Aditya College of Engineering & Technology
Aditya Nagar, ADB Road, Surampalem – 533437
Department of Mechanical Engineering

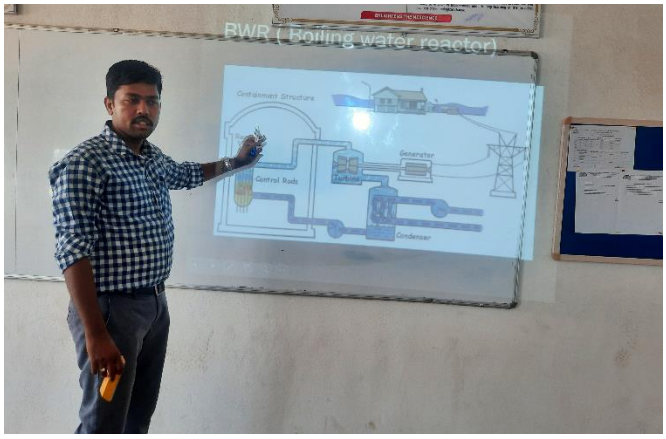
Innovative Teaching & Learning Process

Innovations by faculty in teaching and learning

The faculty's innovations in teaching and learning will be summarized in the following description. Contributions to teaching and learning are acts that help students learn more effectively. These activities may include, but are not limited to, ICT use, instruction delivery, instructional methodologies, assessment, evaluation, and inclusive class rooms, all of which contribute to effective, efficient, and engaging instruction. The Department may establish suitable procedures for making contributions public, reviewing them, and awarding them. Statement of clear aims, adequate preparation and application of acceptable procedures, relevance of outcomes, good presentation, and reflective critique are examples of these. Teaching Effectiveness and innovation can be achieved by using the most effective methods for creating, delineating, and transferring information from faculty to students. These activities may include, but are not limited to, the use of ICT, course delivery techniques, assessment, evaluation, inclusive classrooms, and industry-sponsored laboratories that result in an effective, efficient, and engaging teaching learning process. The department of Mechanical engineering follows the proper procedures for making contributions public, having them reviewed, and ensuring future development. Setting clear goals, efficient preparation, use of acceptable methods, relevance of outcomes, good presentation, and reflective critique are all ways to attain the stated goal.

ICT Classroom:

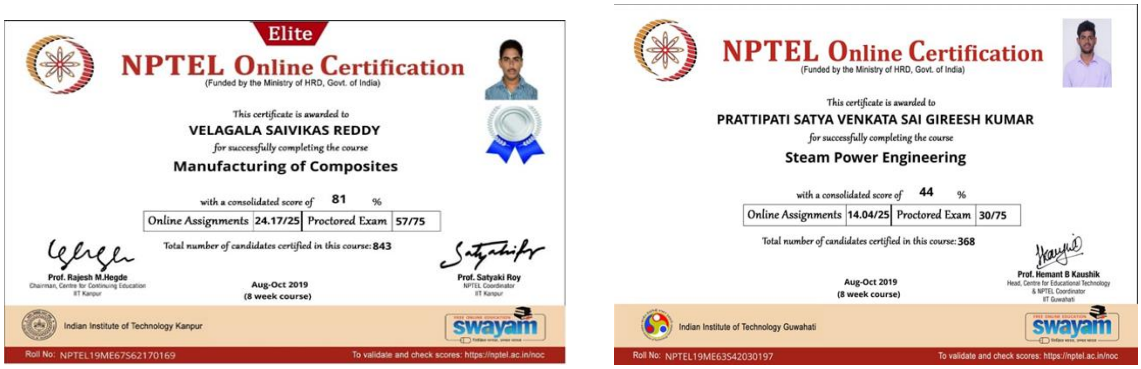
ICT Classroom are available in all the department classrooms. Projectors make learning more dynamic by allowing for a variety of ways to deliver information. All interactive modules, such as technical videos and presentations, are used in Smart courses. Students are drawn to this aesthetically appealing approach of instruction. Smart classrooms, in fact, make it easier for students to connect concepts to animated graphics. Students' audio-visual senses are focused here, which aids them in successfully absorbing knowledge.



Mr. K. Vijay Conducting an ICT learning method in the classroom

Online Courses:

Faculty and students take online courses in their fields of interest from places like Coursera, NPTEL, Spoken tutorial, and others. This allows individuals to broaden their understanding of current events while also gaining interdomain competence. They have received certification from national and international universities and are committed to continuing their education throughout their lives. Online courses can serve as a discussion forum for experts and students all around the world.



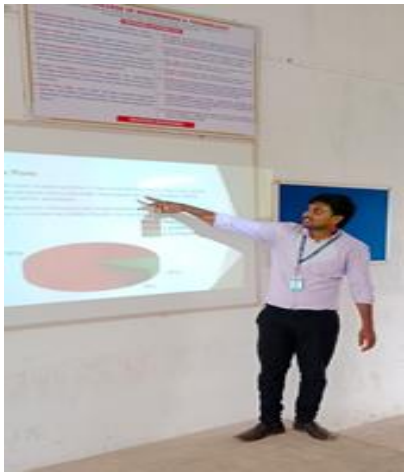
Students securing NPTEL Certificates

Innovative Assignments and Real-time problems:

Assignments are offered based on real-world engineering challenges in order to assist students comprehend and solve them. Students are also given group activities to help them enhance their self-learning and teamwork skills.

Technical presentation:

Students are encouraged to deliver a presentation on any technical topic related to their area of interest in order to transmit knowledge and overcome stage fright. It will also help them enhance their communication skills, which will help them advance in their careers.



Technical Presentation on Waste Management

On-Site Learning:

Students participate in industrial trips and trainings to bridge the gap between theoretical learning and practical training in a real-world setting. During industrial trips, students gain an understanding of industrial methods and organizational hierarchy. In addition to traditional classroom learning, industrial tours provide opportunity for active/interactive learning activities outside of the classroom.

Students of Mechanical Engineering visit to Hinduja National power coorporation

Value Added Courses: Department offers certification courses in CAD CAM, CNC Simulator, APSSDC and 3-D Modelling & Analysis to provide students with important

expertise in a given sector. It enhances students' employability skills and boosts their professional and life-oriented abilities. Workshops with hands-on activities were held.

ADITYA COLLEGE OF ENGINEERING & TECHNOLOGY

CERTIFICATE

This is to Certify that Mr./Ms. ADAPA PARISUDHA VISWA TEJAS with roll number 17P31A0301 of Department of **Mechanical Engineering** has participated in certification course on "**DESIGN AND SIMULATION USING ANSYS WORKBENCH**" organized by Department of Mechanical Engineering, Aditya College of Engineering & Technology, Surampalem from 01st to 11th February 2021.

Co-ordinator HoD-ME Principal

ADITYA COLLEGE OF ENGINEERING & TECHNOLOGY

CERTIFICATE

This is to Certify that Mr./Ms. AKULA SAINAVEEN with roll number 17P31A0302 of Department of **Mechanical Engineering** has participated in certification course on "**DESIGN AND SIMULATION USING ANSYS WORKBENCH**" organized by Department of Mechanical Engineering, Aditya College of Engineering & Technology, Surampalem from 01st to 11th February 2021.

Co-ordinator HoD-ME Principal

Students receiving course completion certificates

Flipped Classroom

The Department's curriculum is designed in such that classroom students review lecture material at home and work on projects and assignments in the classroom. Students in the flipped classroom complete coursework typically sent home as homework in class. The flipped classroom provides a great space for peer-to-peer collaboration. Students can engage one another to complete group projects, debates, and practice. Professors are not the centre of the flipped classroom. Instead, Professors are more flexible, addressing personalized help and direction for students and student groups as they complete their work.

Students are actively participated in the Flipped classroom activity

Project Based Learning:

The Department's curriculum is structured in such a way that students learn to design and build complicated mechanical systems through a variety of activities, including projects. Because these projects are typically too vast and complex for a single student to complete

alone, project-based learning encourages collaboration. Every year, the department hosts a project exhibition to enhance the students' project development skills.


Students presenting several project models

Inquiry-Based Learning

The department curriculum is structures for Inquiry-based learning which develops thinking and problem-solving skills. Instead of driving the class through a lecture-style format, the teacher poses questions, scenarios, and problems. Students then research these topics individually or in groups to formulate their answers. They can then present their findings and supporting evidence to the class along with the other students. Students are then able to further develop their answers by listening to what other students have found as well as identifying areas that require more attention and detail.

Students interacting among themselves during the class hours of Mr. A. Arif

Ask Open-Ended Questions

Students, especially successful students, may rely too heavily on textbook answers. They may develop over time the tendency to think there are only right and wrong answers. But most questions don’t have right or wrong answers. In today’s divisive public sphere, students need to exercise conversational skills and empathy. Students need to learn to communicate and collaborate. By asking open-ended questions, professors encourage vibrant in-class

conversations. Students can piece together different information learned or experienced in their life to stitch together cohesive points. This can encourage students to not only find their voice but express themselves as well.

Peer Teaching

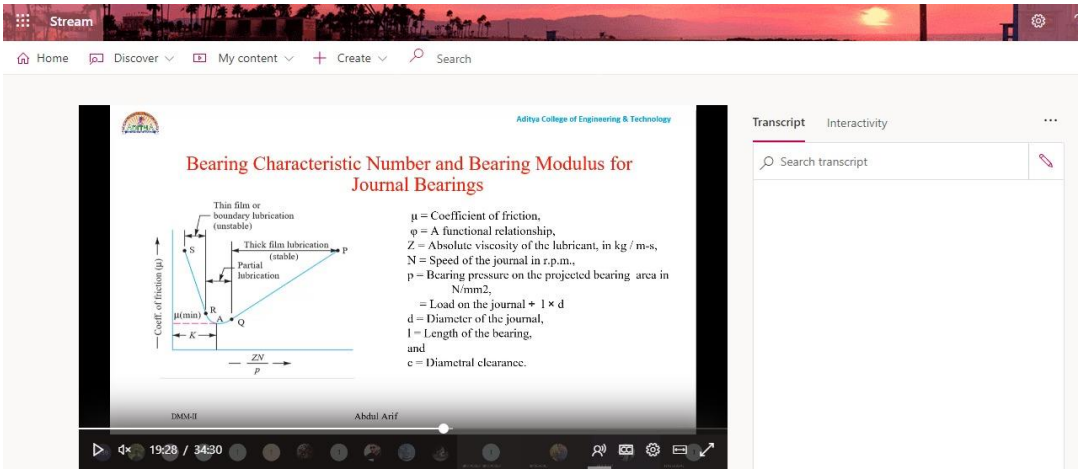
Peer learning is a strategy where a group of students were trained first by the faculty and then the students are guided to explain the trained topic to his/her co-students in the group. This technique requires students to discuss the topic explained by their peer and should be able to solve the related topics. Discussing responses with peers serves to maximize participation, direct attention, and engage students in reading comprehension. At the end of the peer leaning process, both student-tutee and student-tutor will be benefited even for the complex topic.

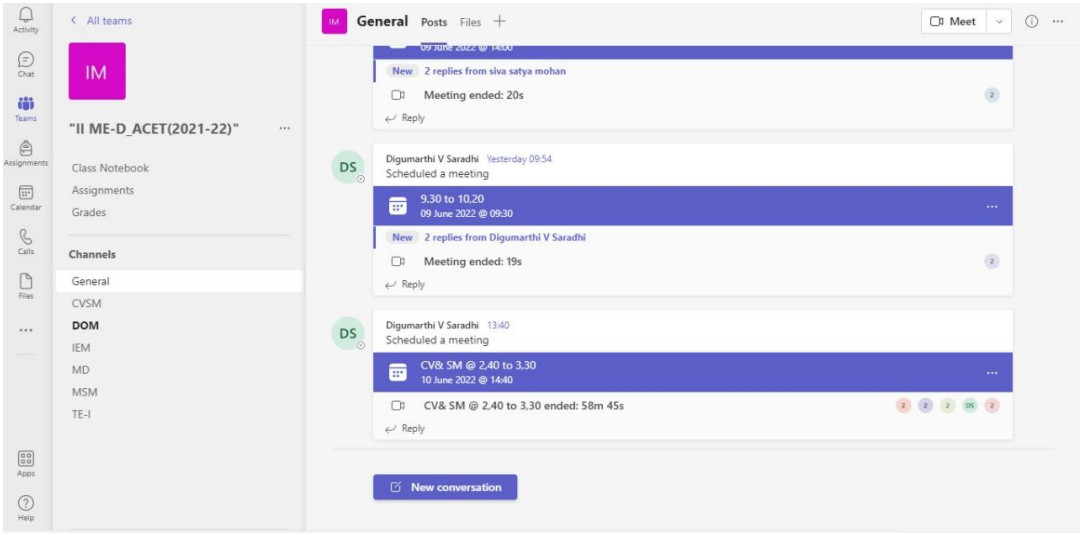
Blended Learning

The Department's curriculum involves blended learning which combines physical and online learning experiences that give students more control over the time, place, path, and pace of instruction. The evolution of the digital learning platforms has a huge impact in educational institutions and has eventually put the traditional methods in the back seat. However, there are demands for both technology and traditional learning methods. As a result of this, the art of combining digital learning tools with more traditional classroom face to face teaching gave birth to the term “Blended Learning”.

Given the emergence of digital technologies and the emerging importance of leveraging technology for teaching-learning at all levels from school to higher education, the NEP 2020 recommends for use of blended models of learning. The NEP-2020 states that while promoting digital learning and education, the importance of face-to-face in-person learning is fully

recognized. Accordingly, different effective models of blended learning will be identified for appropriate replication for different subjects.

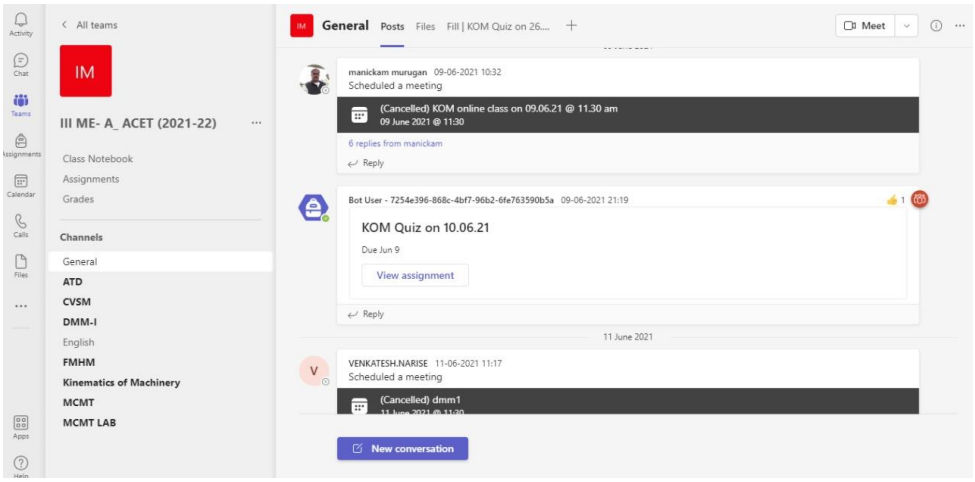




Blended learning activities carried by Faculty

Quiz/Feedback:

Feedback is incredibly important. Students need to learn how to offer constructive feedback as well as accept feedback. Provide students with a mechanism for providing feedback. In a virtual classroom, feedback tools like polling or emojis are a great way for quick feedback cycles. You can even challenge or ask students to expand upon their feedback then ask other students with opposing opinions to discuss why they think differently. Students are made to join as members of the Microsoft teams. Notes materials, Assignments, Quiz questions are posted in the app. Students can participate in the quiz by registering through app sign in and evaluation will be done.



Seminar Assignments: The students will be given the assignment topics and made them to present seminar in the class room and submit the report in assignment write up.

NPTEL Video Class Room:

The students will be shown the NPTEL Video on the lecture topics of the resource persons from IITs, NITK, etc.

Mr.K. Vijay delivering lectures using NPTEL Videos

Learning from Experts:

The identified gaps are communicated to the University for consideration during the revision of curriculum. Beyond this, the department takes necessary measures to fill the gaps by imparting knowledge to the concepts through content beyond syllabus.

- Seminars are arranged by experts frequently.
- Guest lectures are arranged by industry experts to overcome the gap between industry and academica.
- Practical Hands-on workshops are arranged to get exposure to modern tools.
- Students are sent for industrial visits to various industries.

- Aptitude tests, value added courses, mini projects, employability enhancement programs etc. are regularly conducted to enhance their skills.
- Students are encouraged to undertake in-plant training in the industries during their semester holidays.

Students actively participating in guest lectures

Developing digital content materials:

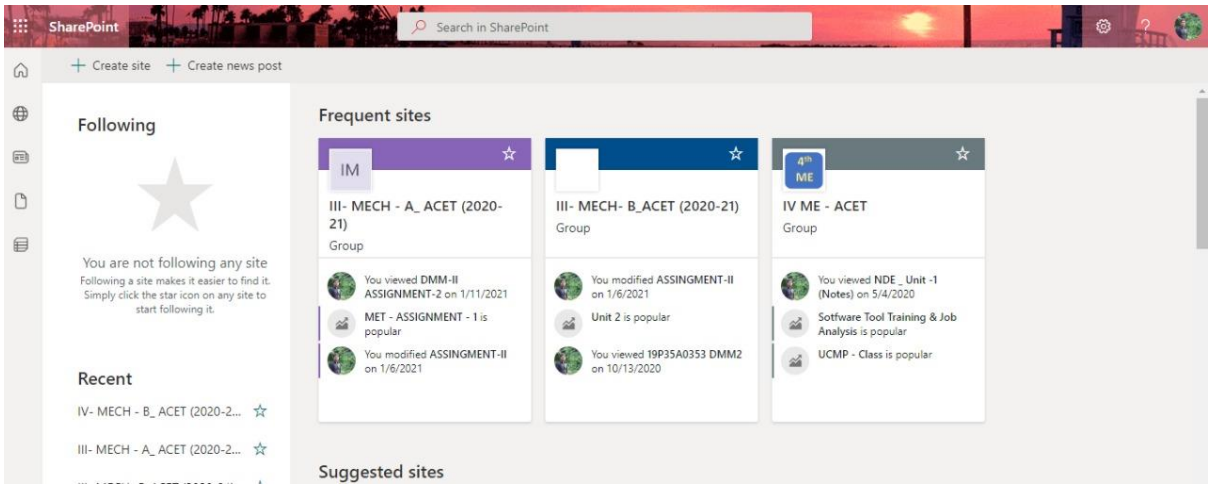
Digital media has slowly peered its way into classrooms and it is reshaping education. Our growing reliance on technology is redefining education. Technology makes education efficient, engaging, and easily accessible. There are many advantages to digital media and its effect on students learning. Technology makes learning efficient. The main benefit of digital media in education is that it can increase student engagement. In addition, it helps students work through difficult concepts with multiple resources. Digital instruction helps show difficult topics that are often hard to understand.

Learning Management Tools

http://moodle.acet.ac.in:82/lms/

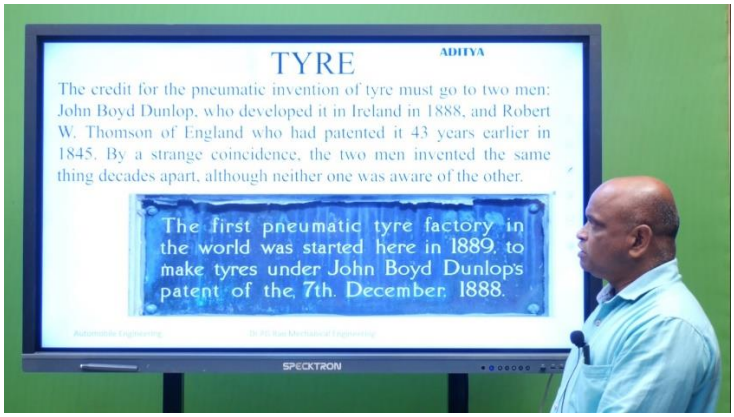
The department uses LMS tools such as Moodles, to make the students submit their

assignments, learn online and implement the experiments to gain knowledge about the concepts learned in the class. Recently, Micro soft Team App been utilized by the faculty to teach the courses



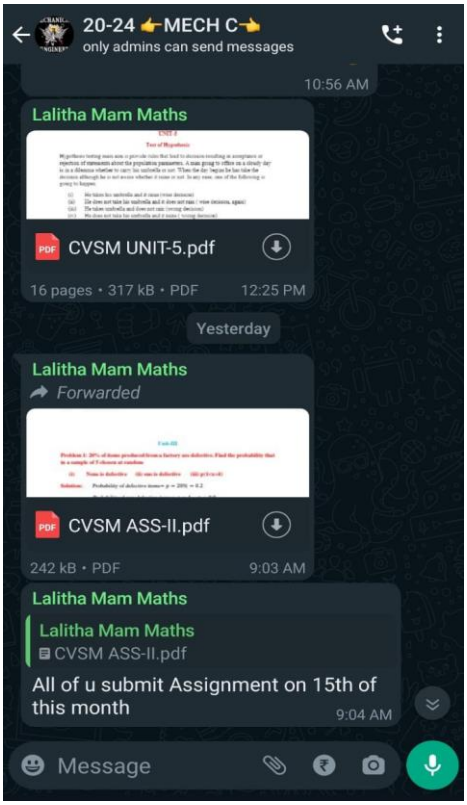
- **Developing Video Lectures**

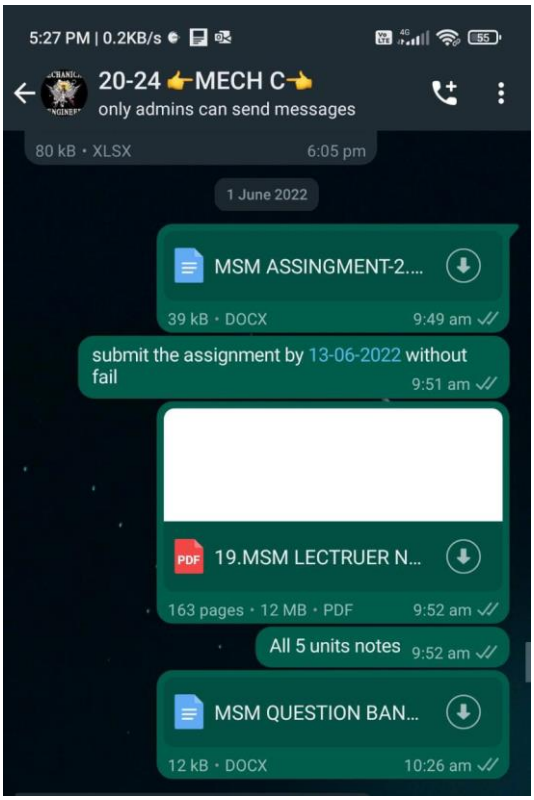
Dr.P Gangadhar Rao , recording digital content videos for several courses on Automobile Engineering



Dr.P Gangadhar Rao delevring digital videos for automible engineering

WhatsApp: Student-Faculty extensively use WhatsApp for sharing study material's, assignments, quiz questions.





Study material’s, Assignments shared using WhatsApp groups