

## **DEPARTMENT OF MECHANICAL ENGINEERING** **TEACHING INNOVATION**

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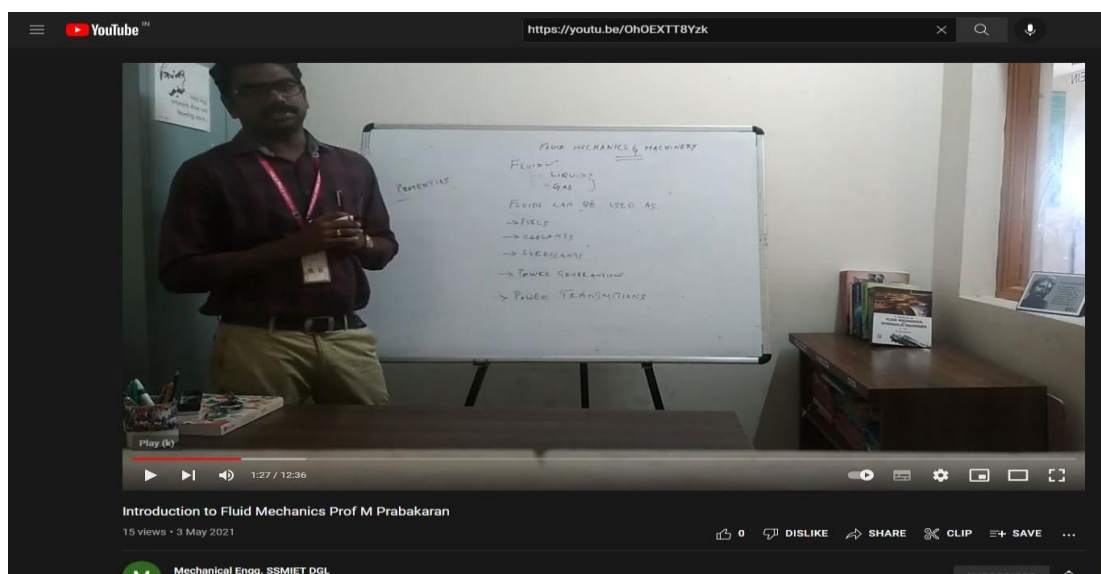
- Innovations by the Faculty in teaching and learning shall be summarized as per the following description.
- An innovation in learning occurs in a specific teaching and learning context, improving upon the implementation of the standard practice or introducing a new practice, thus achieving greater learning outcomes.
- Teaching and learning innovative practices are introduced to raise the curiosity of a student in wide domain to encourage the students to question the obvious and to increase the interaction in the class.
- Rapid advancement in technology is one of the major issues that affect the teaching/learning process.
- The facilitators find it difficult to keep pace with the techno-savvy learners. Further there is rapid change taking place in technology which aggravates the problem.
- Keeping the audience captivated throughout the lecture is another challenge.
- The facilitator is required to use a variety of tools to keep the learner engaged in the learning process since access to a variety of tools all the time may not be possible.
- Today knowledge is just a click away from the learner; a challenge faced by facilitators is to keep pace with the latest news and happenings.
- The teaching/learning process is given immense importance in the institute. The institute trains their facilitators continuously to help them enhance their teaching abilities.
- The evidence of success is visible, qualitatively as well as quantitatively. The qualitative factor improves etiquettes and desire to understand. Also, it changes the overall perspective towards life. The quantitative factor improves academic performance and motivates participation in co-curricular activities. Students who have graduated are performing extremely well in the corporate world. Some students have put their learning into application by starting their own businesses.
- Mode of teaching in this institute is not only limited to the traditional Chalk & Talk methods, But also an amalgamation of the modern technology. Following are the best and innovative practices undertaken by the faculty members for improving teaching and learning experience.
- Use of modern teaching aids like LCD projectors, Interactive boards with wireless pad,

Document camera, Interactive panel, Internet enabled computer systems, Wi-Fi enabled laptops are usually employed in classrooms and other student learning environments.

## **TEACHING USING FLIPPED VIDEO:**

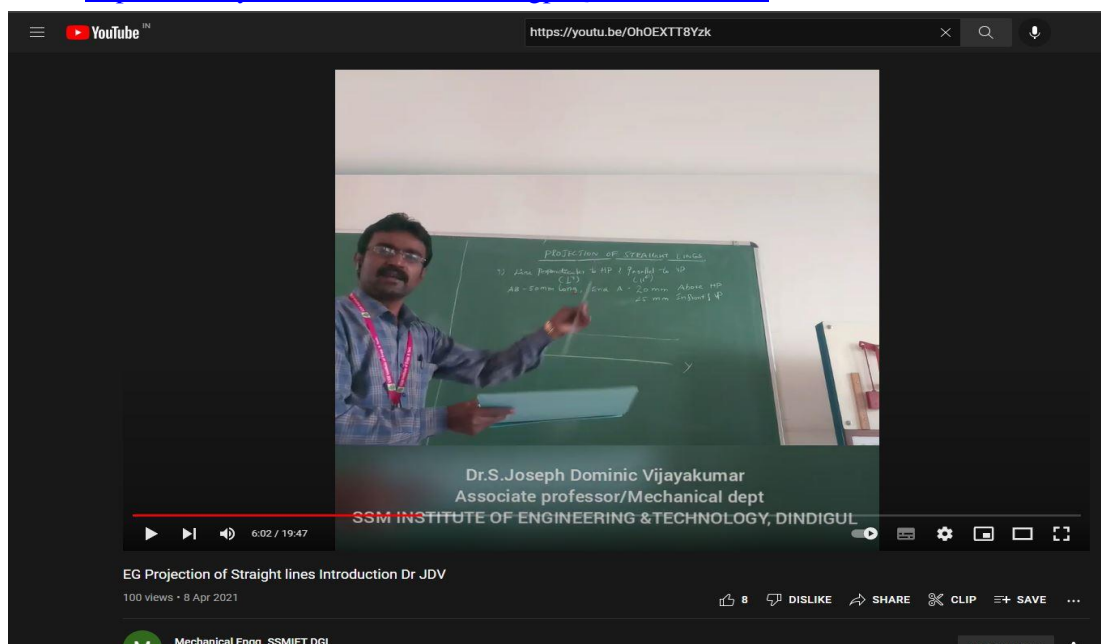
### **YOUTUBE CHANNEL:**

- The use of YouTube Channel in teaching and learning serves to students and also teachers. The online, asynchronous nature of videos allows them to be shared all across the world and at all hours of the day or night. Teachers can use videos to deliver course information that can be extremely helpful in opening up class time. These videos are accessible at the student's convenience and can be watched numerous times to assist with coursework and skill mastery.



**Mr. M. Prabhakaran, AP/Mech (Introduction to Fluid Mechanics)**

**Link:** <https://www.youtube.com/watch?v=FgprQtMZiRs&t=87s>



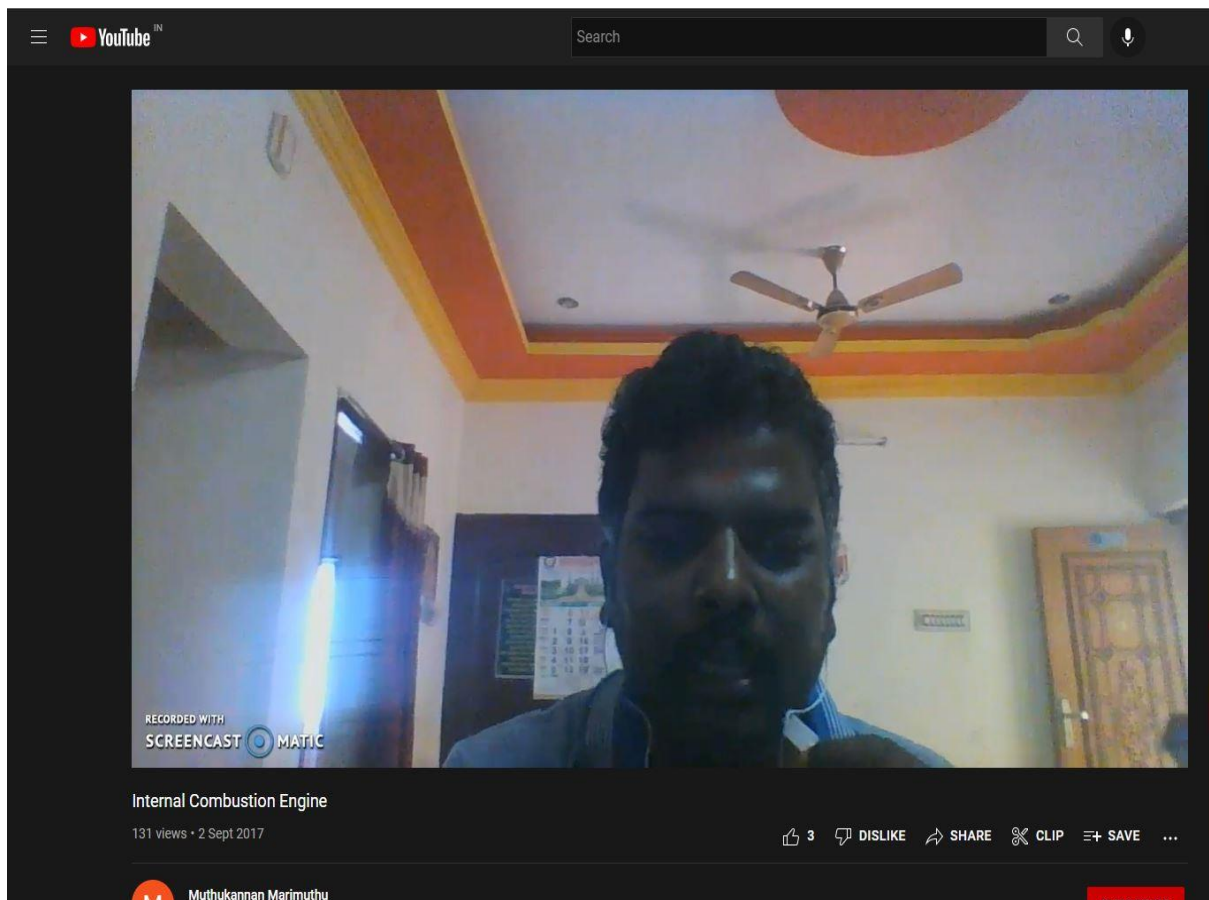
**Dr. S. Joseph Dominic, Prof/Mech (Projection of Straight Lines)**

**Link:** <https://www.youtube.com/watch?v=OZRJrsYOjK4&t=2s>



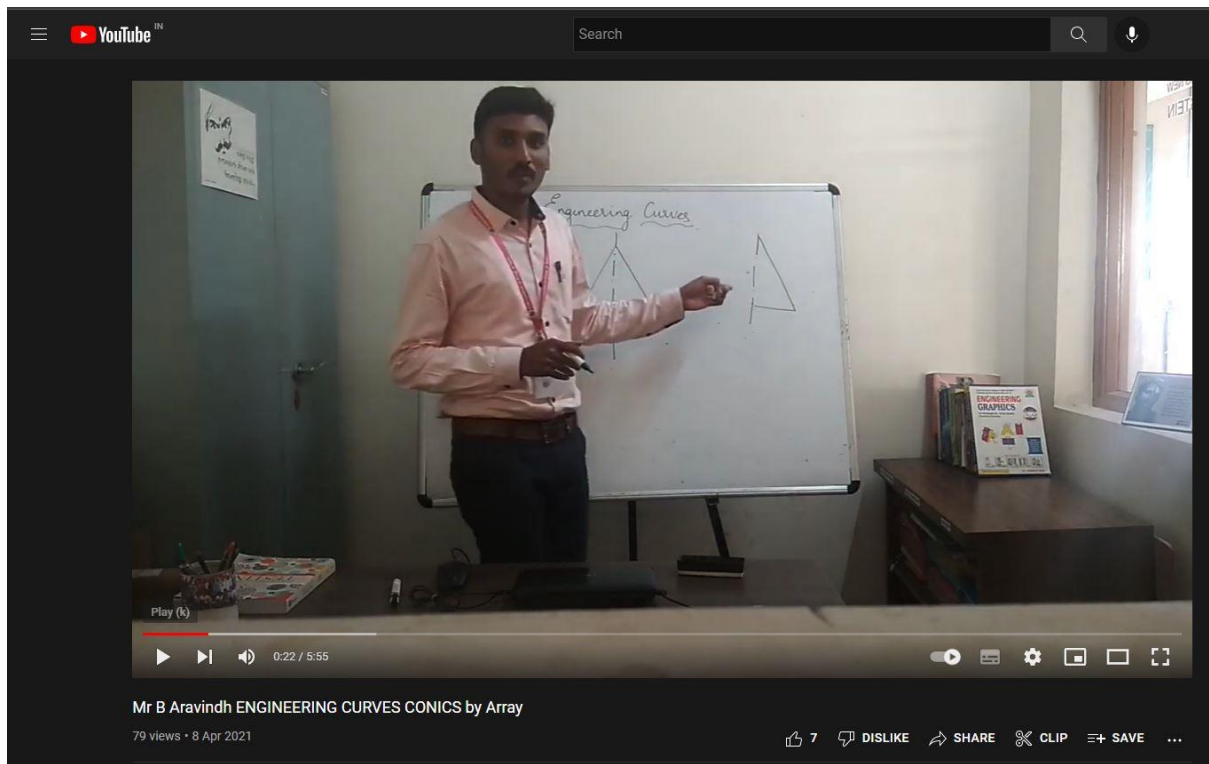
**Dr. M. Sabareeswaran, ASP/Mech (Fundamentals of Robots)**

**Link:** <https://www.youtube.com/watch?v=Z1I50tqi1uE>



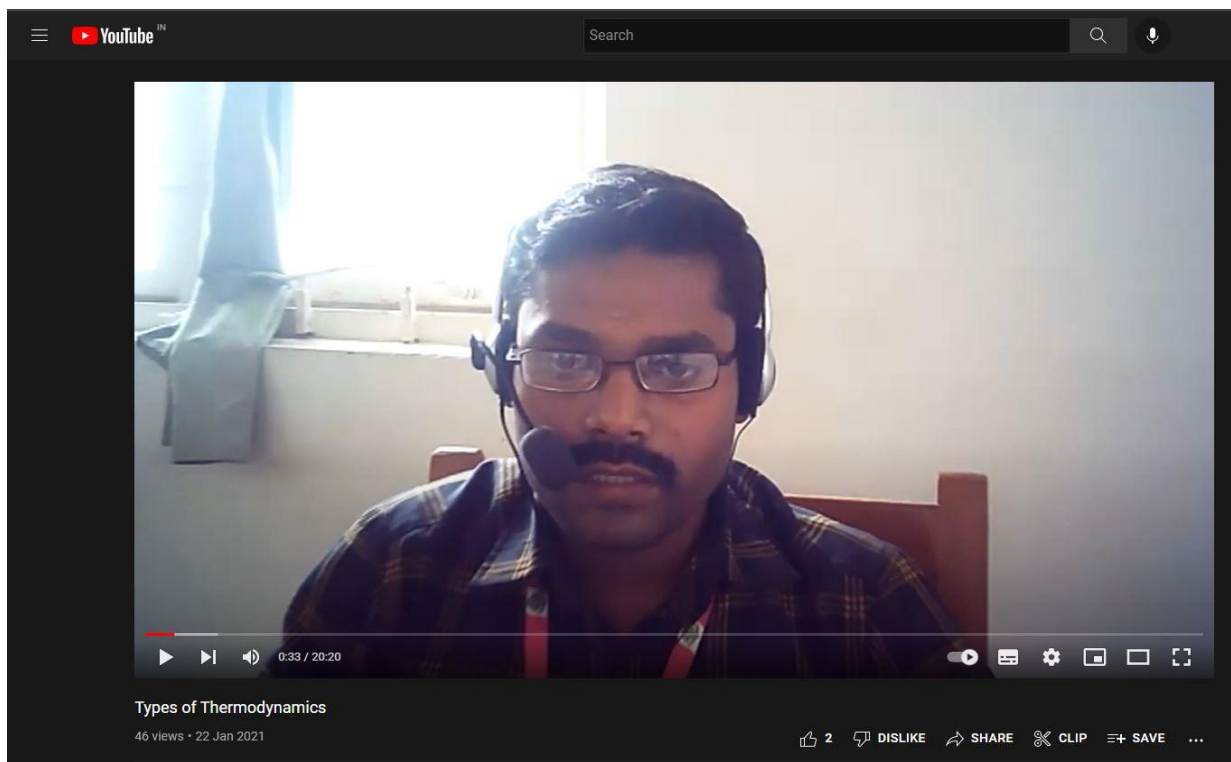
**Dr. M. Muthukannan, Prof/Mech (Internal Combustion Engine)**

**Link:** [https://www.youtube.com/channel/UCcOTzvbUARA-xrSDPLukb\\_Q](https://www.youtube.com/channel/UCcOTzvbUARA-xrSDPLukb_Q)



**Mr. B. Aravindh, AP/Mech (Engineering Drawing-Conics)**

**Link:** <https://www.youtube.com/watch?v=essTqalBmkk>



**Mr. P. Shankar Kannan, AP/Mech (Types of Thermodynamic Systems)**

**Link:** <https://www.youtube.com/channel/UC21EZ3WYZKxsek74R3bkz2w/featured>

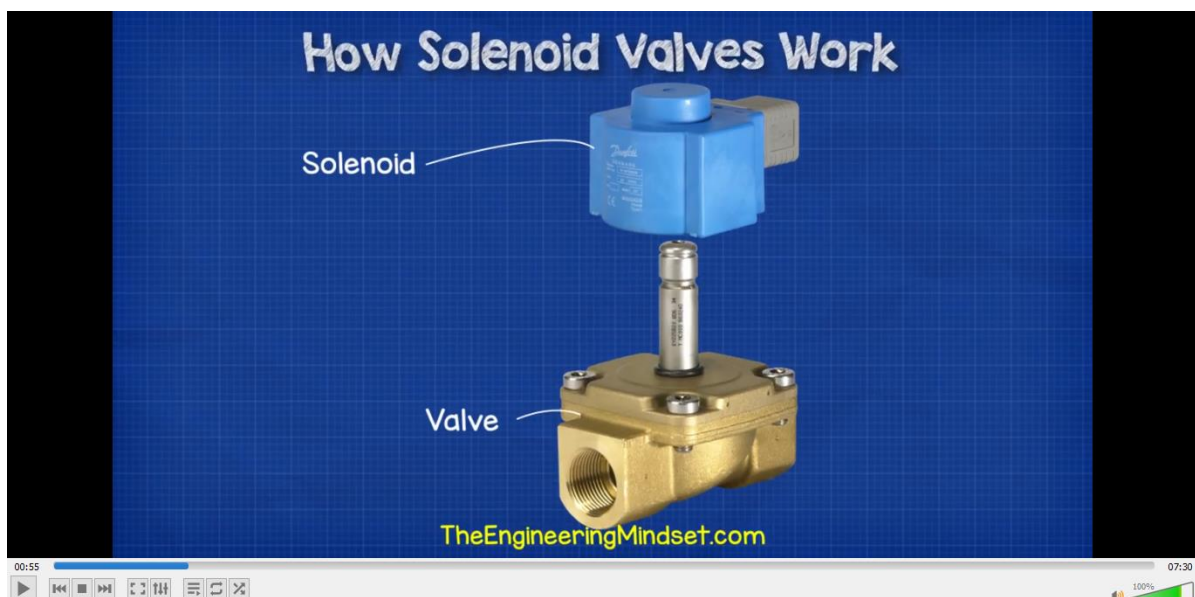


### COLLABORATIVE LEARNING:

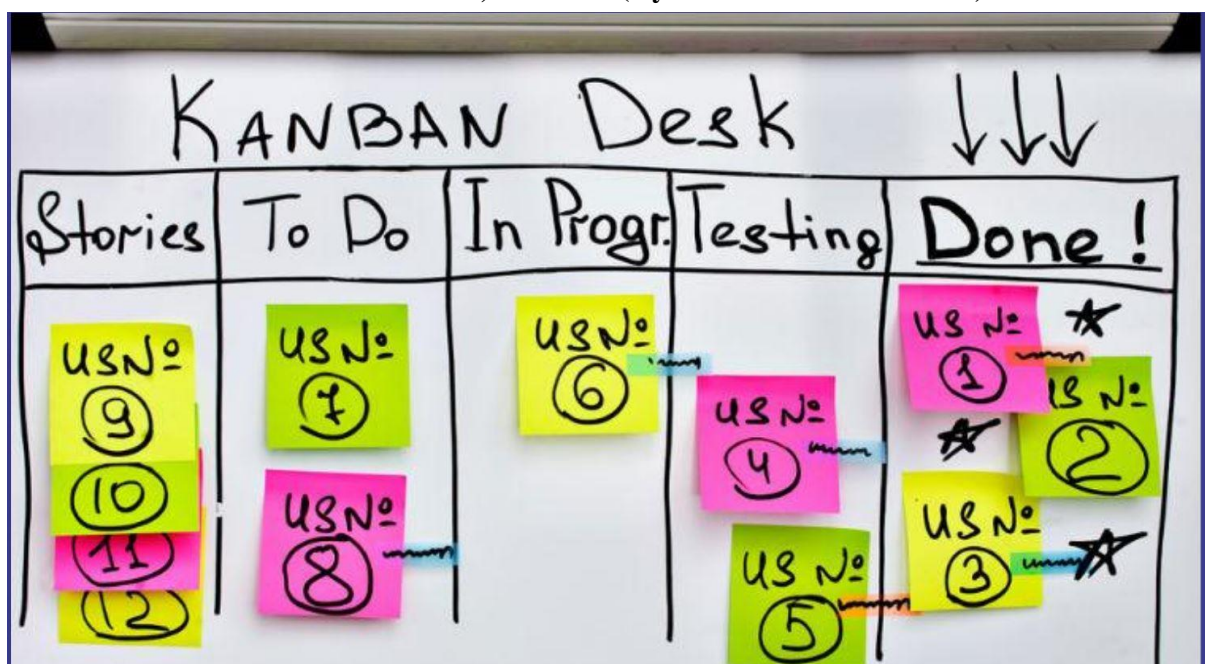
- **Group discussions** uses to learn from other people's experiences and background knowledge.
- Gain perspective and point of view which increases listening and interpersonal skills. Identify and sort out the communication opinions.

**Mini and Major Technical Projects** develop opportunities to explore theory, to research and present a pilot project with a possibility of further development, to test a technical insight, to apply intellectual learning, or to challenge skills as well as understandings within a particular field.

### TEACHING USING MODELS:



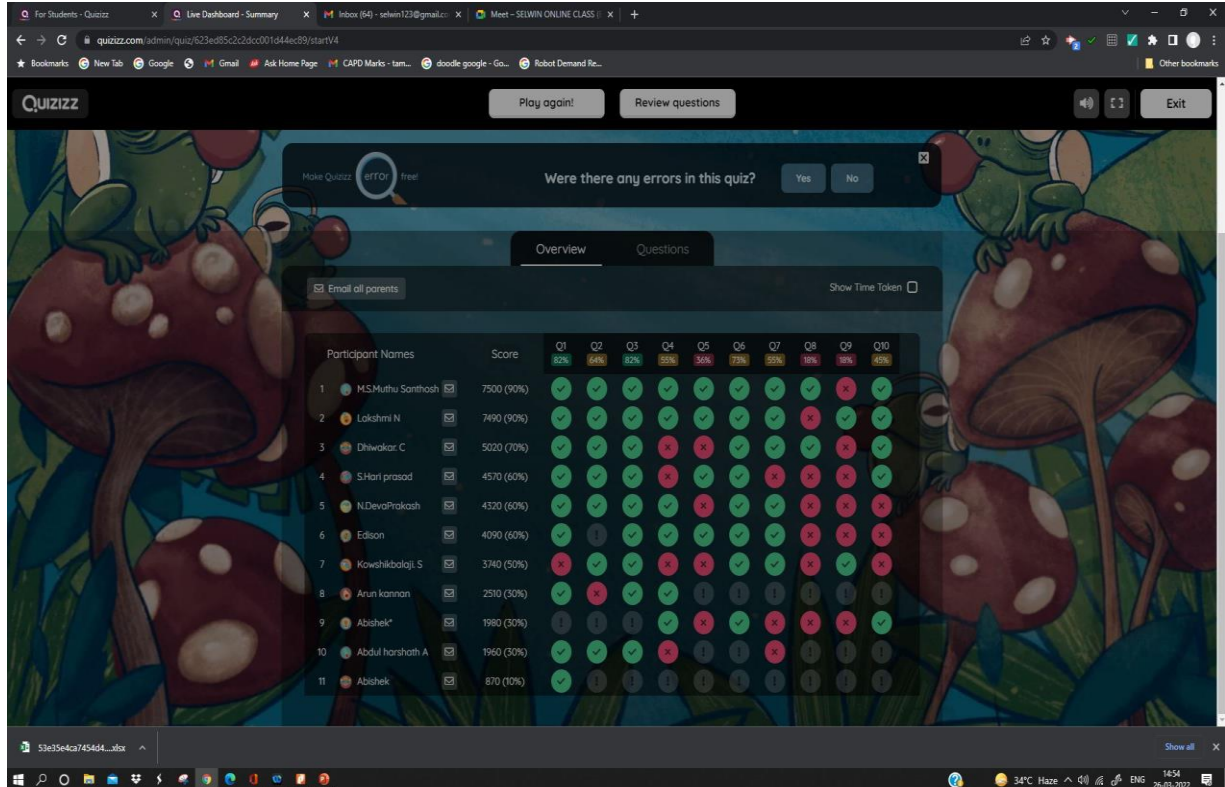
Mr. M. Prabhakaran, AP/Mech (Hydraulics and Pneumatics)



Dr. G. Sankaranarayanan, HOD/Mech (Total Quality Management- KANBAN System)

## PARTICIPATIVE LEARNING USING QUIZZ:

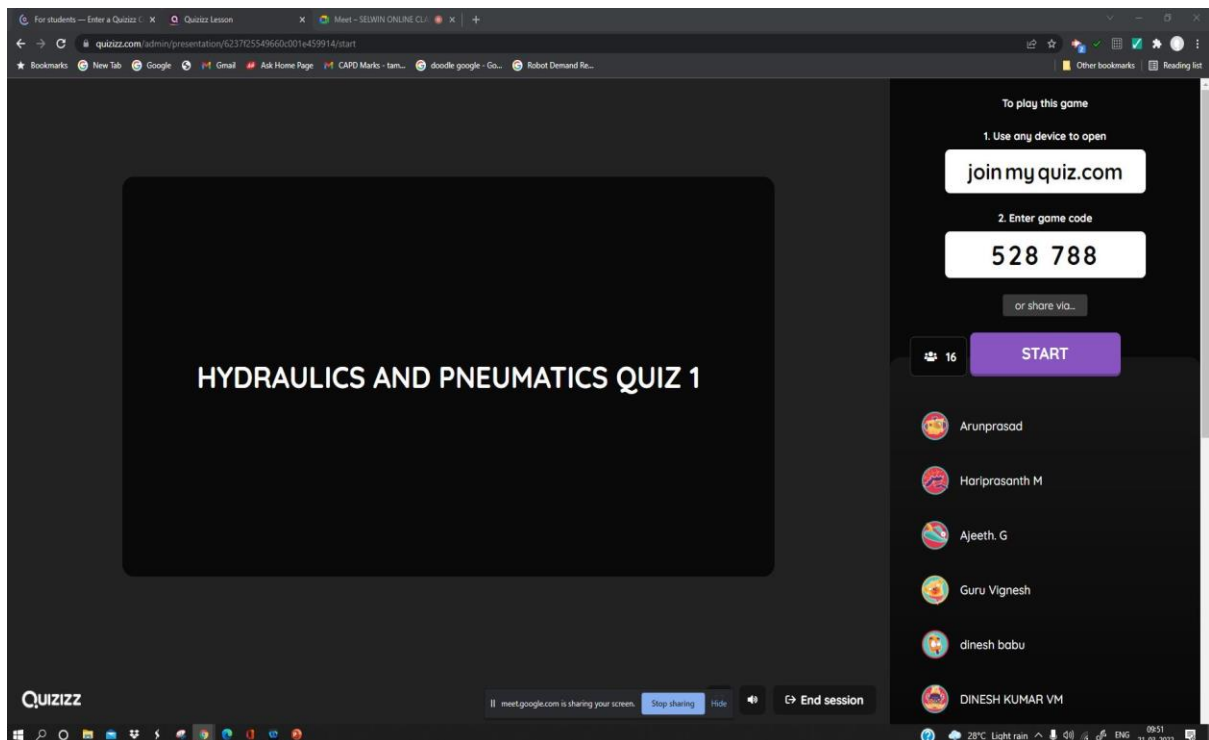
Students are encouraged to participate effectively in online Polling live Quiz event. Points will be awarded for the correct answers and toppers will be displayed on the screen. It motivates the students to participate in an enthusiastic manner. At the end winners will be declared based on correct answers and time taken for answering the questions.



The screenshot shows the Quizizz interface during a quiz session. At the top, there are buttons for 'Play again!', 'Review questions', and 'Exit'. Below these, a search bar and a prompt 'Were there any errors in this quiz?' with 'Yes' and 'No' buttons are visible. The main content area is titled 'Overview' and displays a table of participant names, scores, and question results. The table has columns for 'Participant Names', 'Score', and ten questions (Q1 to Q10). Each cell in the table contains a green checkmark for a correct answer or a red 'X' for an incorrect answer. The background features a whimsical illustration of mushrooms and a frog.

Participant Names	Score	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1. M.S.Muthu Santhosh	7500 (90%)	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓
2. Lakshmi N	7490 (90%)	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓
3. Dhivakar C	5020 (70%)	✓	✓	✓	✗	✗	✓	✓	✗	✗	✓
4. S.Hari prasad	4570 (60%)	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗
5. N.DevaPrakash	4320 (60%)	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗
6. Edison	4090 (60%)	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗
7. Kowshikbalaji S	3740 (50%)	✗	✓	✓	✗	✗	✓	✓	✗	✗	✗
8. Arun karanan	2510 (30%)	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
9. Abhishek*	1980 (30%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10. Abdul harshath A	1960 (30%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11. Abhishek	870 (10%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Mr. M. Selwin, AP/Mech (Strength of Materials for Mechanical Engineers)**



The screenshot shows the Quizizz interface during a quiz session. The main content area displays the title 'HYDRAULICS AND PNEUMATICS QUIZ 1'. On the right side, there is a 'To play this game' section with instructions: '1. Use any device to open' and '2. Enter game code'. Below these instructions, there is a 'joinmyquiz.com' button, a game code input field containing '528 788', and a 'START' button. A list of participants is shown below the 'START' button, including Arunprasad, Hariprasanth M, Ajeeth G, Guru Vignesh, dinesh babu, and DINESH KUMAR VM. The background is dark with a subtle pattern.

**Mr. M. Selwin, AP/Mech (Hydraulics and Pneumatics)**

## BRAINWRITING:

- It will be conducted as a surprise test.
- Students are instructed to form a team of 2 members.
- A crossword puzzle related to a topic will be given to the team.
- Hints will be given for answering the questions. Winners will be declared based on submission time and accuracy of answers.

Name: \_\_\_\_\_ Number: \_\_\_\_\_

**STRENGTH OF MATERIALS**

**Across:** →

4. Change in velocity with respect to time
6. Ability of the body to Withstand Load
8. The Body in rest condition.
9. Have both Magnitude and Direction
10. Opposite Force

**Down:** ↓

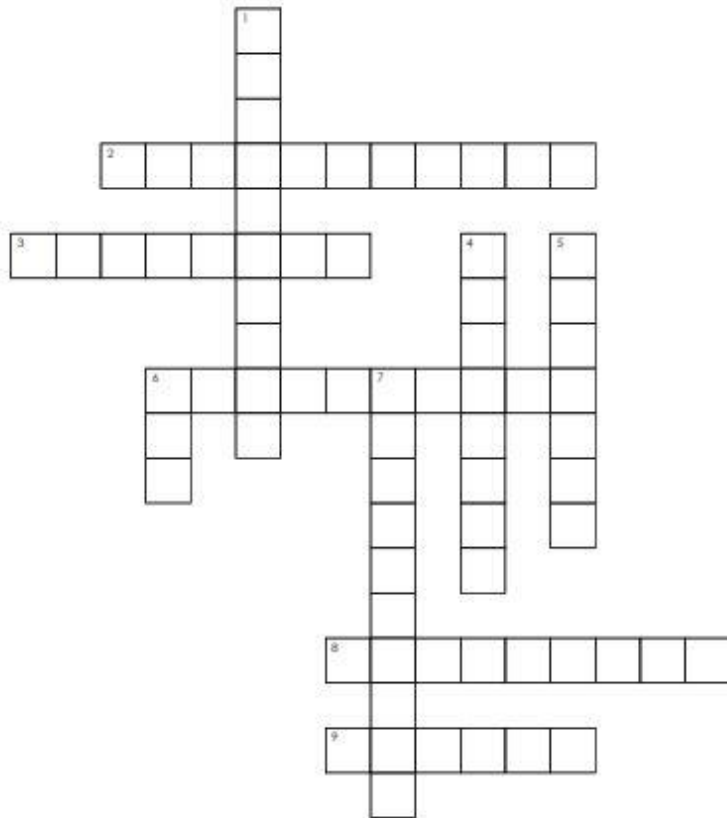
1. If it is applied the body moves.
2. Study of body in motion.
3. On receiving load the body will undergo
5. Pressing of Balloon is ..... Force
7. Law of Gravity is proposed by.

Created by M. SELWIN (AP/MECHANICAL) using the Crossword Puzzle Generator on Super Teacher Worksheets ([www.superteacherworksheets.com](http://www.superteacherworksheets.com))

Mr. M. Selwin, AP/Mech (Strength of Materials for Mechanical Engineers)

Name: \_\_\_\_\_ Number: \_\_\_\_\_

## HYDRAULICS AND PNEUMATICS



**Across:** →

2. .... Reduces Friction
3. .... = FORCE/ AREA
6. Principle based on Buoyance Force
8. Measure of a fluid's resistance to flow
9. FLUID POWER USES.....LAW

**Down:** ↓

1. Power Generation using Liquids
4. Mech Energy converted to Electric Energy
5. .... is Mass per unit volume
6. PNEUMATICS used compressed.....
7. In Fan Electric energy is converted to

Created by M. SELWIN (AP/MECHANICAL) using the Crossword Puzzle Generator on  
Super Teacher Worksheets ([www.superteacherworksheets.com](http://www.superteacherworksheets.com))

**Mr. M. Selwin, AP/Mech (Hydraulics and Pneumatics)**



## QUIZ USING GOOGLE FORMS:

(no subject) - sankar7862@gmail.com x Thermal Engineering I II A & B x Thermal Engineering I x +

docs.google.com/forms/d/e/1FAIpQLSdzrpF5oHV0A6r0lTeCxiGfkdSrrFRpPUittMilzR08sCpFXw/viewform

Apps LuckySearch123 Google ssmiet.ac.in Graphics Card Drivers https://torrent2.eu Ninite - Install or U... Tamilnadu College... Thuttu - Deals & C... Reading list

Otto cycle is the air standard cycle of \* 1 point

- spark ignition (SI) engine
- compression (CI) ignition engine
- both SI and CI engines
- none of the above

The thermal efficiency of a standard Otto cycle for a compression ratio of 5.5 will be \* 1 point

- 25%
- 50%
- 70%
- 100%

In which of the following cycle heat is added at constant volume? \* 1 point

Windows taskbar icons: Internet Explorer, File Explorer, Google Chrome, VLC media player, Firefox, Microsoft Word, and system tray icons.

**Mr. P. Shankarkannan, AP/Mech (Online quiz using Google Forms- Thermal Engineering 1)**

(no subject) - sankar7862@gmail.com x Thermal Engineering I II A & B x WELDING TECHNOLOGY x +

docs.google.com/forms/d/e/1FAIpQLSfsc9qHFWNIK4ucPyfD2JchrFPnzg09JID3W9rf6qCyz3Kkdw/viewform

Apps LuckySearch123 Google ssmiet.ac.in Graphics Card Drivers https://torrent2.eu Ninite - Install or U... Tamilnadu College... Thuttu - Deals & C... Reading list

### WELDING TECHNOLOGY

Objectives

sankar7862@gmail.com (not shared) [Switch account](#)

\* Required

Name \*

Your answer \_\_\_\_\_

Which flame is suitable for welding of ferrous metals, Cu and Al alloys? \* 1 point

- Oxidising flame
- Carburising flame
- Neutral flame

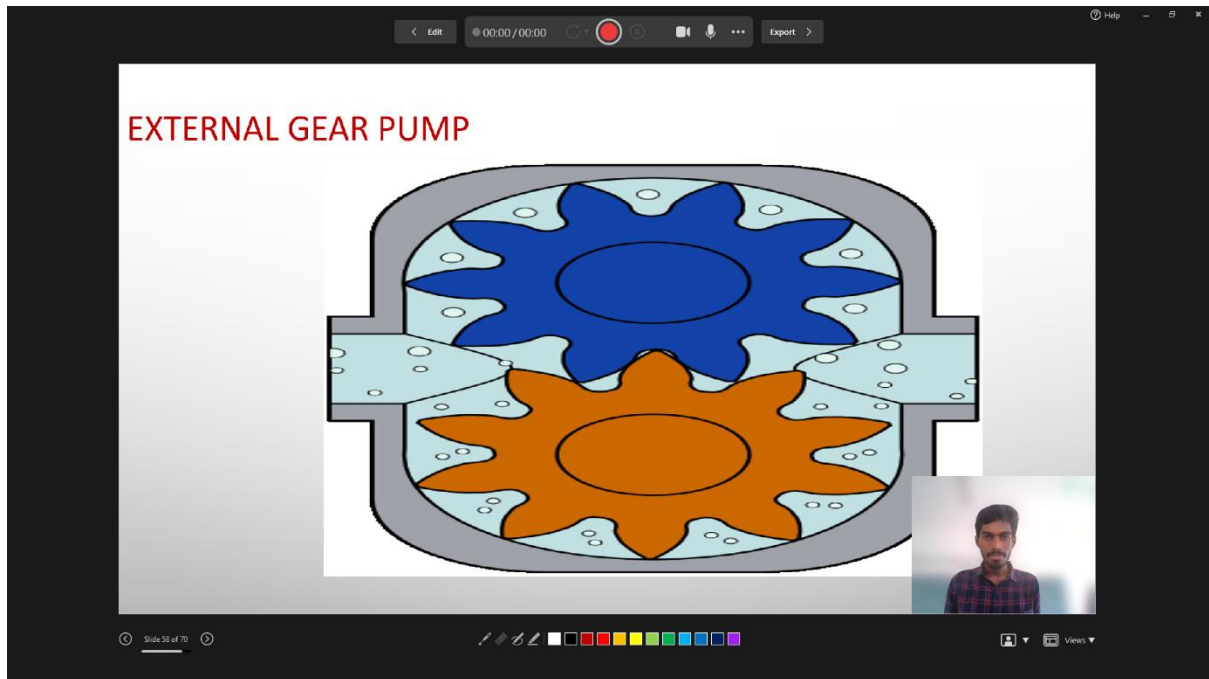
Windows taskbar icons: Internet Explorer, File Explorer, Google Chrome, VLC media player, Firefox, Microsoft Word, and system tray icons.

**Mr. P. Shankarkannan, AP/Mech (Online quiz using Google Forms- Welding Technology)**

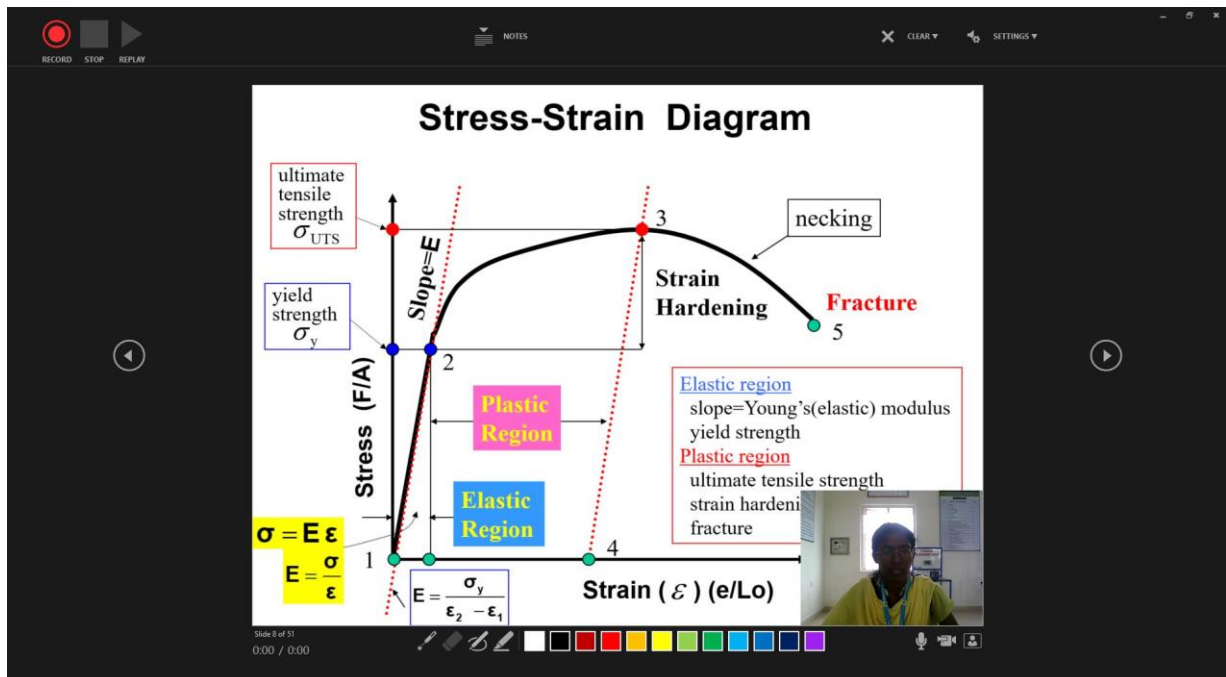
## RECIPROCATING TEACHING METHODOLOGY:

### (JAM) JUST A MINUTE:

- 1 Minute will be given to the students.
- Students have to give a fast & clear explanation about any topic.
- Here, Student will become a teacher and Teacher will act like a student.
- It will enhance the concept of fast learning of difficult concepts.



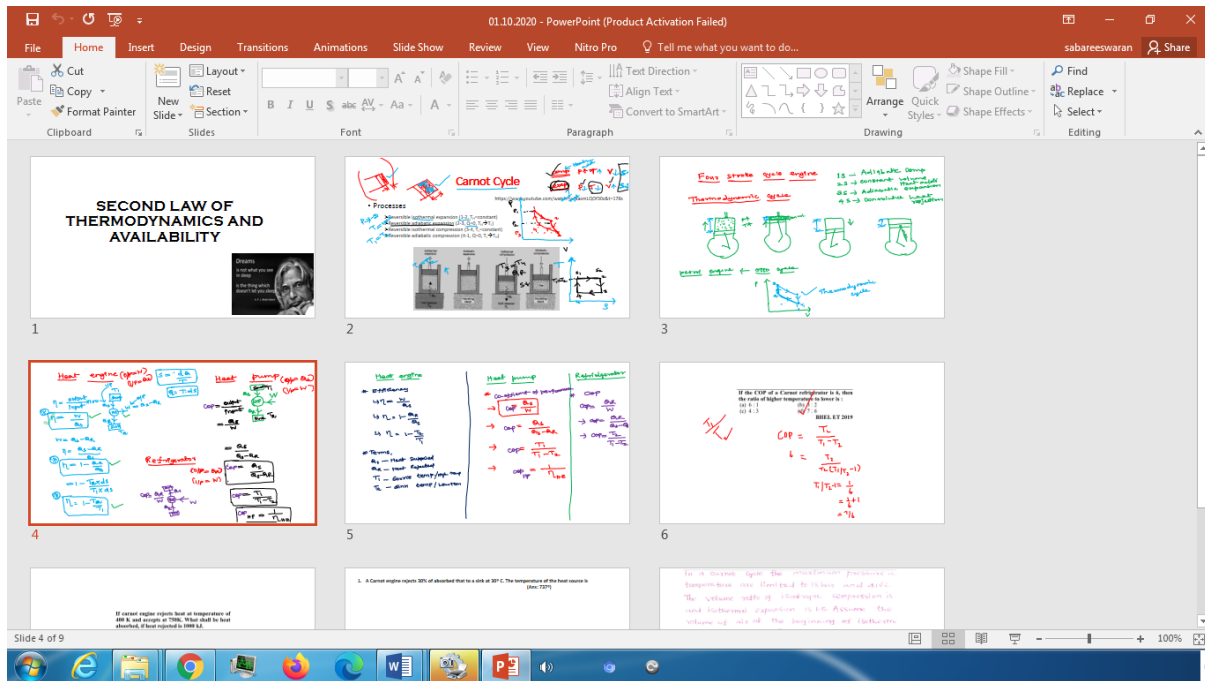
S. Bharath (III Year Mechanical A), Working of External Gear Pump- Hydraulics and Pneumatics



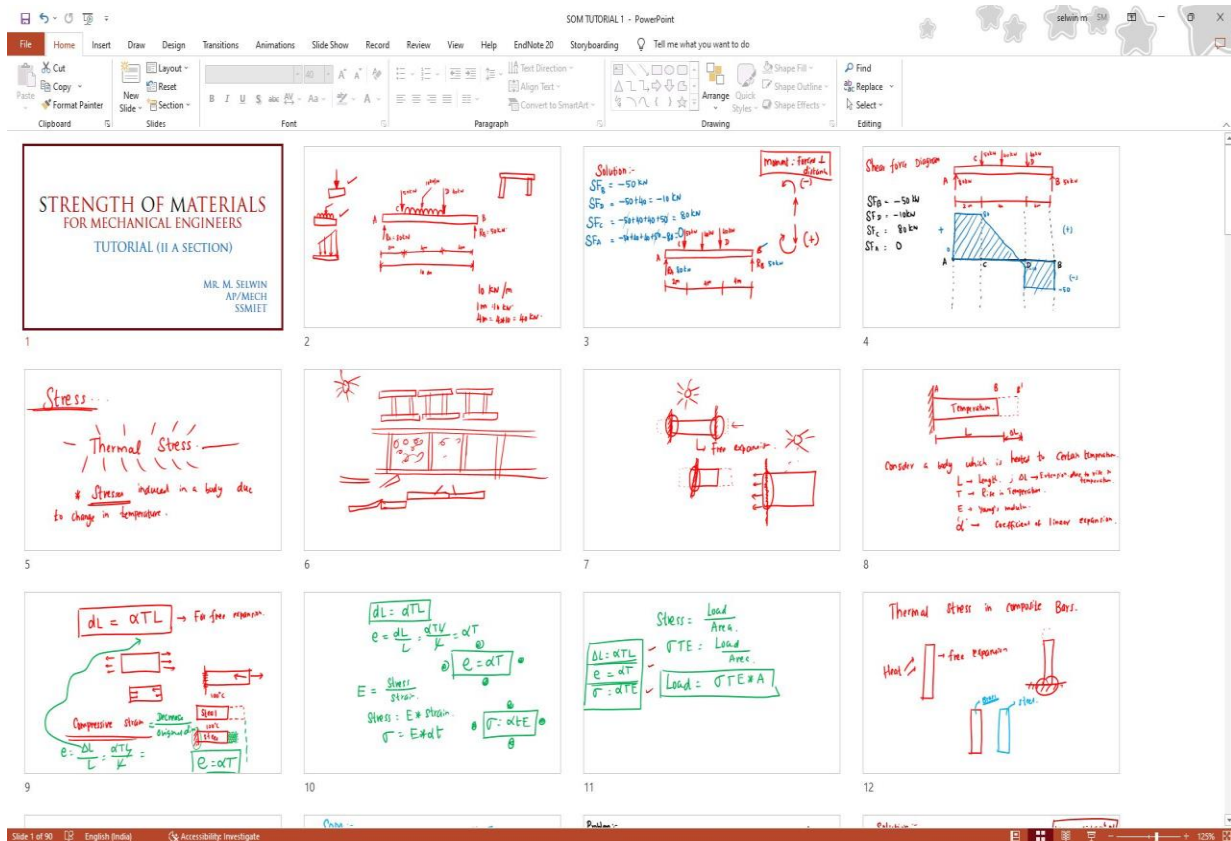
Lakshmi (II Mech A), Stress Strain Curve- Strength of Materials for Mechanical Engineers

Seminar Classes by students enhances the listening ability. Being working in a team Leadership quality, communication skills, sharing of knowledge and time management skills of the students builds up. Students learn to deal with conflicting opinions. For delivering seminars students prepare, Produce and use visual aids for presentation.

### TUTORIAL CLASSES USING WACOM INTERACTIVE PADS:



Mr. P. Shankarkannan, AP/Mech -Teaching Using Wacom Pad (Engineering Thermodynamics)



Mr. M. Selwin, AP/Mech (Strength of Materials for Mechanical Engineers)

**TEACHING USING INDUSTRY VISITS:**



**Bharath Rubbers Ltd, Madurai (Dr. R. Subhaa, ASP/Mech)**

**VIRTUAL LABS:**

Virtual Labs  
Tensile Test on Mild Steel

**TENSILE TEST ON MILD STEEL**

**STEP 1** Measure the Initial Diameter of the tension test sample in two perpendicular directions using vernier caliper.

$d_{0x} = 12.82\text{mm}$

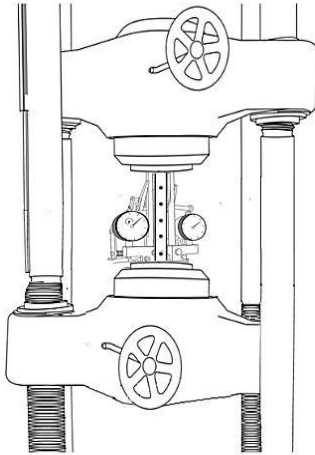
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## TENSILE TEST ON MILD STEEL

**STEP 4** Insert the specimen into its position and mount extensometer on the specimen.

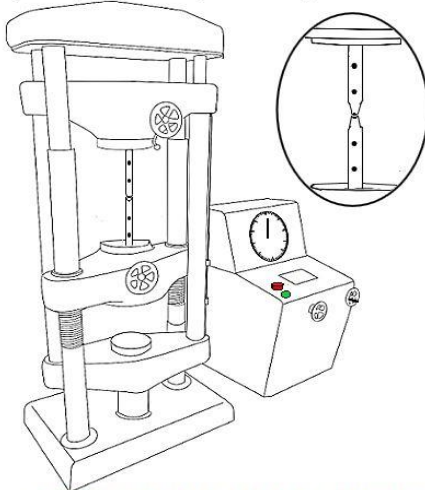


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## TENSILE TEST ON MILD STEEL

**STEP 6** Experiment is conducted. Load, extensometer readings are read at regular intervals of load upto the yield point. Ivory scale readings are noted till the specimen failure.



Load in kN	Extensometer Reading in Division			Ivory Scale Reading(mm)
	A	B	Average	
-	-	-	-	-
2.5	1	1	1	0.4
5	2	2	2	0.8
7.5	3	3	3	1
10	5	4	4.5	1
12.5	6	5	5.5	1
15	7	6	6.5	1.2
17.5	8	7	7.5	1.2
20	9	8	8.5	1.5

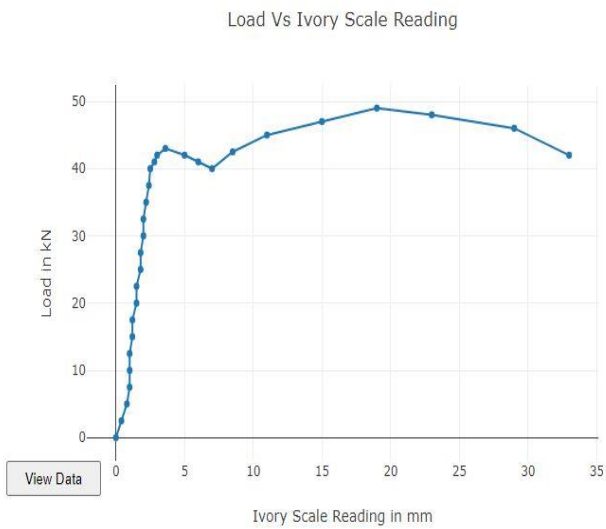
[Download Data](#)

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## TENSILE TEST ON MILD STEEL

STEP 7 Graph.



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**Mr. M. Selwin, AP/Mech (Strength of Materials for Mechanical Engineers)**

**Link: <https://sm-nitk.vlabs.ac.in/>**

## CLASSES USING VARIOUS ICT TOOLS:

### LCD PROJECTORS:



#### **Dr. V. Kandavel, ASP/Mech (Mechatronics System)**

- The biggest resource for self-learning is obviously the college library. The college library not only possesses plenty of books to meet the students' syllabus-oriented needs, but it also houses numerous books by eminent national and international authors on a variety of topics which students may regularly access to sharpen and broaden their knowledge.
- There is a digital library facility in the campus and the students are encouraged to refer to journals and conference proceedings for their project works and seminars in the latest topics.
- Students are encouraged to visit NPTEL lectures, browse different internet sites to increase their knowledge base about the subject.
- Moreover, through these activities' students acquire relevant knowledge which is beyond the syllabus as Anna curriculum.
- Our college having NPTEL Local Chapter. Helps to know basic and advanced techniques in every subject for faculty members and students.
- Students are given by NPTEL materials and videos which enhances their knowledge.

## SMART CLASS ROOM

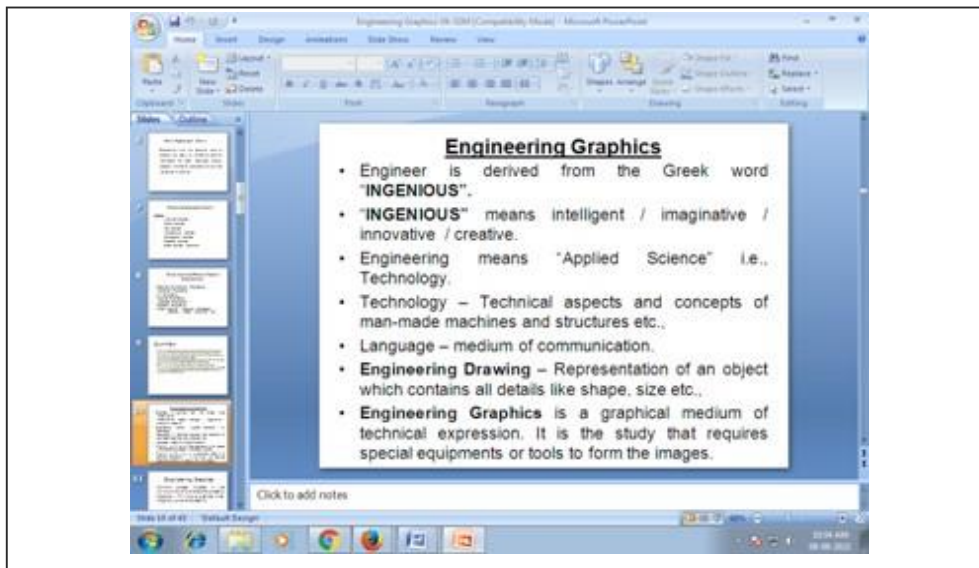
- **Smart Class room** facilities are provided to students for the better understanding of concepts



**Dr. V. Kandavel, ASP/Mech (Mechatronics System)**

### PRESENTATION USING POWERPOINTS:

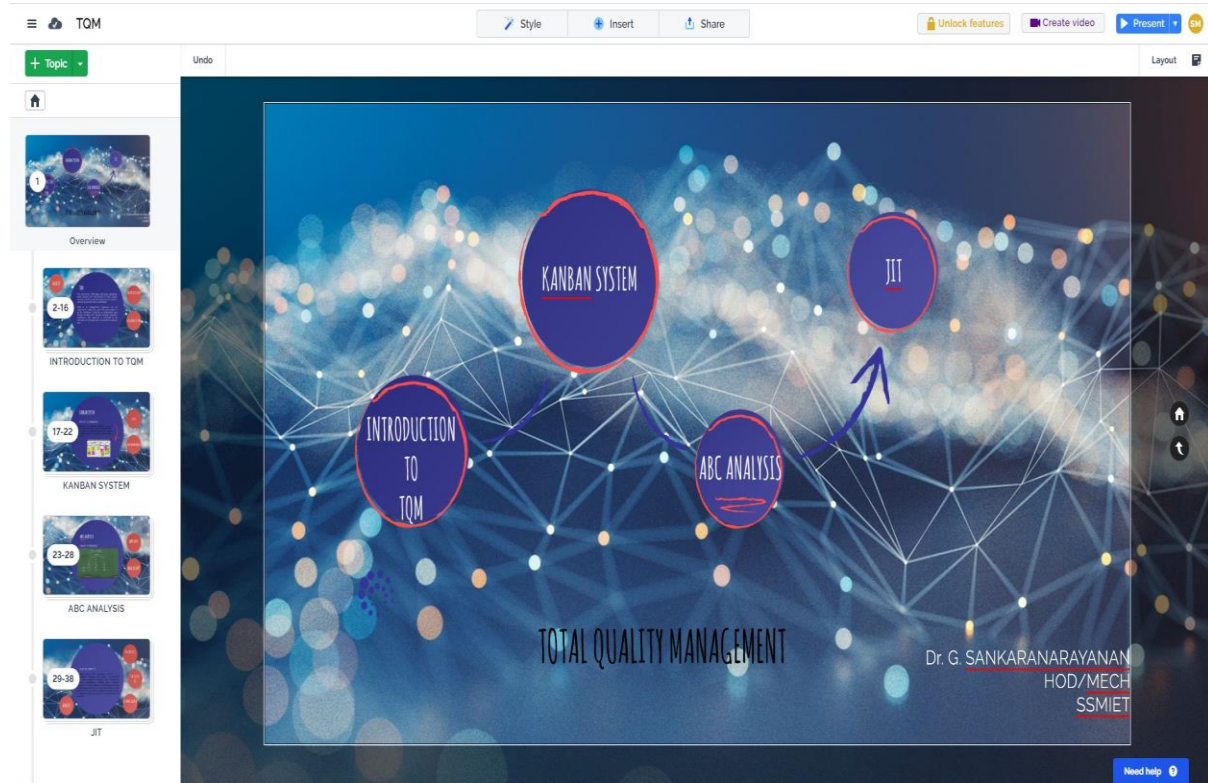
- Provides the ability to equip presentations with different types of media - including images, sounds, animations, and much more.
- This enhances the students abilities to retain what is being taught, especially to those who are visual learners.
- Teachers can focus on the class and interact with the students instead of writing on a board, because the text and the entire presentation are already there in the form of a PowerPoint file.



**Dr. V. Kandavel, ASP/Mech (Engineering Graphics)**



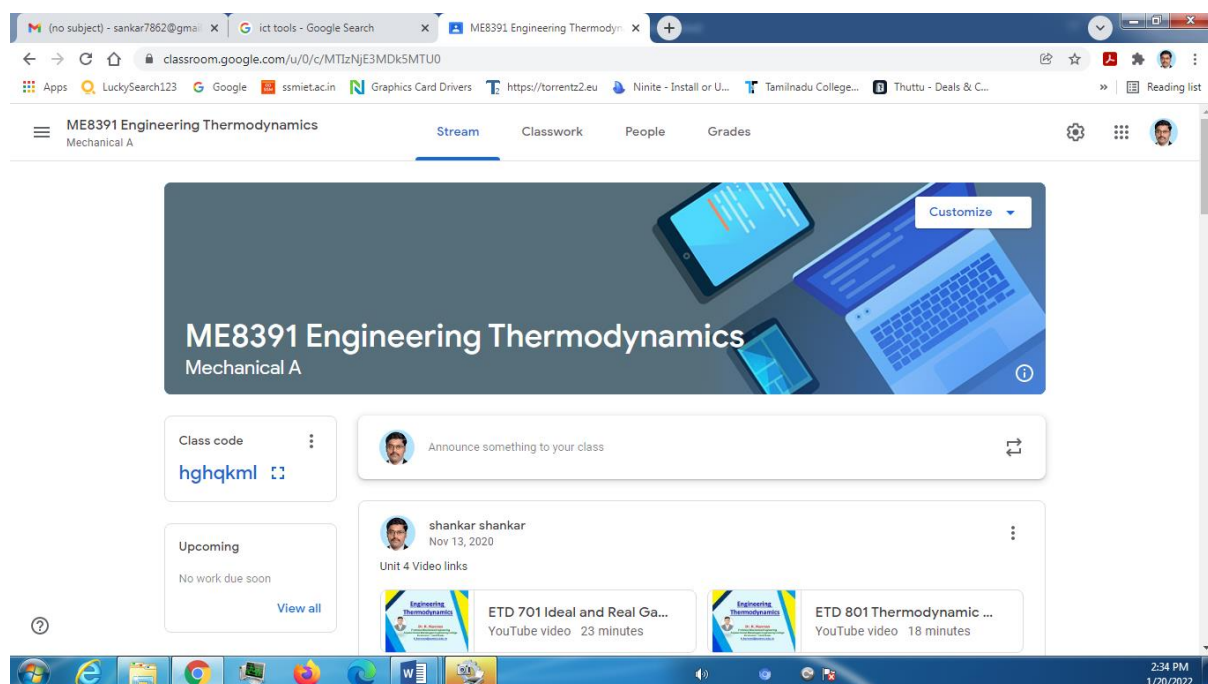
## PRESENTATION USING PREZI:



**Dr. G. Sankaranarayanan, HOD/Mech (Total Quality Management)**

## GOOGLE CLASS ROOMS:

- Creating a Google classroom using google app. Students are made to join as members of the Google classroom. 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.



**Mr. P. Shankar Kannan, AP/Mech (Engineering Thermodynamics)**

ME8793 PROCESS PLANNING AND COST ESTIMATION  
MECHANICAL IV C SECTION

Class code: rvefet4

shankar shankar  
Dec 20, 2021  
IT 3 Important Questions

IMP.docx  
Word

**Mr. P. Shankar Kannan, AP/Mech (Process Planning and Cost Estimation)**

ME8694 Hydraulics & Pneumatics  
B section

Class code: pcru2pb

Arun 301  
May 29, 2021  
Arunkumar(922118114301)

Form May 28, 2021.pdf mo...  
PDF

Settings saved

**Mr. M. Prabhakaran, AP/Mech (Hydraulics and Pneumatics)**



Class code  
**hvj7h5a**

Announce something to your class

Upcoming  
No work due in soon  
[View all](#)

**Gopi Krishnan**  
30 Oct  
Gopi Krishnan 013

922118114013 -GE8077.pdf  
PDF

Add class comment...

**007Faizu Faizal**  
30 Oct  
J John Moses sandrez  
922118114021

922118114021-Total Quality...  
PDF

**Dr. G. Sankaranarayanan, HOD/Mech (Total Quality Management)**