

Department of Mechanical Engineering

Semester: 3

Academic Year : 2020-21

Subject Code: ME18304

Subject Name: Mechanics of Solids

Teaching Methods	Type of learning
Online resources – Videos	Participative Learning
Use of digital pads	Participative Learning
PowerPoint presentations	Participative Learning
ClassDojo – Gamification	Participative Learning
Assessment Methods	Type of learning
Quizzes	Participative Learning
Descriptive Assignments	Participative Learning
Activity Assignment	Experimental Learning
Application type Assignments	Problem Solving Methodologies

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Head of the Department

Sample Proof for Teaching Methods:**Online resources**

S.No	Topics	Online resources Link	Mapping
1	Difference between Malleability and Ductility	https://youtu.be/CIBXoYaM7Fw	UNIT 1
2	What is toughness?	https://youtu.be/gnRd1D5Mbr8	
3	What is Hardness?	https://youtu.be/6I2yMEVLclc	
4	Tensile Test for a Specimen	https://youtu.be/D8U4G5kpcM	
5	Young's Modulus	https://youtu.be/DLE-ieOVFjI	
6	Poisson's ratio	https://youtu.be/tuOIM3P7ygA	
7	Normal Stress and Shear stress	https://youtu.be/x-UiYHyAUaM	
8	Bulk Modulus	https://youtu.be/jFanl-n9NjI	
9	True Stress and True Strain	https://youtu.be/AkX6JqIWRqc	
10	Understanding Shear Force and bending Moment Diagram	https://youtu.be/C-FEVzI8oe8	UNIT 2
11	Stresses in Beams	https://youtu.be/f08Y39UiC-o	
12	Understanding Deflection of Beams	https://youtu.be/MvBqCeZllpQ	UNIT 3
13	Understanding Torsion	https://youtu.be/1YTKedLQOa0	UNIT 4
14	Torque and Moment difference	https://youtu.be/zXxrAJld9mo	
15	Spring constant	https://youtu.be/FAHOI32oAns	
16	Understanding Stress in inclined planes and Mohr's circle	https://youtu.be/_DH3546mSCM	UNIT – 5
17	Understanding theories of failure	https://youtu.be/xkbQnBAOFeg	

Use of Digital pads in Microsoft OneNote

The screenshot shows a Microsoft OneNote window titled "OneNote for Windows 10" with the user name "MAHESWARAN M". The interface includes a ribbon with "Home", "Insert", "Draw", "View", and "Help" tabs. The left sidebar shows a navigation pane with "MOS notes" and a list of units and sessions. The main content area displays a document titled "S11. Thermal Problem" with the following text:

A steel rail is 12 m long and is laid at a temperature of 18°C. The maximum temperature expected is 40°C.
 (i) Estimate the minimum gap between two rails to be left so that the temperature stresses do not develop.
 (ii) Calculate the temperature stresses developed in the rails,
 If: (a) No expansion joint is provided. (b) if a 1.5 mm gap is provided for expansion.
 (iii) If the stress developed is 20 N/mm², what is the gap provided between the rails? Take $E = 2 \times 10^6 \text{ N/mm}^2$ and $\alpha = 12 \times 10^{-6}/^\circ\text{C}$.

Handwritten notes in red ink include:

- $L = 12 \text{ m}$
- $L = 12000 \text{ mm}$
- $T_1 = 18^\circ\text{C}$
- $T_2 = 40^\circ\text{C}$
- $\Delta T = T_2 - T_1$
- $\Delta T = 40 - 18 = 22^\circ\text{C}$

A photograph of a steel rail on wooden sleepers is shown with red arrows indicating the gap between rails. Below the photo, handwritten text reads:

(i) Thermal expansion:

$$\delta_T = \alpha \Delta T L$$

$$= 12 \times 10^{-6} \times 22 \times 12000$$

$$\delta_T = 3.168 \text{ mm}$$

A diagram shows a horizontal line representing a rail with a gap of δ_T between two segments. The length of each segment is labeled as $\frac{L}{2}$.

ClassDojo for Gamification

Mr. M
MOS

Jul 17, 2020

NEW RULES:

Students can Redeem their points for increasing Internals in Assignments and Test.

To Skip 1 Assignment - 50 POINTS
 To Skip One Test - 75 POINTS
 To Boost previously completed Assignments - 50 POINTS
 To boost previously completed Test - 75 POINTS

Note: The Points can be redeemed for any Assignments based on their interest.

Students should mention in the Google Classroom Comment to Skip their Assignments/Tests

Positive	Needs work
<p>Answers Quickly</p>	<p>Asks questions</p>
<p>Completing Ontime</p>	<p>Daily Attendance</p>
<p>EXCELLENT PERFORMANCE</p>	<p>Ontime to Class</p>
<p>Quick Response</p>	<p>Random Gift</p>
<p>Working hard</p>	<p>Add skills</p>

Sample Proof for Assessment Methods:

Activity Assignment



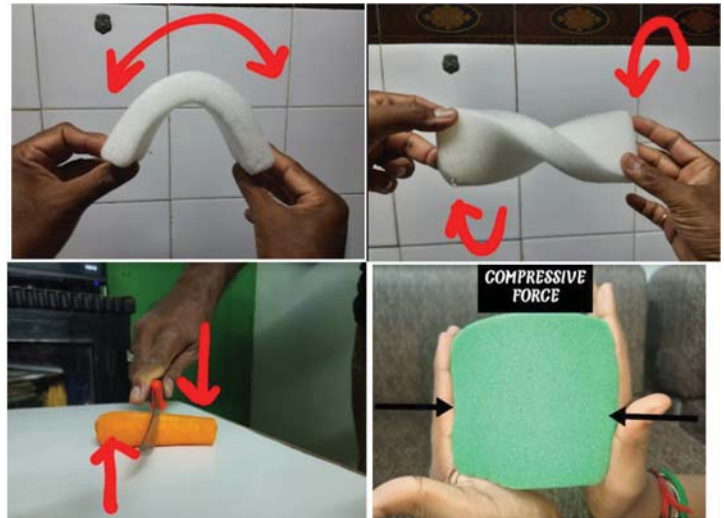
Activity 1 - Different Force Application

Posted Aug 26, 2021

Dear Students,

Take a Photograph and mark the forces for any application mentioned Below:

1. Tensile Force - 1 Photo
2. Compressive force - 1 Photo
3. Bending Force - 1 photo
4. Shear Force - 1 Photo
5. Twisting Force - 1 Photo.



Application type Assignments from Tutorial book

2. The state of stress acting at a critical point on the seat frame of an automobile during a crash is shown in the figure. Determine the smallest yield stress for a steel that can be selected for the member, based on the maximum shear - stress theory. Hint: According to maximum shear stress theory, the smallest yield stress is the difference between the major and minor principal stress.

