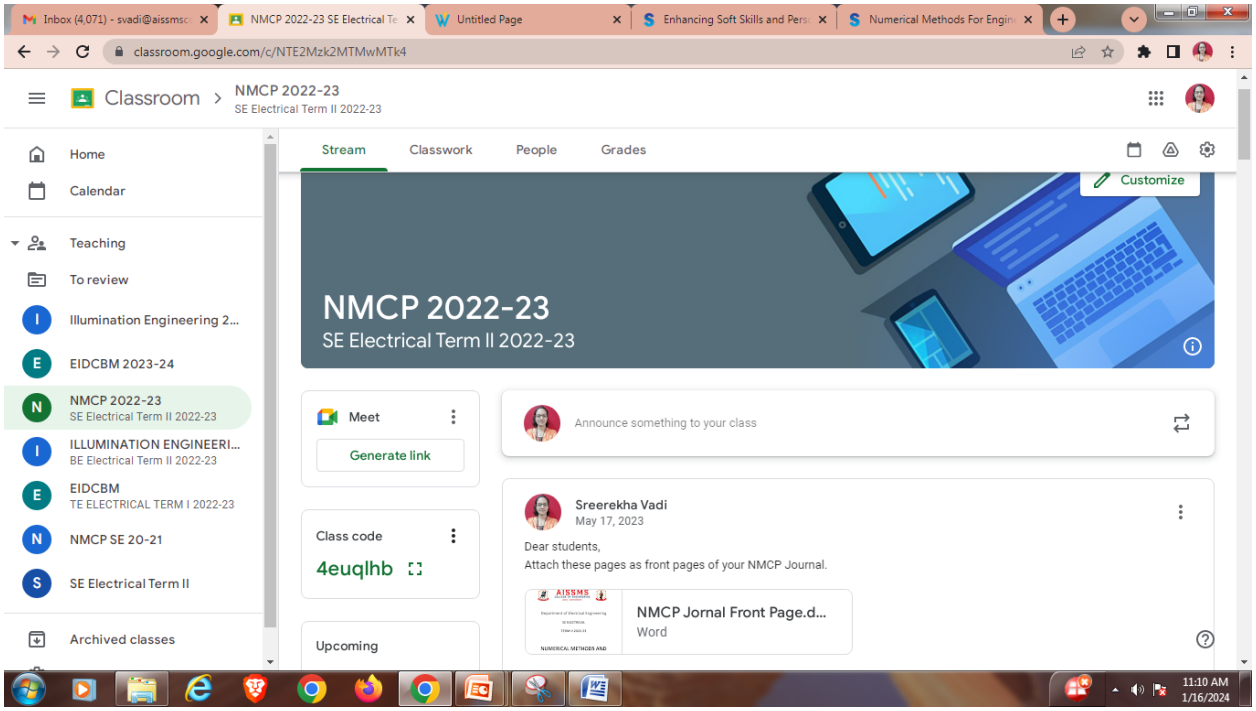
ICT Tool Learning Management System



NUMERICAL METHODS AND COMPUTER PROGRAMMING

SE ELECTRICAL TERM II 2022-23

HOD
Department of Electrical Engineering
AISSMS College of Engineering, Pune

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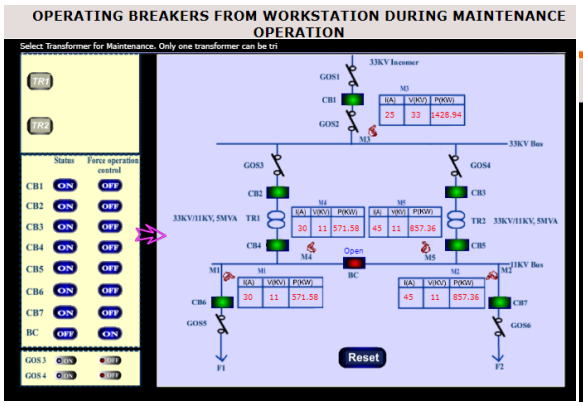
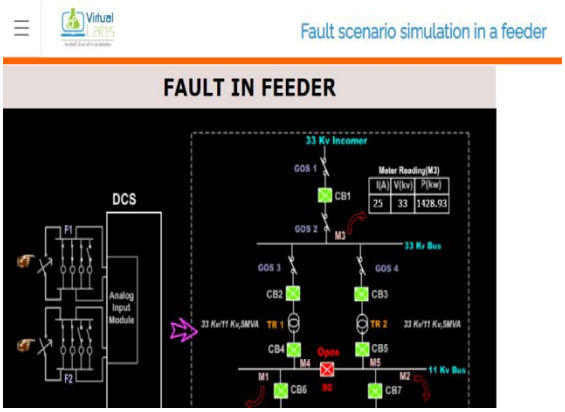
Department of Electrical Engineering

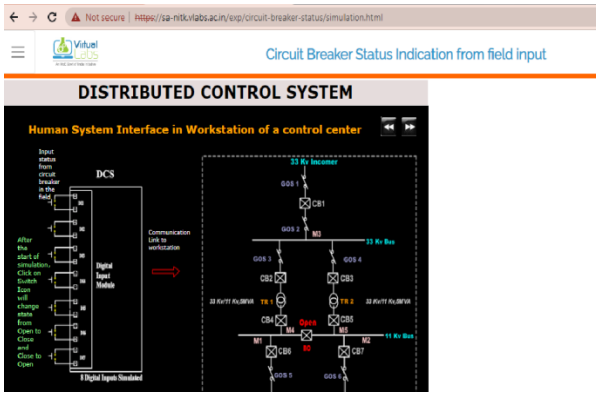
EIDCBM Term I 2022-23

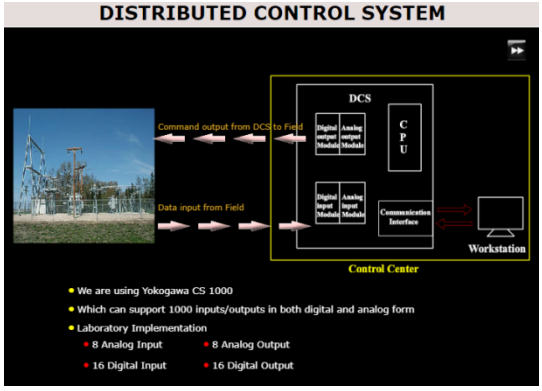
VIRTUAL LAB REPORT

VLAB: **Substation Automation Lab**
Exp 1. Circuit Breaker Status Indication from field input
Link:-(https://sa-nitk.vlabs.ac.in/exp/circuit-breaker-status/)
Exp 2: Fault scenario simulation in a feeder
Link:-(https://sa-nitk.vlabs.ac.in/exp/simulation-feeder/)
Exp 3: Load Transfer from one Feeder to other during Transformer Maintenance
Link:-(https://sa-nitk.vlabs.ac.in/exp/load-transfer/)
Class: **TE Electrical Batch D**
Date: **15/09/2022** 10.30 am-12.30 pm
Subject: Electrical Installation Design and Condition Based Maintenance
Subject Teacher : Mrs.S Vadi









Simulation Diagrams

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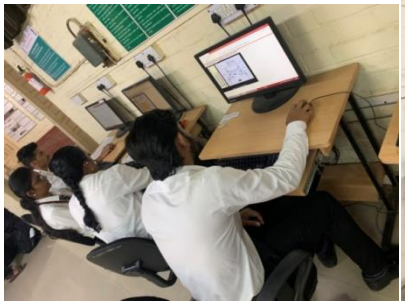
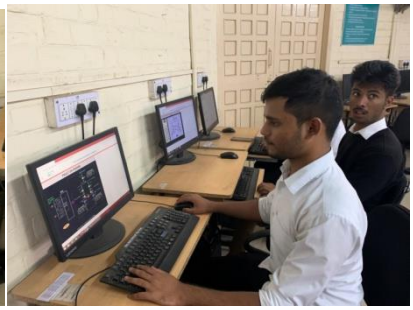
Glimpses:-


Course coordinator

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Electrical Engineering Department

TE Electrical Term I 2022-23

VLAB EXPERIMENT REPORT

Name of Lab : Substation Automation Lab

Experiments :

1. Circuit Breaker Status Indication from field input
2. Fault scenario simulation in a feeder
3. Load Transfer from one Feeder to other during Transformer Maintenance

Links:

- https://sa-nitk.vlabs.ac.in/exp/circuit-breaker-status/
- https://sa-nitk.vlabs.ac.in/exp/simulation-feeder/
- https://sa-nitk.vlabs.ac.in/exp/load-transfer/

Class: Batch C, TE Term I 2022-23

Time: 10.45 am, 10/11/2022

Glimpses:




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Department of Chemical Engineering

ICT Tool based Learning Management System

AY 2022-23

MATLAB and Sci-Lab based Simulation Learning

MODULE-I (16 Lectures)

Classification of Engineering Materials, Engineering properties of materials. Characteristic property of metals, bonding in solids, primary bonds like ionic, covalent and metallic bond, crystal systems, common crystal structure of metals, representations of planes and directions in crystals, atomic packing in crystals, calculation of packing density, voids in common crystal structures and imperfections crystals.

Chapter-1

Introduction to Engineering Materials

Introduction

Materials play an important role for our existence, for our day to day needs ,and even for our survival. In the stone age the naturally accessible materials were stone, wood, bone, fur etc *Gold was the 1st metal used by the mankind followed by copper.* In the bronze age Copper and its alloy like bronze was used and in the iron age they discovered Iron (sponge iron & later pig iron).

1960's	Engineering Materials	Metals
Design	Choice of Material	
New Materials	New Products	
Number of Materials	40 – 80,000!	

General Definition of Material

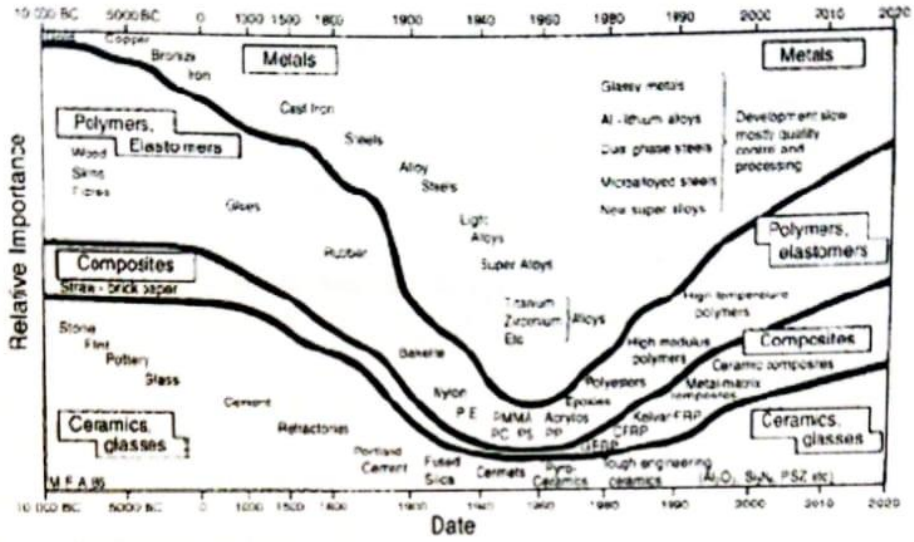
According to Webster's dictionary, materials are defined as *'substances of which something is composed or made'*

Engineering Material: Part of inanimate matter, which is useful to engineer in the practice of his profession (used to produce products according to the needs and demand of society)

Material Science: Primarily concerned with the search for basic knowledge about internal structure, properties and processing of materials and their complex interactions/relationships

Material Engineering: Mainly concerned with the use of fundamental and applied knowledge of materials, so that they may be converted into products, as needed or desired by the society (bridges materials knowledge from basic sciences to engineering disciplines)

Note: ***Material science is the basic knowledge end of materials knowledge spectrum, where as, material engineering is applied knowledge end and there is no demarcation line between the two subjects of interest***



Evolution of Engineering Materials

Why Material Science & Engineering is important to technologists?

Examples:

- Mechanical engineers search for high temp material so that gas turbines, jet engines etc can operate more efficiently and wear resistance materials to manufacture bearing materials
- Electrical engineers search for materials by which electrical devices or machines can be operated at a faster rate with minimum power losses
- Aerospace & automobile engineers search for materials having high strength-to-weight ratio
- Electronic engineers search for material that are useful in the fabrication & miniaturization of electronic devices
- Chemical engineers search for highly corrosion-resistant materials

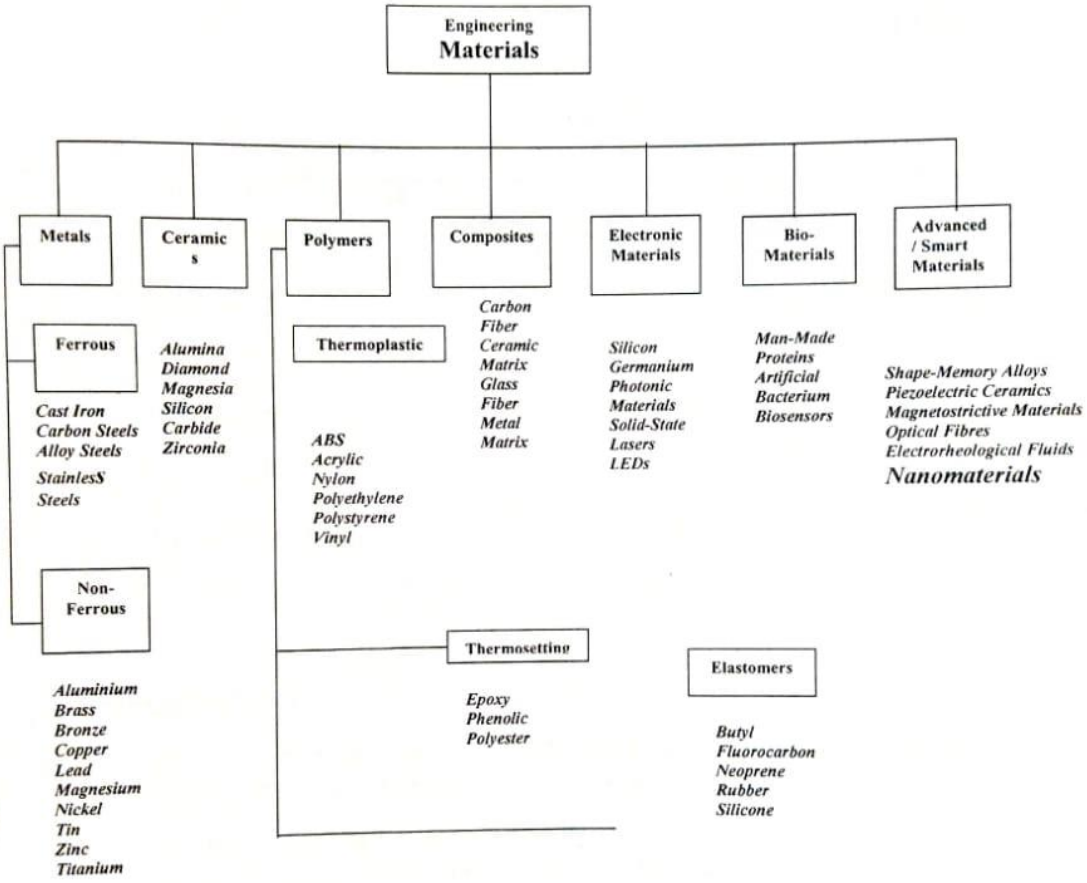
Note: All these demands may be fulfilled when the internal structure and engineering properties are known to an engineer or technologist

(b). *Electronic Materials:* e.g. conductors, semi-conductors, etc

(c). *Magnetic Materials:* e.g. ferromagnetic, paramagnetic & diamagnetic materials, etc

(d). *Optical Materials:* e.g. glass, quartz, etc

(e). *Bio Materials:* e.g. man-made proteins, artificial bacterium



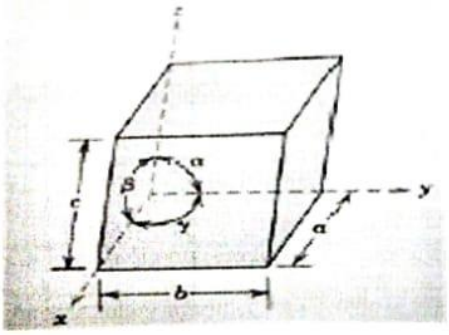
- Tiny block formed by arrangement of small group of atoms is called *Unit Cell.* It is chosen to represent the symmetry of crystal structure, and may be defined as:

- Finite representation of infinite lattice
- Small repeat entity
- Basic structural unit
- Building block of crystal structure
- Can generate entire crystal by translation

Lattice Parameters

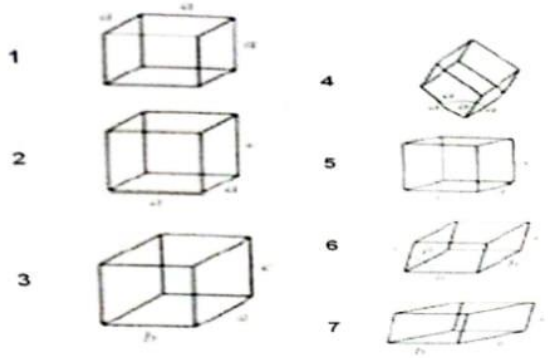
- Six lattice parameters $a, b, c, \alpha, \beta, \gamma$
- Typically in the order of few Angstroms (few tenths of nanometer)
- Example: Cubic structure has following lattice parameters:

$$a = b = c \text{ and } \alpha = \beta = \gamma = 90^{o}$$



Types of Crystal

Cubic, Monoclinic, Triclinic, Tetragonal, Orthorhombic, Rhombohedral and Hexagonal



No.	Crystal Type	Lattice Parameters	Examples
1.	Cubic	$a = b = c, \alpha = \beta = \gamma = 90^{\circ}$	Fluorite, Garnet, Pyrite
2.	Tetragonal	$a = b \neq c, \alpha = \gamma = 90^{\circ} = \beta$	Zircon
3.	Orthorhombic	$a \neq b \neq c, \alpha = \gamma = \beta = 90^{\circ}$	Topaz
4.	Rhombohedral	$a = b = c, \alpha = \beta = \gamma \neq 90^{\circ}$	Tourmaline
5.	Hexagonal	$a = b \neq c, \alpha = \beta = 90^{\circ}, \gamma = 120^{\circ}$	Corundum
6.	Monoclinic	$a \neq b \neq c, \alpha = \gamma = 90^{\circ} \neq \beta$	Kunzite
7.	Triclinic	$a \neq b \neq c, \alpha \neq \gamma \neq \beta \neq 90^{\circ}$	Amazonite

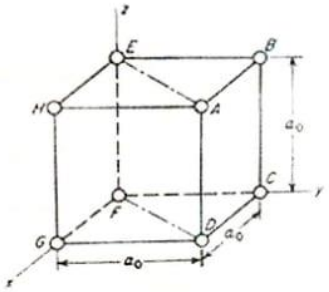
Principal Metal Crystal Structures

- *Simple Cubic Lattice Structure*
- *Body Centered Cubic (BCC) Structure*

- *Face Centered Cubic (FCC) Structure*

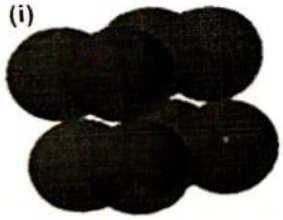
Simple Cubic Lattice

- Most elementary crystal structure with three mutually perpendicular axes arbitrarily placed through one of the corners of a cell
- Each corners occupied with one atom
- Example: alpha polonium

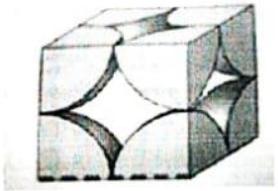


SC Structure

(i)



(ii)



(i). Aggregate of atoms (ii). Hard Sphere Unit Cell

Body Centered Cubic (BCC) Structure

- BCC cell has an atom at each corner and another atom at body center of cube
- Each atom at corner is surrounded by eight adjacent atoms
- Example: alpha iron, chromium, molybdenum & tungsten

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Deptt of Chemical Engg.
AISSMS, COE, PUNE-01.

Youtube links

22-23, 23-24

YouTube content developed by faculty members

Sr No	Name of faculty member	Content	Link
1	Prof M P Bauskar	video on Micrometer	https://www.youtube.com/watch?v=a0RXdhmyDLM
2	Prof M P Bauskar	Video on the use of vernier caliper	https://www.youtube.com/watch?v=LUWUixrm5DY
3	Prof M P Bauskar	dial calibration experiment	https://www.youtube.com/watch?v=pHFmwMtsuio
4	Prof M P Bauskar	Floating Carriage Experiment	https://www.youtube.com/watch?v=Jd5Kx4hMgiQ
5	Prof M P Bauskar	CNC PROGRAMMING	https://www.youtube.com/watch?v=uAvh5RnyJTc
6	Prof M P Bauskar	Profile projector part 2	https://www.youtube.com/watch?v=YFxgg_0pTkQ
7	Prof M P Bauskar	Profile projector - part 1	https://www.youtube.com/watch?v=T7gE8n9yqFY
8	Dr D.Y.Dhande	Flat Belt drives	https://www.youtube.com/watch?v=qYP5Xil3w60
9	Dr D.Y.Dhande	V Belt drive	https://www.youtube.com/watch?v=SHCFtQfblXs
10	Dr D.Y.Dhande	Hydrodynamic Lubrication	https://www.youtube.com/watch?v=-RIRqDizlzU
11	Dr D.Y.Dhande	Sliding Contact Bearing	https://www.youtube.com/watch?v=19_i5CN_hfY
12	Dr D.Y.Dhande	Lecture on solving numericals on sliding contact bearing	https://www.youtube.com/watch?v=oyRawws8UhA
13	Dr D.Y.Dhande	Chain Drives (Part I)	https://www.youtube.com/watch?v=QRwe5LSGR6M

22-23, 23-24

14	Dr D.Y.Dhande	Chain Drives (Part II)	https://www.youtube.com/watch?v=XRrJGEs7ZZA
15	Dr D.Y.Dhande	Dr D.Y.Dhande	https://www.youtube.com/watch?v=BIKZTQ0gBzA
16	Dr P S Gajjal	Solid Mechanics introduction lect	https://www.youtube.com/watch?v=mRbrpcOnw7g
17	Prof.P.V.Deshmukh	Thermal Analysis	https://www.youtube.com/watch?v=FVqDSHXcYXQ
18	Prof.P.V.Deshmukh	Thermal Analysis2	https://www.youtube.com/watch?v=23Nuf15lfHc
19	Prof.P.V.Deshmukh	Coupled Field Analysis	https://www.youtube.com/watch?v=AabITcqnEOA
20	Prof.P.V.Deshmukh	2023 04 17 12 00 56 Spanner	https://www.youtube.com/watch?v=HB0td9iJtzA
21	Prof.P.V.Deshmukh	2023 04 17 11 39 02 Coupled	https://www.youtube.com/watch?v=5YuC0i6cwWQ
22	Prof.P.V.Deshmukh	Modal Analysis	https://www.youtube.com/watch?v=hflieo7_w8E
23	Prof.P.V.Deshmukh	SE A SMD C1 Batch 05 Oct	https://www.youtube.com/watch?v=Wcn4xbZ050g
24	Prof.P.V.Deshmukh	BE A C Batch 28 Aug	https://www.youtube.com/watch?v=9NJlRIbQTAY
25	Prof.P.V.Deshmukh	Introduction to CCA	https://www.youtube.com/watch?v=S7cgTcdd_Iw
26	Prof.P.V.Deshmukh	Solid Modeling and Drafting	https://www.youtube.com/watch?v=jA25m-aYIIQ
27	Prof.P.V.Deshmukh	Microsoft Teams Presentation	https://www.youtube.com/watch?v=UDtAx0X-mpc
28	Prof.P.V.Deshmukh	CAD/CAM and Automation	https://www.youtube.com/watch?v=fy2lormrk5Y
29	Prof.P.V.Deshmukh	Transformation - Rotate about an arbitrary point	https://www.youtube.com/watch?v=HMyWl50S7-g
30	Prof.P.V.Deshmukh	Transformation Reflection about line 10 July 2020 A	https://www.youtube.com/watch?v=oEMG8FlbIgs

31	Prof.P.V.Deshmukh	Transformation Scale and Reflection about line	https://www.youtube.com/watch?v=2qb1H6hrd7w
32	Prof.P.V.Deshmukh	Microsoft Teams P V Deshmukh	https://www.youtube.com/watch?v=dmUAz6wraO0
33	Prof.P.V.Deshmukh	SMD 17 July A 14min	https://www.youtube.com/watch?v=EhSXFqh_M24
34	Prof.P.V.Deshmukh	SMD 16 July B 32min	https://www.youtube.com/watch?v=M0nCaD9b01s
35	Prof.P.V.Deshmukh	SMD 16 July A 18min	https://www.youtube.com/watch?v=32TZM4tP16M
36	Prof.P.V.Deshmukh	SMD 14 July B 23min mp4 crdownload	https://www.youtube.com/watch?v=vJDOOCNFBxU
37	Prof.P.V.Deshmukh	SMD 14 July A 12min	https://www.youtube.com/watch?v=1IgPVJUr6jA
38	Prof.P.V.Deshmukh	SMD 13 July B 29min mp4 crdownload	https://www.youtube.com/watch?v=CI8-lZylwIg
39	Prof.P.V.Deshmukh	SMD 13 July A 30min	https://www.youtube.com/watch?v=iBaclKzMf40
40	Prof.P.V.Deshmukh	SMD 17 July B 21min mp4 crdownload	https://www.youtube.com/watch?v=cCRwVrn2BuI

SVL

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Mechanical Engineering
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DEPARTMENT OF FIRST YEAR ENGINEERING

Innovative Teaching Learning Methods

Date: 10/07/2023

Activity Report

Title of Activity:

1) Simulation of RL ,RC and RLC Circuit.
2) Virtual Lab Experiment of KVL KCL, Thevenin's Theorem, Superposition Theorem and Norton's Theorem

Organized by: Prof. Almas Ambreen

Participants: DIV:VIII (E and Tc) & IX (Electrical & Prod)

Objective:

- To adopt student centric learning method in place of conventional teaching learning process
- Computer simulation is a technology to simulate real circuits without fear of failure.
- To improve their technical skills.
- To improve the Technical knowledge.
- Think beyond the syllabus

Brief Description:

- Response was very encouraging and positive.

Almas Ambreen
(Subject Teacher)

Enclosed: Attendance Sheet

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DEPARTMENT OF FIRST YEAR ENGINEERING

Student Centric Activity: Real time Quiz on Quizziz Platform

Title of Activity:Quiz
Duration: 1 Hr.Date: 28/06/2023

Type of Activity:Online Real-time quiz on Quizziz

Organized by: Bhakti Patil

Participants: FE Civil (B) and FE ENTC Students

Objective:

- To adopt a student-centric learning method in place of the conventional teaching-learning process.
- To use the latest teaching and learning methodologies to give motivation to learn.
- To interact with students in a captivating way.

Brief Description:
Using these quizzes, students can do critical thinking, and get into a habit of innovative learning. These quizzes integrate game mechanics into the learning process.They help students understand the weaker areas with instant feedback. A key benefit of Quizzes in e-Learning is: Building motivation.

PHOTOGRAPHS:

FE Civil-Bstudents

Bhakti Patil
Subject Teacher

FE ENTC students

Dr.D V Nighot
HOD

Head
Department of First Year Engineering
AISSMS College of Engineering
Pune-411001

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Affiliated to Savitribai Phule Pune University and recognized 2(f) and
12(B) by UGC(Id.No. PU / PN/ Engg. / 093 (1992)
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Department of First Year Engineering

Activity Report

Student Centric Method **Date: 27/12/2023**

AY 22-23 SEM I

Title of Activity: Student Centric Method

Subject: Basic Electrical Engineering

Topic :Simulation on Multisim Software, (Charging and Discharging of Capacitor)
RL- RC Circuit And VLAB on Thevenins Theorem, Superposition Therem

Participants: Students of Div I (Mech A) and Div II(Mech B)

Objective:

- To Adopt Student Centric learning Method in place of Convectional teaching learning process
- To make student adaptive for healthy competition
- Frequent Testing and trial and error encourage students to study

Brief Description:

In this software students could create their own account and do simulation on the given circuit. They wear able to save the simulation results. The response received from the students was remarkable and it encouraged the students.

B S Bobdey
(Subject Teacher)

Dr D V Nighot
FE HOD

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