

## **Innovations by the Faculty in Teaching and Learning**

### **GOALS:**

In order to improve students' teaching experience aside from traditional classroom teaching, the department uses novel concepts and their subsequent execution by means of quantifiable programs with the following goals:

The department will continuously strive to:

- Enrich student learning by innovative practices.
- Develop students' comprehension and expertise of creative methods and strategies.
- Broaden students' perspective of emerging technologies and tools in academics, and contemporary and social issues by innovative strategies.
- Motivate students to innovatively think, formulate and perform through different club activities.

### **List of initiatives in teaching and learning process followed by the department:**

Each faculty use innovative practices, knowingly or unknowingly to enhance the teaching learning experience of every student and make understand the concepts throughout the year. Some initiatives may be so small to escape attention, and might be difficult to quantify and record; but may affect the learning of students in a subtle but important way. On the other hand, some initiatives might be so impactful to be clearly visible as making huge strides in improving the teaching-learning process.

Given below is a listing of some of the noticeable initiatives taken by the faculty of the department. However, it should not be considered as a conclusive list; but as a part of an open-ended process of continuous improvement.

#### **1.Virtual labs:**

In certain labs like Engineering Chemistry, Engineering Physics, Engineering Mechanics some relevant experiments are conducted online on web browsers with the help of simulators. Such online facilities are called as virtual labs (<http://www.vlab.co.in/>), and are a part of an excellent innovative initiative taken by the MHRD of India.

## Outcomes:

- Remote-access to simulation-based Labs in various disciplines of Science and Engineering.
- Use of virtual labs enthruse students to conduct experiments by arousing their curiosity. This would help them in learning basic and advanced concepts through remote experimentation.
- It provides a complete Learning Management System around the Virtual Labs where the students/ teachers can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations, and self-evaluation.

## 2. Use of Working models/Animations/ Mini projects/PPTs/Charts/ CASE studies:

In many relevant subjects, faculty encourage the students to make miniature working models of mechanisms. The faculty members also make use of cut sections as well as working models to enhance interest and level of learning.

- All the classrooms are well-equipped with high quality projectors ready for use any time.
- Each faculty has prepared power point presentations which were extensively used in pandemic period for online teaching and learning. The extensive use of charts, animations and Case studies help the students to understand the concepts in easier way.



**Outcomes:**

- Working models and mini projects enhances systems thinking abilities of the students. Models and model development are useful for helping students learn quantitative skills such as working, graphical analysis, visualization; and computational skills.
- Animations, Charts and Case studies help students to understand and grasp the concept easily.

**3. Online teaching and learning resources on Microsoft Teams/ Google Classrooms:**

Faculty frequently upload notes, presentations, assignments, videos, and test results on various virtual platforms. This significantly boosts the out-of- class learning experience of students.

**Outcome:**

- During the pandemic period, this methodology has helped students to interact and learn the subjects effectively.
- The platforms helped the students to get the study material, interact with the faculty, solve, and submit assignments and enhance their thinking ability through the tests as well as quiz sessions conducted by almost every faculty member.

**4. E content on YouTube:** Faculty have also created their own YouTube Channels and Google drives wherein they upload study material relevant to their own subjects. The links are shared with the students and the contents are openly accessed by all students.

**platform**

Some sample video lectures can be accessed by using following links:

**Links:**

1) <https://www.youtube.com/watch?v=0XaOXjHJq2s&list=PLrk97TseHNgCCALAwjXfkR13sX6RThbV->

2) [https://www.youtube.com/channel/UCzjDSJS5\\_y1VTwhyqC31qTA](https://www.youtube.com/channel/UCzjDSJS5_y1VTwhyqC31qTA)

**Outcome:**

- This has helped students to learn and understand the course in a better and effective way.

- The students can learn at their own pace and at own convenience apart from classroom learning. This provides students, the opportunity for self-study.

### **5. Classroom quiz sessions:**

These help in creating interest by breaking monotony of regular classes while enhancing the learning experience.

### **6. Project-Based Learning:**

PBL has been introduced for FE students with the goal of earn by working cooperatively in groups to solve a problem. PBL is a student-centered pedagogy that employs a dynamic classroom approach in which students are believed to gain a deeper understanding through active exploration of real-world challenges and problems. Students gain knowledge about a subject by investigating and responding to a complex question, challenge, or problem over time. It is an inquiry-based and active learning style. Problem-based learning will also alter the role of the teacher as a mentor in the learning process.

### **Outcome:**

- PBL encourages students to develop a balanced, diverse approach to solving real-world problems, both on their own and in a team.