- ✓ CO-wise assessment Rubrics: Every mid-exam question and every assignment is mapped to a specific CO. Thereafter, a CO -wise cut-off value is taken based on the highest mark secured for that CO and the number of students with their internal mark above the cut- off value is considered for rating the CO attainment(Example):

✓ No. of students having marks > cut-off	✓ Rating in 3 scale (I)
✓ >=60%	✓ 3
✓ 50% to 59%	✓ 2
✓ 40% to 49%	✓ 1

- ✓ Pattern for External End Examinations: There shall be an external examination

for every theory course and consists of two parts (part- A and part-B). The

duration of the time for this end examination is 3 hours.

- ✓ Assessment Rubrics: An overall cut-off value is taken for all CO's commonly based on the highest mark secured and the number of students with their external mark above the cut-off value is considered for rating all CO attainments. (Example):

✓ No. of students having marks > ✓ cut-off	✓ Rating in 3 scale (E)
>=60%	3
50% to 59%	2
40% to 49%	1

Overall Attainment: The Final CO attainment is calculated by combining the internal attainment and External attainment in a ratio of 25: 75.

Final Value (V) = 30% of Internal Level (I) + 70% of External Level (E) (**R20** regulation)

2. Laboratory Course:

Pattern for Lab Examinations: For practical subjects, there shall be continuous internal evaluation during the semester for 35 marks. 15 marks for day to day work, 5 for record and total 50 marks to be awarded by conducting laboratory test and for 5 marks for Viva- voce.

CO-wise assessment Rubrics (Example):

No. of students having marks > cut-off	Rating in 3 scale (E)
>=60%	3
50% to 59%	2
40% to 49%	1

Project Work Evaluation: Mini-Project:

There shall be an industry-oriented Mini-Project, in collaboration with an industry of their specialization, to be taken up during the vacation after III-year II Semester examination. However, the mini-project and its report shall be evaluated along with the project work in IV- year II Semester. The industry oriented mini-project shall be submitted in a report form and presented before the committee. It shall be evaluated for 50 marks. The committee consists of an external examiner, head of the department, the supervisor of the mini-project and a senior faculty member of the department. There shall be no internal marks for industry-oriented mini-project.

Major project:

- ✓ Project batches are formed as per the instruction given by project coordinators.
- ✓ Synopsis will be submitted to the project coordinators for scrutinizing. Project Batches are allotted to the internal guides based on the specialization and competency

- ✓ skills of the faculties.
- ✓ Each internal guide will continuously monitor their students on a weekly basis to observe the progress of the work.
- ✓ The project guide along with project coordinator conduct 3 project reviews as per the rubrics, which is set by the Department and the submit the Internal Assessment marks to the Head of Department.
- ✓ External Project Viva voce is conducted by the panel of examiners deputed by the University.
- ✓ Based on the viva voce the marks are awarded to the students and submitted to university.
- ✓ The department will encourage students to participate in technical Expo and the project guides motivate and guide the students to publish in standard conference/journal forums.

Attainment of Program Outcomes and Program Specific Outcomes: The following are the Assessment **Tools**:

Several tools are described for assessing course outcomes. The program outcomes are based on the course outcomes. Thus, the tools remain the same for assessing the program outcomes. In addition, the tools of survey based on the alumni and exit surveys are considered.

1. The tools broadly are
2. End of course surveys (half yearly)
3. Student exit surveys
4. Alumni surveys yearly
5. Staff surveys – yearly
6. Higher education and placement – student publications.

Internal Assessment Tools

Component	Evaluation Components	Nature of Exam
Theory	MCQ's	Multiple choice questions
	First Mid Exam	Short essay and long essay questions
	End Mid exam	Multiple choice questions
	MCQ's	Short essay and long essay questions
	Daily evaluation	Planning, analysis of labskills, finishing The experiment

Practical	Practical examination	Synopsis, spotting andviva-voce, major experiment and minorexperiment
	Laboratory manual	Communication, datainterpretation
Beyond syllabus	Conducting 02experiments	
Overall Evaluation	External exam –semester wise	

University examinations:

Component	Components of Evaluation	Nature of exam
Theory	University end exams	Short essays, long essays, numerical Problems
Practical	University end exams	Synopsis, spotting, major experiment,minor experiment, interpretation, data analysis, viva voce, communication

Assessment process:

The assessment tools are direct and indirect methods for evaluating the attainment of POs. Direct methods:

Through the internal and external assessment, the teacher can focus on the PO's. The question papers include, short answers, short essay and long essay type. In addition, MCQs examinations are conducted on each unit test. Assignments are given for some extension of syllabus. In case of laboratory examination, synopsis, major experiment, minor experiment, viva voce, reports, etc., are the components. While setting a question paper, each question is framed based on the POs in order to attain them to a large extent. A few POs of minor

importance may not be accommodated. It is necessary that a question has to cover 60% of 'essentials to know', 30% 'better to know' and 10% are 'nice to know'. Therefore, special attempts are made to attain these objectives.

The subjects are also categorized as professional core subjects, basic science subjects (mathematics, science, computing, and humanities) and Engineering Sciences. Accordingly, the POs have assumed adequate importance. Having set the question papers, the answer papers are being evaluated from the same perspectives. The students are given feedback and POs are highlighted. Data are gathered after scrutinizing the answer for course outcomes. The course outcomes are translated to POs. Attainment of POs is considered from the data of all students.

1. Indirect method: Survey is conducted from two levels: alumni and exit survey.
2. Direct method: Given below:

S. No.	Direct Assessment	Method Description
1.	Internal Assessment Test	The Internal Assessment marks in a theory paper shall be based on two tests generally conducted at the end of 8 and 16 weeks of each semester (20) and assignment (5). An improvement test may be conducted for the desirous students before the end of the semester to give an opportunity to such students to improve their Internal Assessment Marks. It is a metric to continuously assess the attainment of course outcomes w.r.t course objectives. Average of the two tests marks obtained shall be the Internal Assessment Marks for the relevant subject.
2	Assignment	Assignment is a metric to mainly assess student's knowledge/skills/attitude with their designing capabilities.
3	Lab Assignments	Lab Assignment can be one of the measuring criteria to mainly assess student's practical knowledge with their designing capabilities. In case of Practical, the IA marks shall be based on day to work in the lab (10) and one practical exam (15).
4	Theory Semester Examination	Semester examination (theory or practical) are the metric to assess whether all the course outcomes are attained or not framed by the course owner. Semester Examination is more focused on attainment of course outcomes and uses a descriptive exam. Practical semester examination focuses on conduction of experiments and viva-voce.
5	Practical Semester Examination	
6	Seminar	The IA marks in the case of mini projects, projects and seminars in the final year shall be based on theevaluation at the end of 8th semester by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the project / seminar guide.
7	Mini project	
8	Major Project	

IQAC Coordinator

Dean (Academics & Administration)

Principal

PRINCIPAL
Aditya College of Engineering
SURAMPALEM-533 437

ADITYA COLLEGE OF ENGINEERING • SURAMPALEM •

Institution Annual report for the AY: 2021-22

Annual report for the academic year

2021-22

Annual report for the academic year 2021-22

The annual report of Aditya College of Engineering for the academic year 2021-22 along with several developmental activities is presented.

- A total number of 763 students were admitted for all disciplines.

- 15 Certificate courses were conducted for the enhancement of the students' knowledge in which 1520 students participated. This enabled the students to enrich their subject competency and expertise in their desired discipline.

- 519 students out of 579 were successful in final semester examinations both in UG and PG programmes.

- Total 380 students are placed in various reputed companies and 21 students opted towards higher education during this academic year.

- Total 1049 Students were participated in 21 Sports/Games events and extra-curricular activities during this academic year.

- Mentor - Mentee system plays a vital role in grooming the students in our Campus. Every mentor will have 19 mentees who facilitates and guides them to become successful and responsible citizens.

- Students and faculty members are encouraged for enrolment of online certificate courses such as NPTEL, Coursera, CISCO, MCP etc. They are also encouraged to participate in seminars, symposiums, workshops organized inside and outside the campus.

- Students have taken up internships and executed innovative projects as a part of their curriculum. Total 756 students undergone the field work/internships during the year.

- Faculty members are encouraged to pursue Doctoral degree and research articles publication in reputed journals.

- Total 113 faculty members have attended Faculty development programs/Seminars/Workshops and total 37 non-teaching members attended Skill enhancement/Training programmes.

- Total 10 Faculty development programmes, 9 Seminars/ Workshops and 2 Orientation programmes for teachers and students and 1 administrative training program organized.

- A Total Number of 86 Research Articles have been published in Reputed International conferences/Journals and 14 number of Book chapters have been published during the academic year.

- Faculty members were provided with financial support for attending conferences, workshops etc. and total 112 faculty members have been provided with financial support to attend conferences/ workshops and towards membership fee of professional bodies with financial support of Rs. 6,27,339/- during the academic year.

- ERP software has been implemented for effective monitoring of result analysis, examinations, syllabus coverage, students' attendance and students mentoring, Library and E- resources, etc.

- Aditya College of Engineering participated in NIRF.

- Aditya College of Engineering is ISO 9001-2015 certified institution.

- Aditya College of Engineering accredited by NAAC with B+ in 2018.

- Central library will be updated by procuring latest books and journals every year and provides DELNET, INFLIBNET. EBOOKS, E-Resources like TAYLOR & FRANCIS, NATIONAL DIGITAL LIBRARY and LMS platforms such as MOODLE, Knimbus etc.

- College signed 6 MoUs with renowned universities/organizations during the academic year.

- Solar power plant is installed using 929 solar panels (0.325 KWh each) and 6 inverters (50KVA) to convert solar energy to electrical energy with a generating capacity of 300 KW as a part of institute's green initiatives.

- College implemented rainwater harvesting system in the year 2017 and being maintained successfully with a total capacity of 1,13,97,724 liters.

- College installed Sewage Treatment Plants (STPs) in the year 2017 and being maintained successfully to recycle used and waste water with a capacity of 20,000 litres. Recycled water is being utilized for watering the gardens.

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