

INNOVATIONS BY FACULTY IN TEACHING AND LEARNING

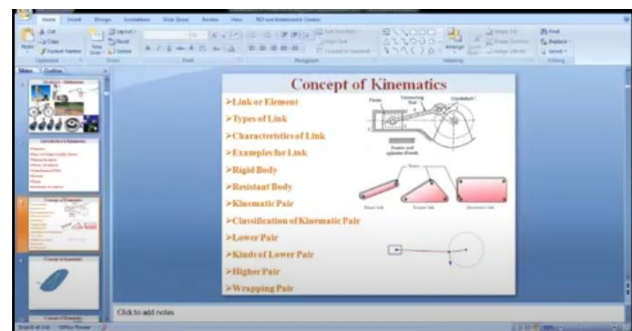
The following observation indicates various models and methods used for teaching learning process by faculties in various courses.



Demonstration Models used for CAMD & CAED Lab



Faculty Conducting Student Seminar in Mechatronics Theory



Illustrates Conduction of Flipped Class/Group Discussion/Polling Questionnaire



A Guest lecture on “Product Design & Development in an Aerospace Domain” was delivered by Dr Madeva Nagaral, Manager, HAL on 28th October, 2022.

Initiatives in teaching and learning process followed by the department:

GOALS:

To enhance student learning experience other than traditional class room teaching, the department implies different teaching leaning pedagogy. The department faculty will continuously strive to:

- Inhibit student learning with innovative practices.
- Develop students’ practical skills by providing industrial visit.
- Inculcate a professional ethics by providing guest lectures through industry experts.
- Motivate students to innovatively think, formulate and perform through different club activities.

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

Some of the initiatives taken by the faculty in the department is indicated below. However, it must be considered as a conclusive list, as a part of an open-ended process of continuous improvement.

Student Club Activities:

The department constitute an internal student club named **Yanthrik Avinyas** which provide a good platform, wherein, the students can participate in various events like cultural, technical, sports, seminars and lectures arranged by the club. From these activities, the students will be able to explore their talents which enhance their team effort, communication skill, target work and overall development. The faculty coordinators are associated for each event responsible for the execution of the activity.



Faculties Coordinating for Student Club Activities: Cultural, Sports, Technical, Webinar and Expert lectures.

Outcome: Enhancement of communication, presentation, leadership skill among the students.

Virtual labs:

In case of certain labs, during covid time, like material testing lab, design lab, fluid mechanics lab, etc., few important experiments were demonstrated through online platform. Those online facilities are named as virtual labs (<http://www.vlab.co.in/>), falls under the MHRD of India.

Virtual Lab used to explain assignments to students

| Virtual Link | Subject & Experiment Details |
|---|---|
| https://sm-nitk.vlabs.ac.in/List%20of%20experiments.html | Impact Test (Material Testing Lab) |
| https://dom-nitk.vlabs.ac.in/List%20of%20experiments.html | Four Bar Mechanism (Kinematics & Dynamics of Machines) |
| https://fm-nitk.vlabs.ac.in/List%20of%20experiments.html | Venturi meter (Fluid Mechanics Lab) |

Outcome: Improve students’ understanding and learning.

Use of Animations/Mini projects/PPTs/CASE studies/notes:

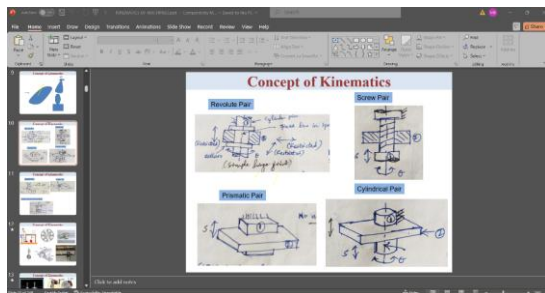
The faculties make use of you tube, ppt, case studies to ensure the attentive skills of the students in the class room. All the classrooms are well-equipped with high quality projectors ready for use any time.



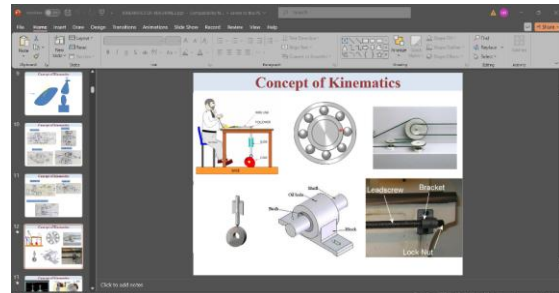
Flipped Class/Group Discussion



Flipped Class/Group Discussion



Powerpoint Slides



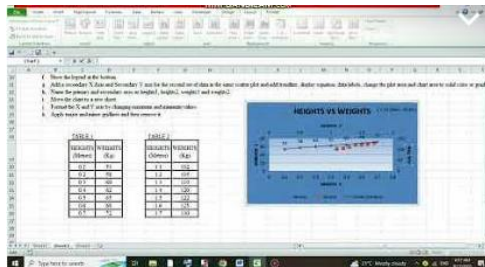
Mechanism Examples Animation

PPTs used by faculties

E content on YouTube Channel:

Few of our faculties have also created their own YouTube channels where they upload study material in students Whatsapp group relevant to their own subjects. The links are shared with the students and the contents are openly accessed by all students.

Study material using you tube



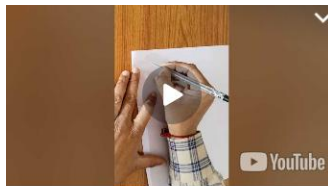
Excel/Spread Sheets

Share your videos with friends, family, and the world
youtube.com

<https://youtube.com/playlist?list=PLP9uHeADcmNjvVrpCON9ObNG4cQQgigZA&si=OBiKw8llPHOmt5zc>
12:53

Spreadsheet for Engineers

<https://tinyurl.com/ymuevvuu>

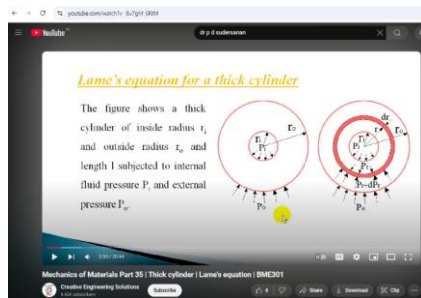


How to Calculate Displacements, Stresses, Reactions for a 2 Stepped Bar using...
youtube.com

<https://youtu.be/-yuHYt5OSb4?si=5gXcXkF6DDhuF2>
1:24

Finite Element Analysis

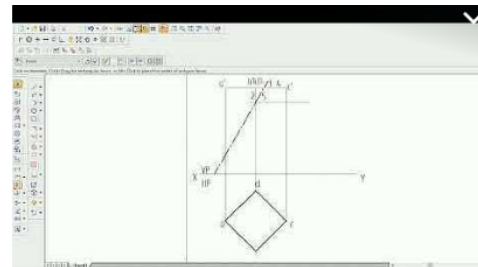
<https://tinyurl.com/525jetzw>



Heat Transfer

https://www.youtube.com/watch?v=8u7ghf_6

KtM



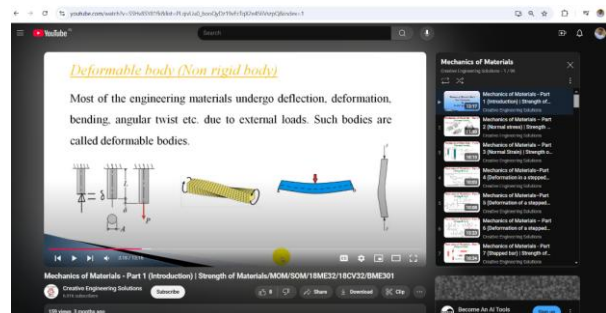
Development of Lateral Surfaces of Solids

Share your videos with friends, family, and the world
youtube.com

https://youtube.com/playlist?list=PLP9uHeADcmNgZFWBxwvgj_eOlv4b801I&si=cmn_axciQWFRDJKm
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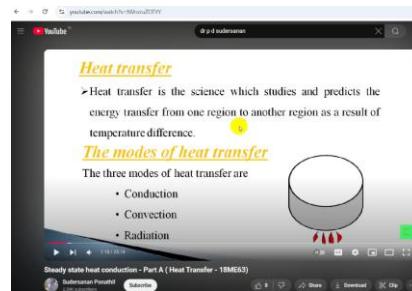
Computer Aided Engineering Drawing

<https://tinyurl.com/22kcx9yd>



Mechanics of Materials

<https://tinyurl.com/359yyz2u>



Heat Transfer

<https://www.youtube.com/watch?v=NvNxtuZO>

TYT

Outcome: Improve students' understanding and learning

Classroom polling quiz sessions:

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

KOM 18ME44 Polling Question 1

IV SEMESTER

USN

Short answer text

Types of Spur Gear *

External

Internal

Small

Precision

| Timestamp | USN | Types of Spur Gear |
|-------------------|------------|--------------------|
| 7/9/2021 11:17:56 | 1gv20me402 | All the Above |
| 7/9/2021 11:18:01 | 1GV19ME013 | All the Above |
| 7/9/2021 11:18:08 | 1gv18me021 | All the Above |
| 7/9/2021 11:18:26 | 1GV20ME403 | All the Above |
| 7/9/2021 11:18:33 | ME007 | All the Above |
| 7/9/2021 11:18:39 | 1GV20ME414 | All the Above |
| 7/9/2021 11:18:39 | 1GV19ME023 | All the Above |
| 7/9/2021 11:18:51 | 1GV20ME413 | All the Above |
| 7/9/2021 11:18:52 | 1gv19me021 | All the Above |
| 7/9/2021 11:19:15 | 1GV19ME022 | All the Above |
| 7/9/2021 11:19:46 | 1GV19ME001 | All the Above |
| 7/9/2021 11:20:16 | 1GV19ME015 | All the Above |

Polling Questionnaire

Response

Outcome: Subject knowledge enhancement

Industry Visits:

Students will have an exposure to industrial aspects through industrial visit arranged by the department. Our department faculties coordinate for industrial visits.



Apollo Tri Coat Industrial Visit



Apollo Tri Coat Industrial Visit



Deccan Hydraulics Industrial Visit



Deccan Hydraulics Industrial Visit

Faculties coordination and contribution for Industrial Visits (field visit)

Outcome: It contributes to students' knowledge and opportunity for self-study

Project Based Learning:

Project based learning is purely oriented towards the exposure of problem-solving skills possessed by the students in a group. This type of learning is a student – centric which employs a dynamic classroom approach and make the students absorb a deeper understanding relevant to real-world challenges and problems. Students will gain a knowledge over the project through investigation involving complexity. It is an inquiry-based and active learning style. Faculties are assigned as guide to each project group. The role of faculty is to lead the students positively and ensuring their problem or challenges are converted into actual model development.

Outcome: Students can complete projects and develop expertise of creative methods.

ERP Module:

An ERP software module developed in the department is a useful innovation by the faculty for the NBA accreditation process. It helps automate important tasks like calculating CO attainment, PO attainment and uploading documents, making the process faster and more accurate. Only faculty members can access the module, ensuring data security. This tool reduces manual work and allows faculty to easily track and manage course outcomes. It shows how the department is using technology to improve academic processes and meet NBAs focus on innovation and quality improvement.



ERP Module Developed by Faculty for CO PO Attainment & Other Informations