2.3.2 Teachers use ICT enabled tools for effective teaching learning process

S.No	Description	Page No
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5	ICT Enabled Class Room	19
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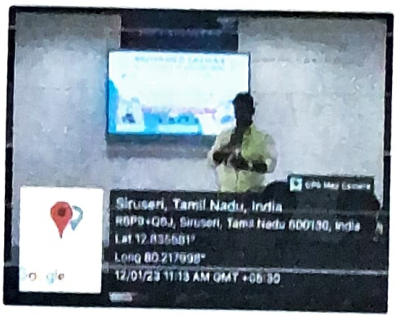
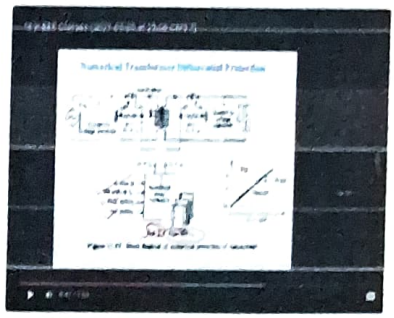
Metric 2.3.2

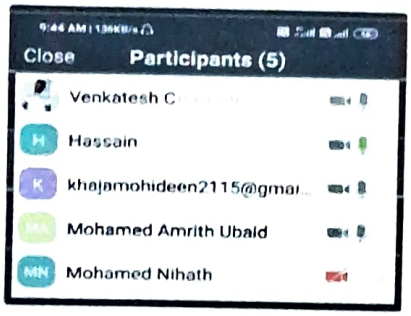
Teachers use ICT enabled tools for effective teaching-learning process.



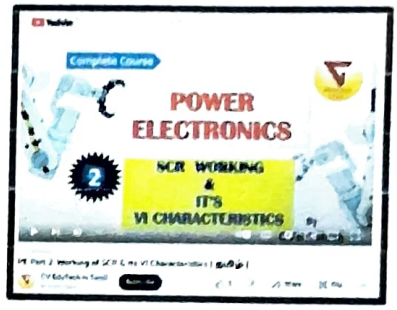
Smart Class Room



Virtual White Board



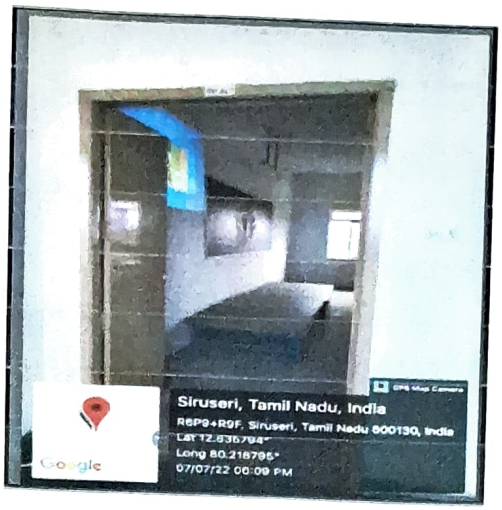
Virtual Class Room



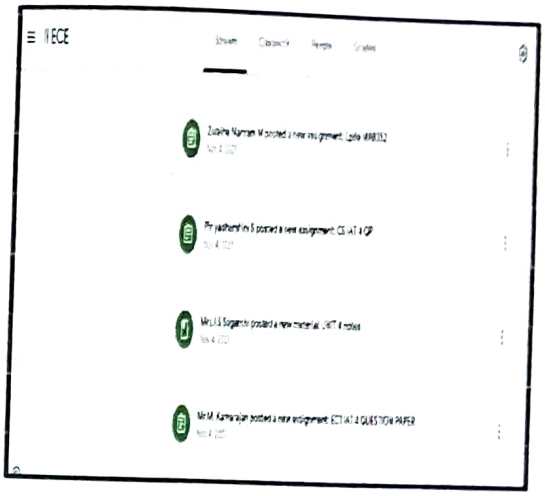
Faculty You tube Video

MOOC Courses

E-Learning



LCD Enabled Class Room



GCR Page

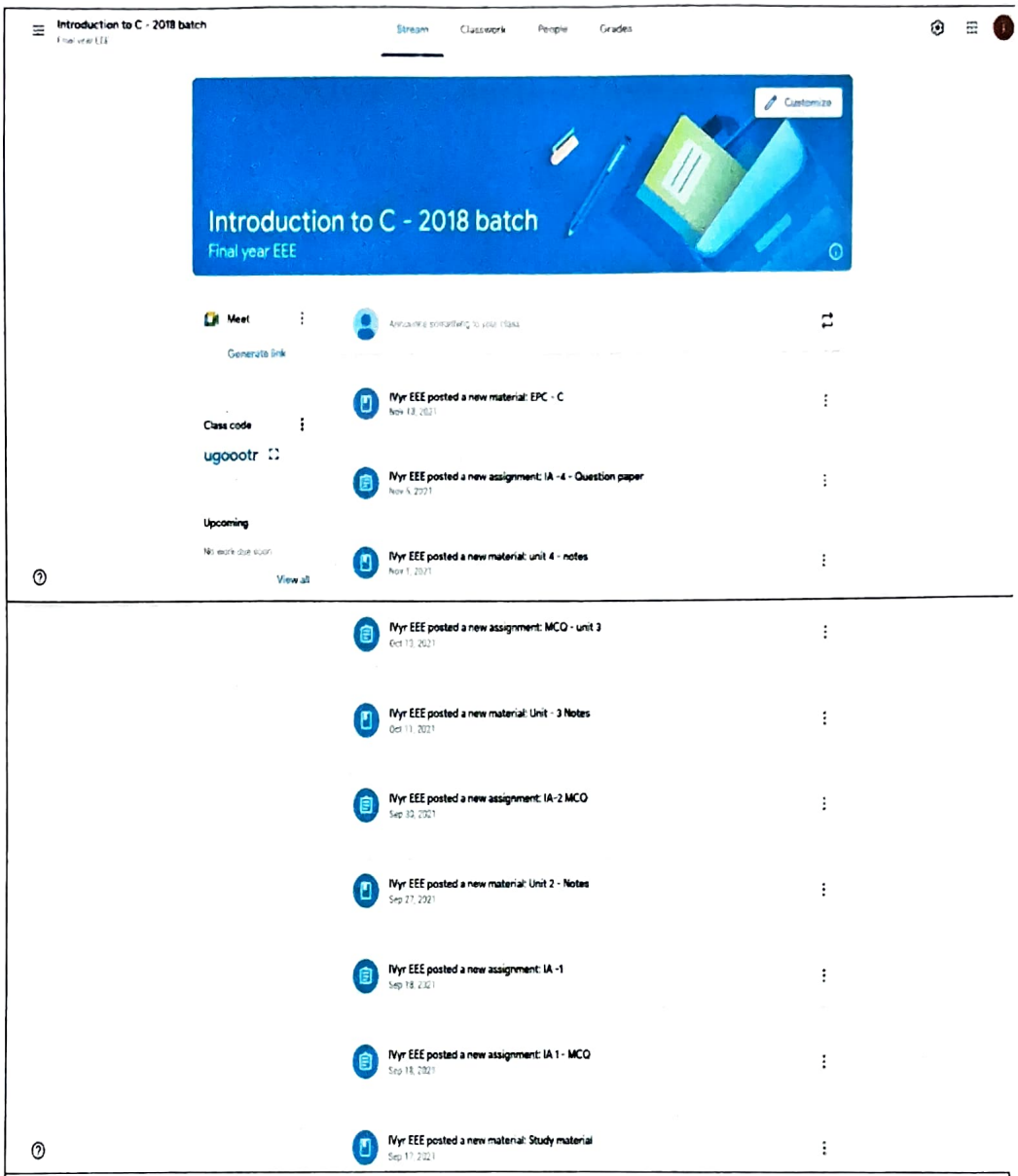
Delnet

E-Resource MSAJCE Website

ICT Tools

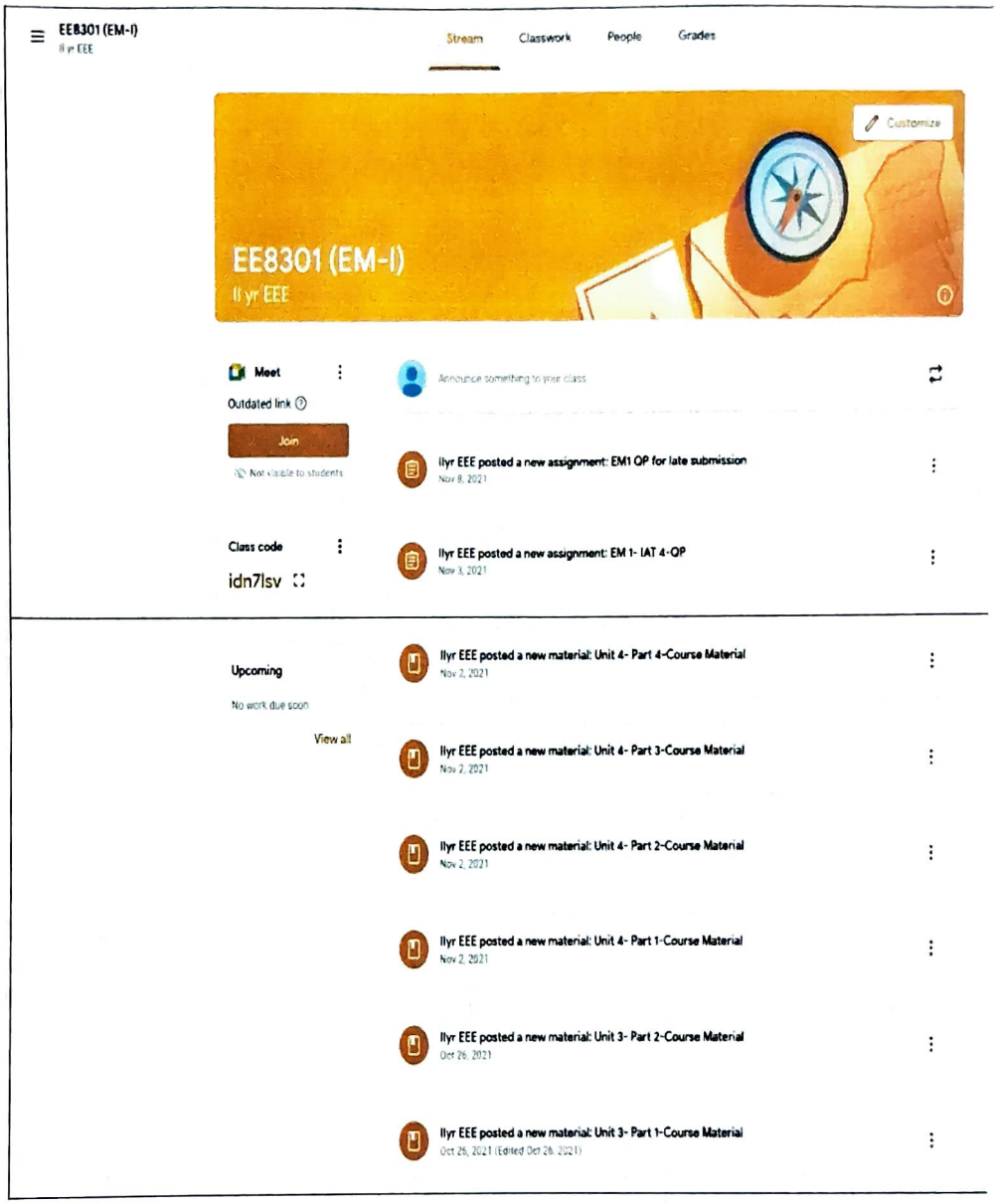
S.No	Name of the Subject	Name of the Faculty	Topic	YouTube Video Link
1	Power Electronics	Mr. C. Venkatesh	PE Part 1: Introduction to Power Electronics	https://www.youtube.com/watch?v=0Ua9Tex8q7w
2	Power Electronics	Mr. C. Venkatesh	PE Part 2: Working of SCR & Its VI Characteristics	https://www.youtube.com/watch?v=rhqqBcM7CrA&t=29s
3	Medical Electronics	Dr.M.Siva Kumar	Biomedical Electronics	https://www.youtube.com/watch?v=mr756SaOjs8
4	Embedded System	Dr.M.Siva Kumar	MCU & SBC programming for smart IoT devices_ Using Cisco Packet Tracer	https://www.youtube.com/watch?v=TgiaVUIxwd8
5	Antenna and Micro Wave Engineering	Dr.M.Siva Kumar	Antenna Design & Analysis using Matlab antenna Designer app	https://www.youtube.com/watch?v=mdg2PZjtVgo

Subject Name: OCS752 Introduction to C Programming



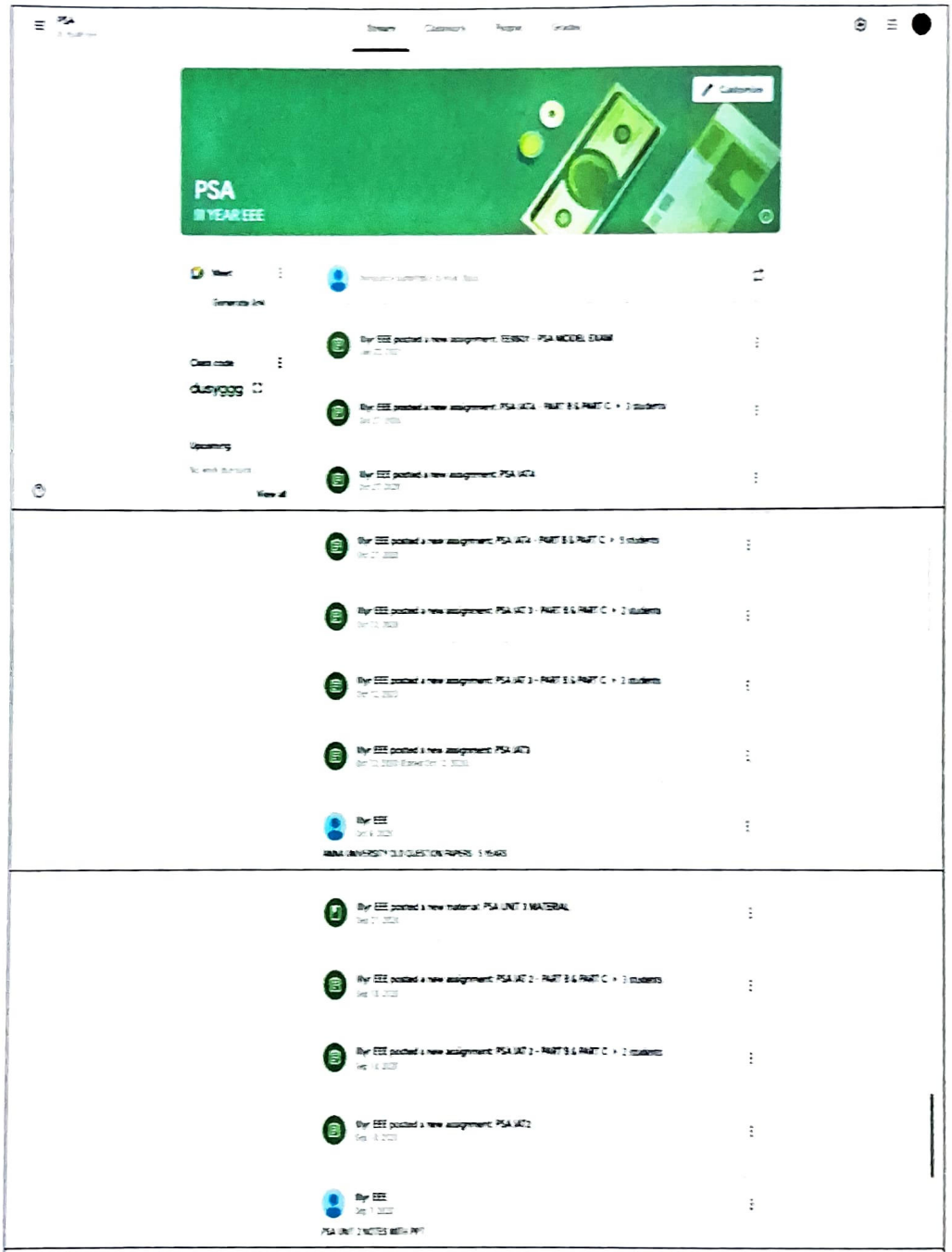
Introduction to C Programming - Course Documents Uploaded in Google Class Room

Subject code / Subject Name: EE8301 Electrical Machines-I



Electrical Machines-I- Course Documents Uploaded in Google Class Room

Subject Name: EE8501 Power System Analysis



Power System Analysis- Course Documents Uploaded in Google Class Room

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

YEAR: III

S.No	Name of the Subject	Name of the faculty	ICT tool used	Link
1	Digital Signal Processing	Mrs.Hemasumitha	Google Class Room	https://classroom.google.com/c/MTUyNzEzODE5OTQ3
		Mr.N.Suresh	Powerpoint	http://www.msajce-edu.in/academics/eee/ICTTools/EE8591-ICT.pdf
2	Object Oriented Programming	Mrs.Asrin	Google Class Room	https://classroom.google.com/c/MzkxMTU4MTU1Mjk2
		Mrs.Sumana	Powerpoint	http://www.msajce-edu.in/academics/eee/ICTTools/CS8392-ICT.pdf
3	Microprocessors and Microcontrollers	Mrs.R.SugunaDevi	Google Class Room	https://classroom.google.com/c/Mzk4MzgwMTU1MTgx
			Powerpoint	http://www.msajce-edu.in/academics/eee/ICTTools/EE8551-ICT.pdf
4	Basics of Bio Medical Instrumentation	Mrs.D.Hemasumitha	Google Class Room	https://classroom.google.com/c/Mzk1NDMzNjI2MzM4
		Mr.S.V.Vinodh	Powerpoint	http://www.msajce-edu.in/academics/eee/ICTTools/OMD551-ICT.pdf
5	Power Electronics	Mr.C.Venkatesh	Google Class Room	https://classroom.google.com/c/Mzk0NTMzNzI2NzI0
			YouTube	https://www.youtube.com/watch?v=rhqqBcM7CrA
		Dr.A.Kamalaselvan	Powerpoint	http://www.msajce-du.in/academics/eee/ICTTools/EE8552-ICT.pdf
6	Power System Analysis	Mrs.H.Brindha	Powerpoint	http://www.msajce-edu.in/academics/eee/ICTTools/EE8501-ICT.pdf

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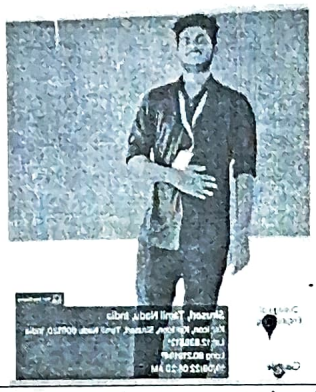
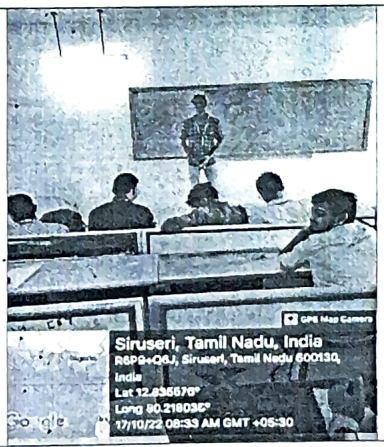
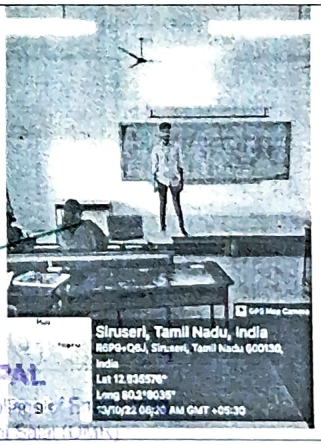
Sample of Innovative Teaching methods

Role Play for the course Total Quality Management



Seminar presentation for the course High voltage engineering





Flipped class for the course Electronic Devices and Circuits

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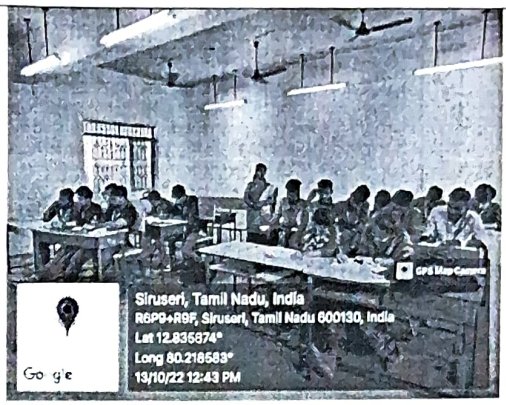
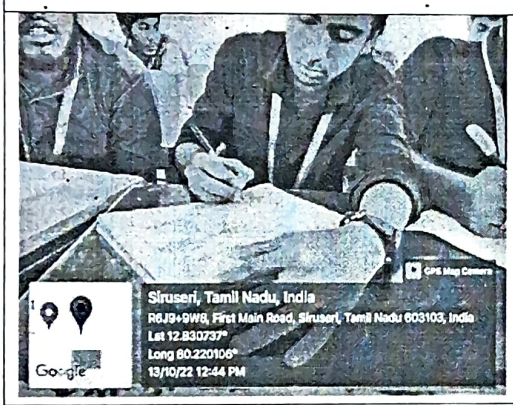
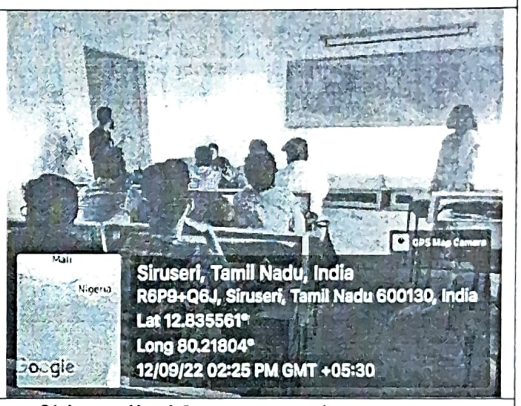
Sample of Innovative Teaching methods

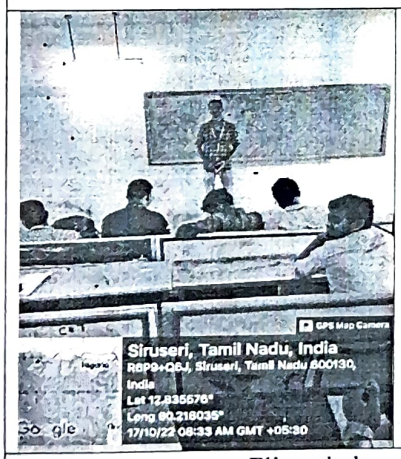


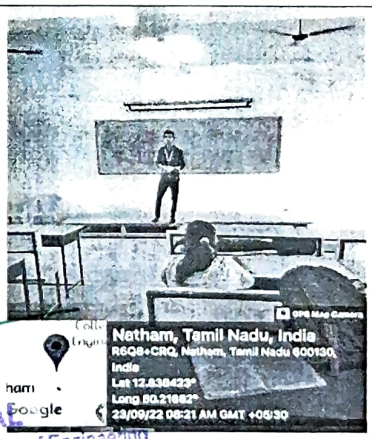
Mind map for the course Microprocessor and Microcontrollers





Flipped class for the course Basics of biomedical Instrumentation





Flipped class for the course Digital Logic Circuits

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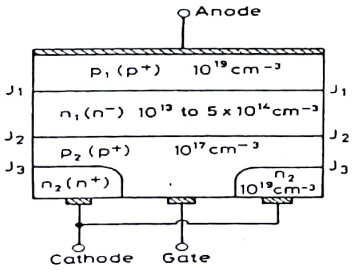
EE8552 Power Electronics

THYRISTORS

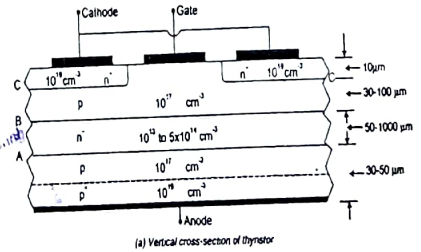
SILICON CONTROLLED RECTIFIER (SCR)

- Three terminal, four layers (P-N-P-N)
- Can handle high currents and high voltages, with better switching speed and improved breakdown voltage .
- Name 'Thyristor', is derived by a combination of the capital letters from **THYRatron** and **transISTOR**.
- Has characteristics similar to a thyratron tube But from the construction view point belongs to transistor (pnp or npn device) family.

BASIC STRUCTURE OF SCR



BASIC STRUCTURE OF SCR CONTD...



(a) Vertical cross-section of thyristor

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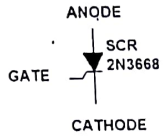
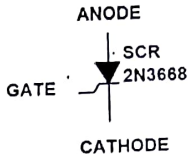
SCR / Thyristor

- Circuit Symbol and Terminal Identification



SCR / Thyristor

- Anode and Cathode terminals as conventional pn junction diode
- Gate terminal for a controlling input signal

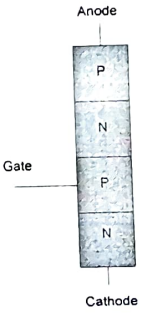


SCR/ Thyristor

- An SCR (Thyristor) is a "controlled" rectifier (diode)
- Control the conduction under forward bias by applying a current into the Gate terminal
- Under reverse bias, looks like conventional pn junction diode

SCR / Thyristor

- 4-layer (pnpn) device
- Anode, Cathode as for a conventional pn junction diode
- Cathode Gate brought out for controlling input



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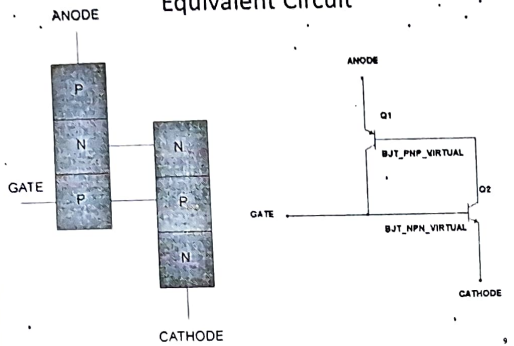
Equivalent Circuit

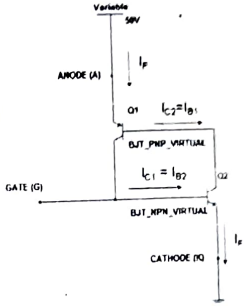


9

Apply Biasing

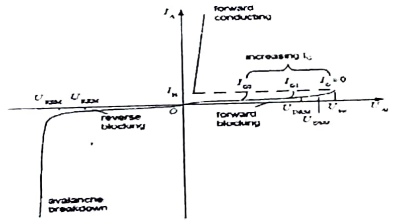
With the Gate terminal OPEN, both transistors are OFF. As the applied voltage increases, there will be a "breakdown" that causes both transistors to conduct (saturate) making $I_F > 0$ and $V_{AK} = 0$.

$V_{Breakdown} = V_{BR(F)}$



10

V-I CHARACTERISTICS OF SCR



11

Apply a Gate Current

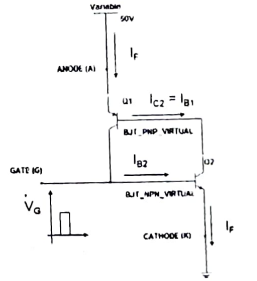
For $0 < V_{AK} < V_{BR(F)}$,

Turn Q_2 ON by applying a current into the Gate

This causes Q_1 to turn ON, and eventually both transistors SATURATE

$V_{AK} = V_{CEsat} + V_{BEsat}$

If the Gate pulse is removed, Q_1 and Q_2 still stay ON!

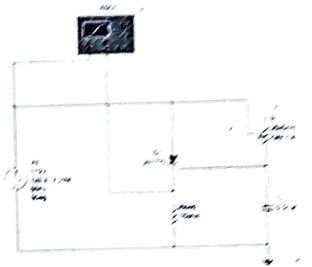


12

How do you turn it OFF?

- Cause the forward current to fall below the value if the "holding" current, I_H
- Reverse bias the device

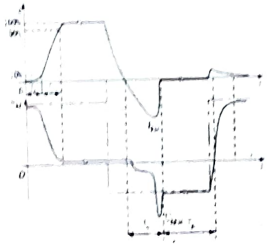
SCR Application – Power Control



When the voltage across the capacitor reaches the "trigger-point" voltage of the device, the SCR turns ON current flows in the Load for the remainder of the positive half-cycle.

Current flow stops when the applied voltage goes negative.

SWITCHING CHARACTERISTICS OF SCR



Turn-on transient
- Delay time t_d
- Rise time t_r
- Turn-on time t_{gt}

Turn-off transient
- Reverse recovery time t_{rr}
- Forward recovery time t_{gr}
- Turn-off time t_q

SCR OPERATING MODES

FORWARD BLOCKING MODE: Anode is positive wrt cathode, but the anode voltage is less than the break over voltage (VBO).

only leakage current flows, so thyristor is not conducting.

FORWARD CONDUCTING MODE: When anode voltage becomes greater than VBO, thyristor switches from forward blocking to forward conduction state, a large forward current flows.

If the IG=IG1, thyristor can be turned ON even when anode voltage is less than VBO.

- The current must be more than the latching current (IL).
- If the current reduced less than the holding current (IH), thyristor switches back to forward blocking state.

REVERSE BLOCKING MODE: When cathode is more positive than anode, small reverse leakage current flows. However if cathode voltage is increased to reverse breakdown voltage, Avalanche breakdown occurs and large current flows.

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Thyristor- Operation Principle

- Thyristor has three p-n junctions (J1, J2, J3 from the anode)
- When anode is at a positive potential (V_{AK}) w.r.t cathode with no voltage applied at the gate, junctions J1 & J3 are forward biased, while junction J2 is reverse biased.
  - As J2 is reverse biased, no conduction takes place, so thyristor is in forward blocking state (OFF state).
  - Now if V_{AK} (forward voltage) is increased w.r.t cathode, forward leakage current will flow through the device.
  - When this forward voltage reaches a value of breakdown voltage (V_{BO}) of the thyristor, forward leakage current will reach saturation and reverse biased junction (J2) will have avalanche breakdown and thyristor starts conducting (ON state), known as forward conducting state.
- If cathode is made more positive w.r.t anode, junction J1 & J3 will be reverse biased and junction J2 will be forward biased.
- A small reverse leakage current flows, this state is known as reverse blocking state.
- As cathode is made more and more positive, stage is reached when both junctions A & C will be breakdown, this voltage is called as reverse breakdown voltage (OFF state), and device is in reverse blocking state.

TRIGGERING METHODS

- THYRISTOR TURNING ON IS ALSO KNOWN AS **TRIGGERING**.
- WITH ANODE POSITIVE WITH RESPECT TO CATHODE, A THYRISTOR CAN BE TURNED ON BY ANY ONE OF THE FOLLOWING TECHNIQUES :
  - FORWARD VOLTAGE TRIGGERING
  - GATE TRIGGERING
  - DV/DT TRIGGERING
  - TEMPERATURE TRIGGERING
  - LIGHT TRIGGERING

Forward Voltage Triggering

- When breakover voltage (V_{BO}) across a thyristor is exceeded than the rated maximum voltage of the device, thyristor turns ON
- At the breakover voltage the value of the thyristor anode current is called the latching current (IL).
- Breakover voltage triggering is not normally used as a triggering method, and most circuit designs attempt to avoid its occurrence.
- When a thyristor is triggered by exceeding V_{BO}, the fall time of the forward voltage is quite low (about 1/20th of the time taken when the thyristor is gate-triggered).
- However, a thyristor switches faster with V_{BO} turn-ON than with gate turn-ON, so permitted di/dt for breakover voltage turn-on is lower.

dv/dt triggering

- When forward voltage across anode & cathode of a thyristor, two outer junctions (A & C) are forward biased but the inner junction (J2) is reverse biased.
- The reversed biased junction J2 behaves like a capacitor because of the space charge present there.
- As p-n junction has capacitance, so larger the junction area the larger the capacitance.
- If a voltage ramp is applied across the anode-to-cathode, a current will flow in the device to charge the device capacitance according to the relation:

$$i_c = C \cdot \frac{dv}{dt}$$

- If the charging current becomes large enough, density of moving current carriers in the device induces switch-on.
- This method of triggering is not desirable because high charging current (i_c) may damage the thyristor.

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ACADEMIC YEAR:

EE8511- CONTROL AND INSTRUMENTATION LABORATORY

Name	**:**	
Register Number	**:**	
Department	**:**	Electrical and Electronics Engineering
Year / Semester	**:**	III Year / V Semester

(ANNA UNIVERSITY: CHENNAI - 600 025)

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Register Number | | |

BONAFIDE CERTIFICATE

It is Certify that this is a Bonafide record of work done by Mr. / Ms. . . . . of **III YEAR/VI SEMESTER**B.E / B.Tech **ELECTRICAL AND ELECTRONICS ENGINEERING** in the **EE8511- CONTROL AND INSTRUMENTATION LABORATORY** during the academic year 2022-2023.

Staff In-Charge **Head of the Department**

Submitted for the Anna University B.E / B.Tech Practical Examination held on . . . . . .

Internal Examiner **External Examiner**

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Infrastructure Details

Department of Civil Engineering

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)	Facilities Available
1	Class Room	SF 320-Lecturer Hall	II Year	702	LCD Projector, Wi-Fi
2	Class Room	SF 321-Lecturer Hall	III Year	702	LCD Projector, Wi-Fi
3	Class Room	SF 322-Lecturer Hall	IV Year	1053	LCD Projector, Wi-Fi
4	Drawing Hall - I	SF 323-Lecturer Hall	-	1053	-

Department of Computer Science Engineering

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)	Facilities Available
1	Class Room	TF 406-Lecturer Hall	II Year	1053	LCD Projector, Wi-Fi
2	Class Room	TF 407-Lecturer Hall	III Year	1053	LCD Projector, Wi-Fi
3	Class Room	TF 408-Lecturer Hall	IV Year	1053	LCD Projector, Wi-Fi

Department Of Electrical and Electronics Engineering

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)	Facilities Available
1	Class Room	SF 311-Lecturer Hall	II Year	702	LCD Projector, Wi-Fi
2	Class Room	SF 312-Lecturer Hall	III Year	702	LCD Projector, Wi-Fi
3	Class Room	SF 319-Lecturer Hall	IV Year	702	LCD Projector, Wi-Fi

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Siruseri, Chennai 603 103

Department of Electronics and Communications Engineering

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)	Facilities Available
1	Class Room	FF 217-Lecturer Hall	II Year	702	LCD Projector, Wi-Fi
2	Class Room	FF 218-Lecturer Hall	III Year	702	LCD Projector, Wi-Fi
3	Class Room	FF 219-Lecturer Hall	IV Year	702	LCD Projector, Wi-Fi

Department of Information Technology

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)	Facilities Available
1	Class Room	TF 413-Lecturer Hall	II Year	1053	LCD Projector, Wi-Fi
2	Class Room	TF 414-Lecturer Hall	III Year	1053	LCD Projector, Wi-Fi
3	Class Room	TF 415-Lecturer Hall	IV Year	1053	LCD Projector, Wi-Fi

Department of Mechanical Engineering

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)	Facilities Available
1	Class Room	SF 327-Lecturer Hall	II Year	702	LCD Projector, Wi-Fi
2	Class Room	SF 328-Lecturer Hall	III Year	702	LCD Projector, Wi-Fi
3	Class Room	SF 329-Lecturer Hall	IV Year	702	LCD Projector, Wi-Fi

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Department of Science and Humanities

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)
1	Class Room	SF 301-Lecturer Hall	I Year	702
2	Class Room	SF 302-Lecturer Hall	I Year	702
3	Class Room	SF 303-Lecturer Hall	I Year	702
4	Class Room	SF 307-Lecturer Hall	I Year	1053
5	Class Room	SF 308-Lecturer Hall	I Year	702
6	Class Room	SF 309-Lecturer Hall	I Year	702

Others

Sl. No.	Description	Name in Board	Usage	Size (Sq.Ft)
1	Class Room	FF 203 -Lecturer Hall	PG	351
2	Drawing Hall - I	SF 323-Lecturer Hall	-	1053
3	Drawing Hall - I	TF 19- Lecturer Hall		1053
4	Tutorial Hall	TF 421- Lecturer Hall	-	1053
5	Tutorial Hall	TF 422- Lecturer Hall 1	-	702
6	Tutorial Hall	TF 423-Lecturer Hall	PG	702

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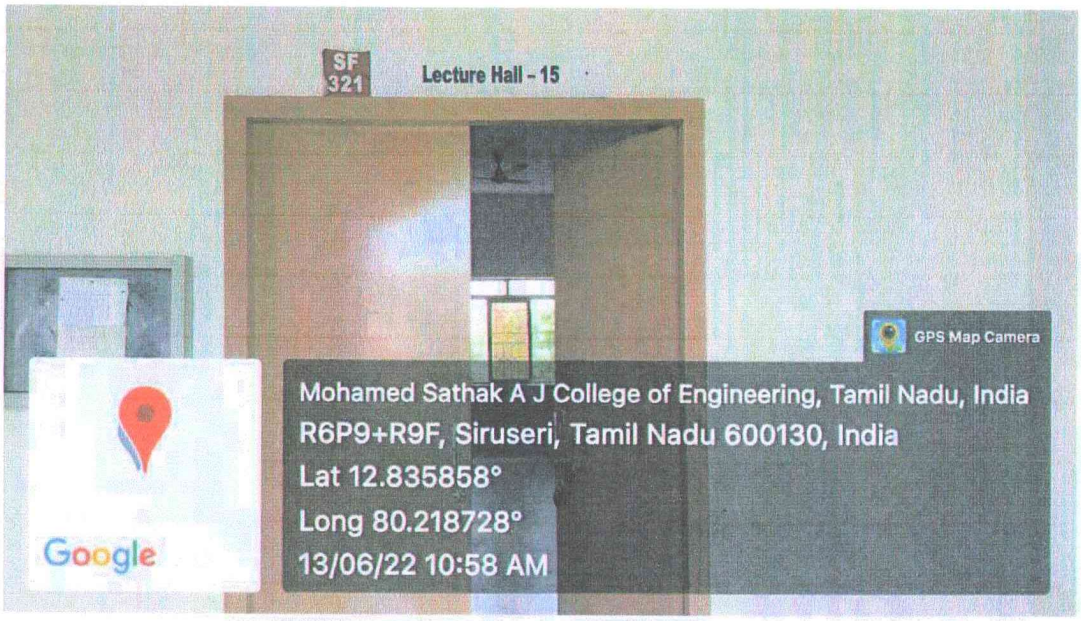
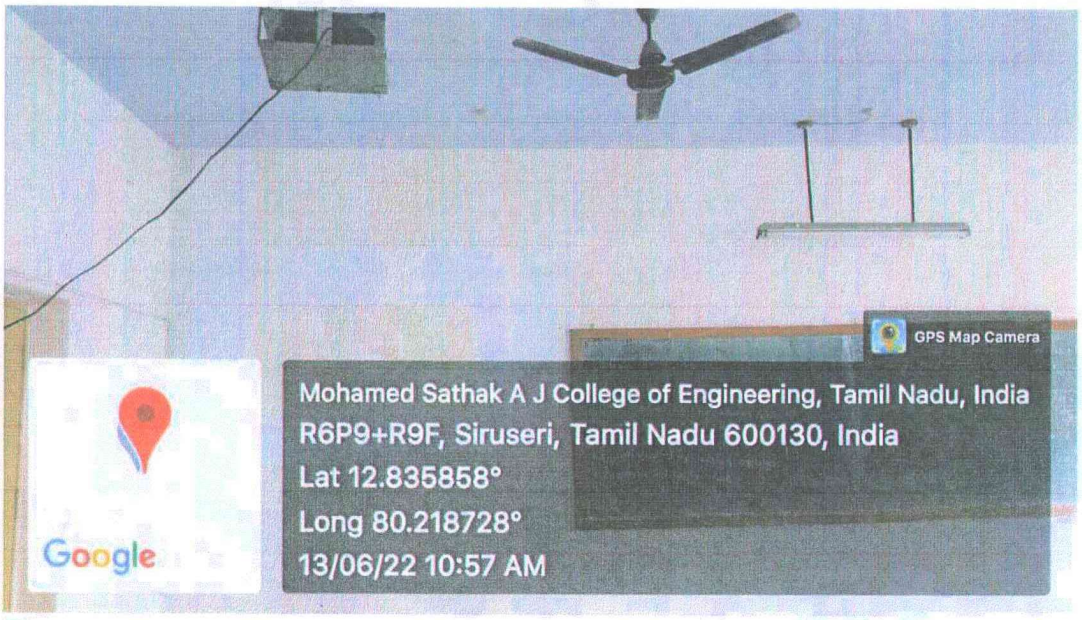
CIVIL CLASS ROOM SF321





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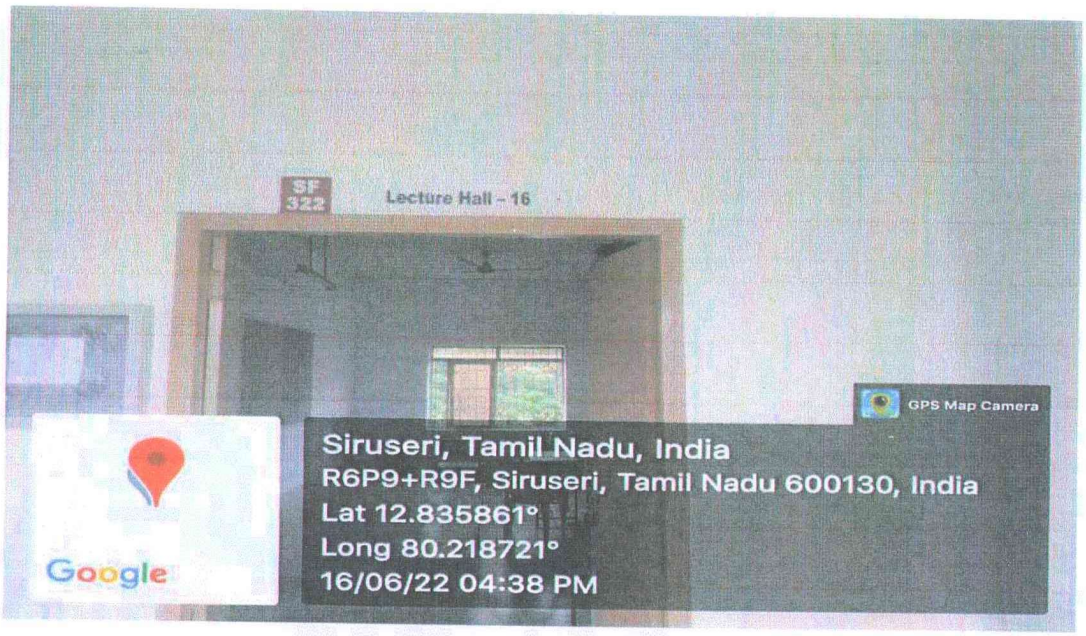
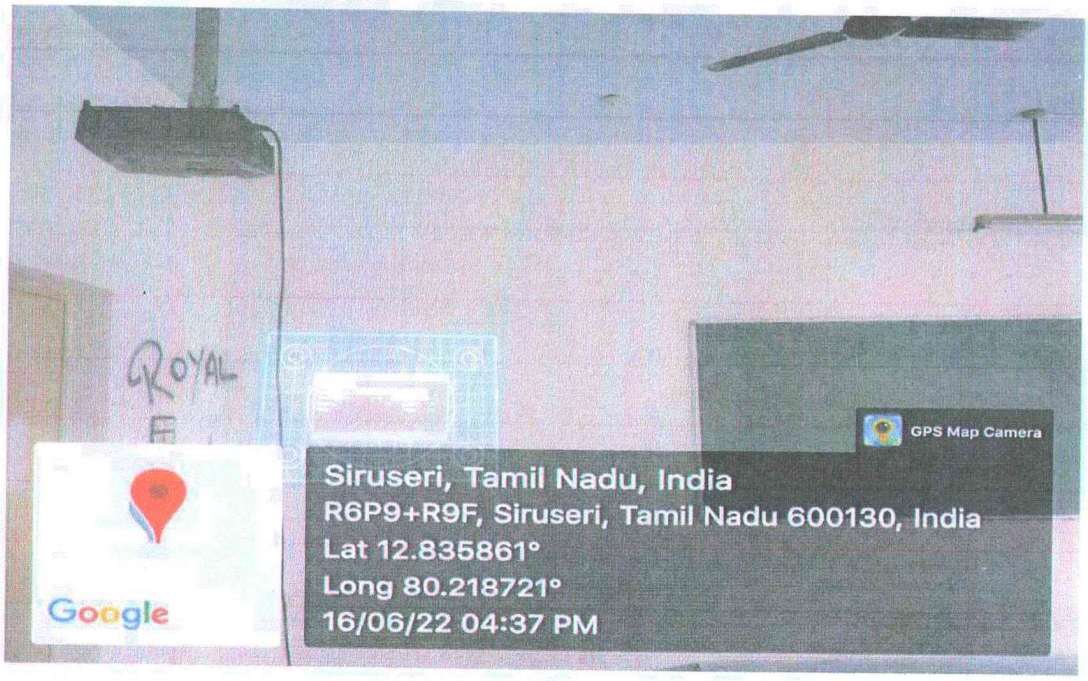
CIVIL CLASS ROOM SF322





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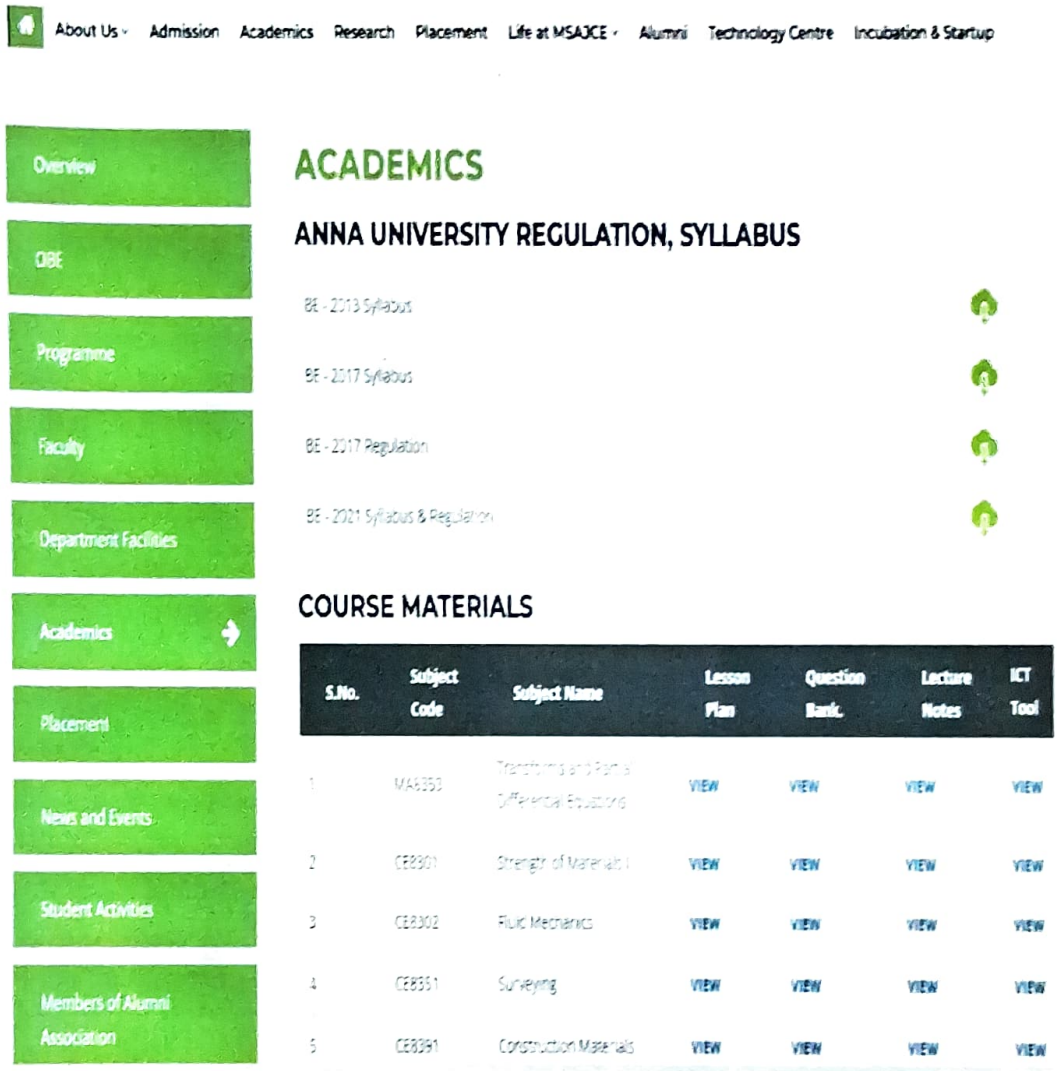
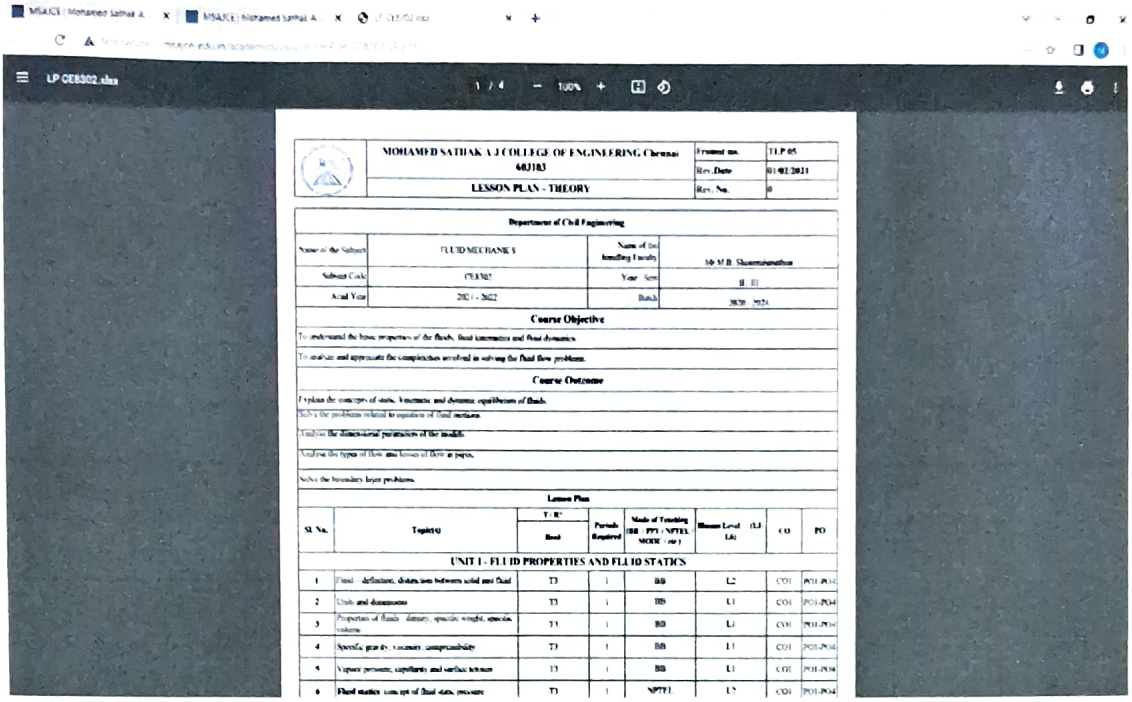
E-Resources

Department of Civil Engineering



Lesson Plan



LP OE8302.xlsx

MOHAMED SATHAK A J COLLEGE OF ENGINEERING Chennai 600103	Format no.	TLP 05
	Rev.Date	01/02/2011
LESSON PLAN - THEORY	Rev. No.	0

Department of Civil Engineering

Name of the Subject	FLUID MECHANICS	Name of the handling Faculty	Mr.M.B. Shanmuganathan
Subject Code	CE8302	Year / Sem	II / III
Acad Year	2021 - 2022	Batch	2020 - 2024

Course Objective

To understand the basic properties of the fluids, fluid kinematics and fluid dynamics.

To analyze and appreciate the complexities involved in solving the fluid flow problems.

Course Outcome

Explain the concepts of static, kinematic and dynamic equilibrium of fluids.

Solve the problems related to equation of fluid motions.

Analyze the dimensional parameters of the models.

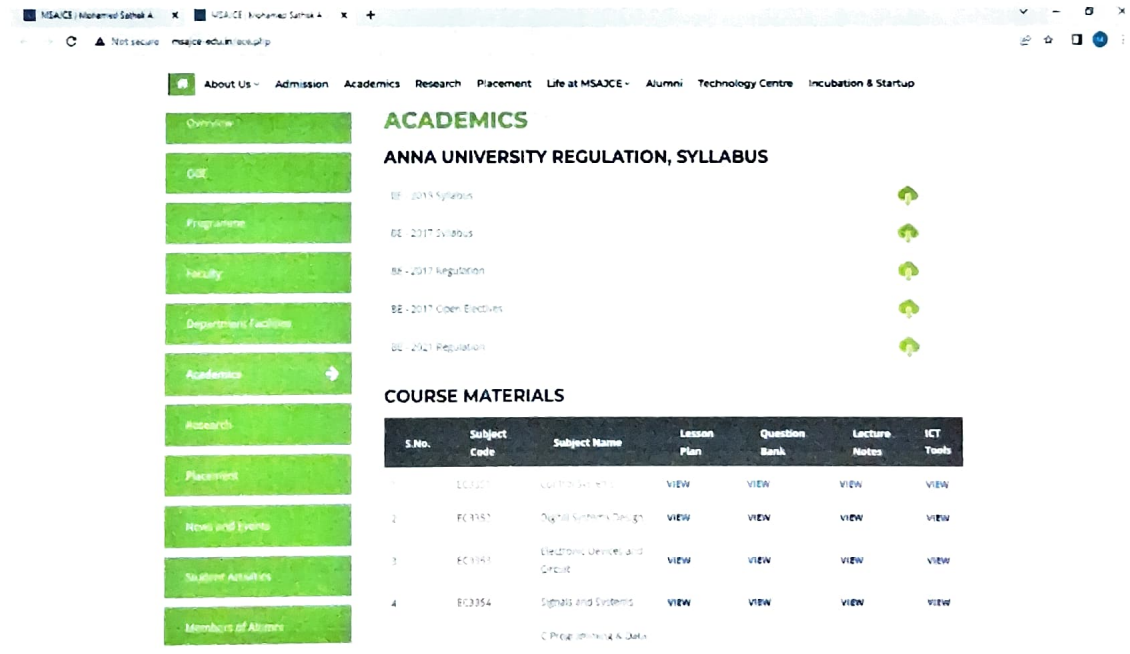
Analyze the types of flow and losses of flow in pipes.

Solve the boundary layer problems.

Lesson Plan

Sl. No.	Topic(s)	T / R* Book	Periods Required	Mode of Teaching (BB / PPT / NPTEL MODE / etc.)	Bloom Level (L1 / L2)	CO	PO
UNIT I - FLUID PROPERTIES AND FLUID STATICS							
1	Fluid - definition, distinction between solid and fluid	T3	1	BB	L2	CO1	PO1-PO4
2	Units and dimensions	T3	1	BB	L1	CO1	PO1-PO4
3	Properties of fluids - density, specific weight, specific volume	T3	1	BB	L1	CO1	PO1-PO4
4	Specific gravity, viscosity, compressibility	T3	1	BB	L1	CO1	PO1-PO4
5	Vapour pressure, capillarity and surface tension	T3	1	BB	L1	CO1	PO1-PO4
6	Fluid statics: concept of fluid static pressure	T3	1	NPTEL	L2	CO1	PO1-PO4

Department of ECE



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Overview | CDC | Programmes | Faculty | Department Facilities | Academics | Research | Placement | News and Events | Student Activities | Members of Alumni

ACADEMICS

ANNA UNIVERSITY REGULATION, SYLLABUS

BE - 2013 Syllabus

BE - 2017 Syllabus

BE - 2017 Regulation

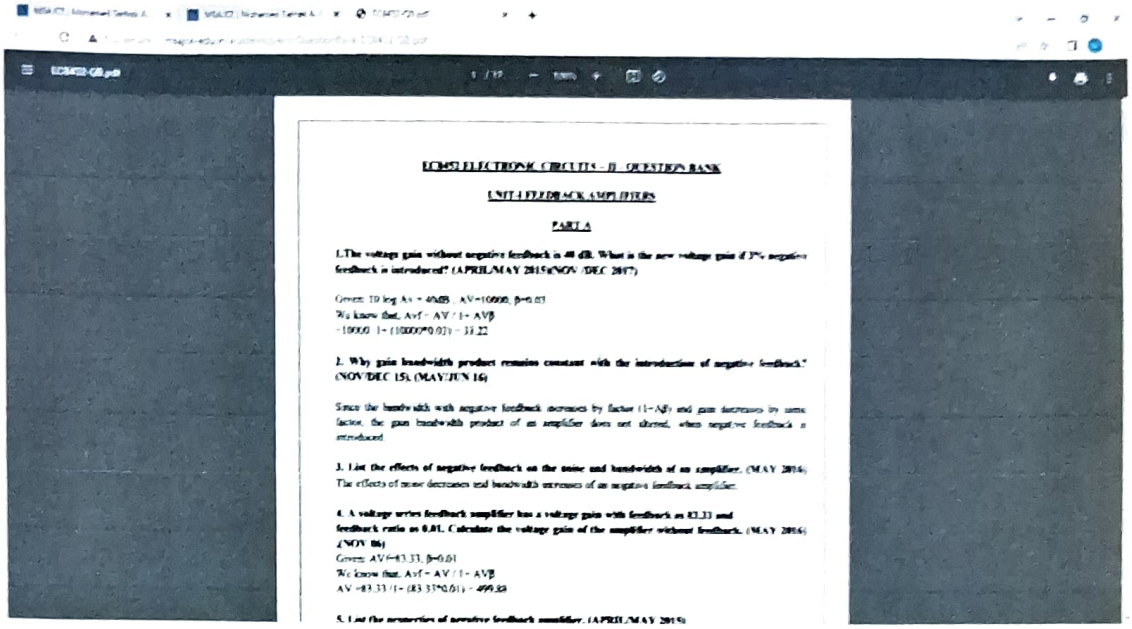
BE - 2017 Open Electives

BE - 2021 Regulation

COURSE MATERIALS

S.No.	Subject Code	Subject Name	Lesson Plan	Question Bank	Lecture Notes	ICT Tools
1	EC3251	Circuit Analysis	VIEW	VIEW	VIEW	VIEW
2	EC3352	Digital Systems Design	VIEW	VIEW	VIEW	VIEW
3	EC3353	Electronic Devices and Circuits	VIEW	VIEW	VIEW	VIEW
4	EC3354	Signals and Systems	VIEW	VIEW	VIEW	VIEW
		C Programming & Data				

Question Bank



EC8452 ELECTRONIC CIRCUITS – II – QUESTION BANK

UNIT-I FEEDBACK AMPLIFIERS

PART A

1.The voltage gain without negative feedback is 40 dB. What is the new voltage gain if 3% negative feedback is introduced? (APRIL/MAY 2015)(NOV /DEC 2017)

Given: 10 log Av = 40dB , AV=10000, β=0.03
We know that, Avf = AV / 1+ AVβ
=10000 /1+ (10000*0.03) = 33.22

2. Why gain bandwidth product remains constant with the introduction of negative feedback? (NOV/DEC 15), (MAY/JUN 16)

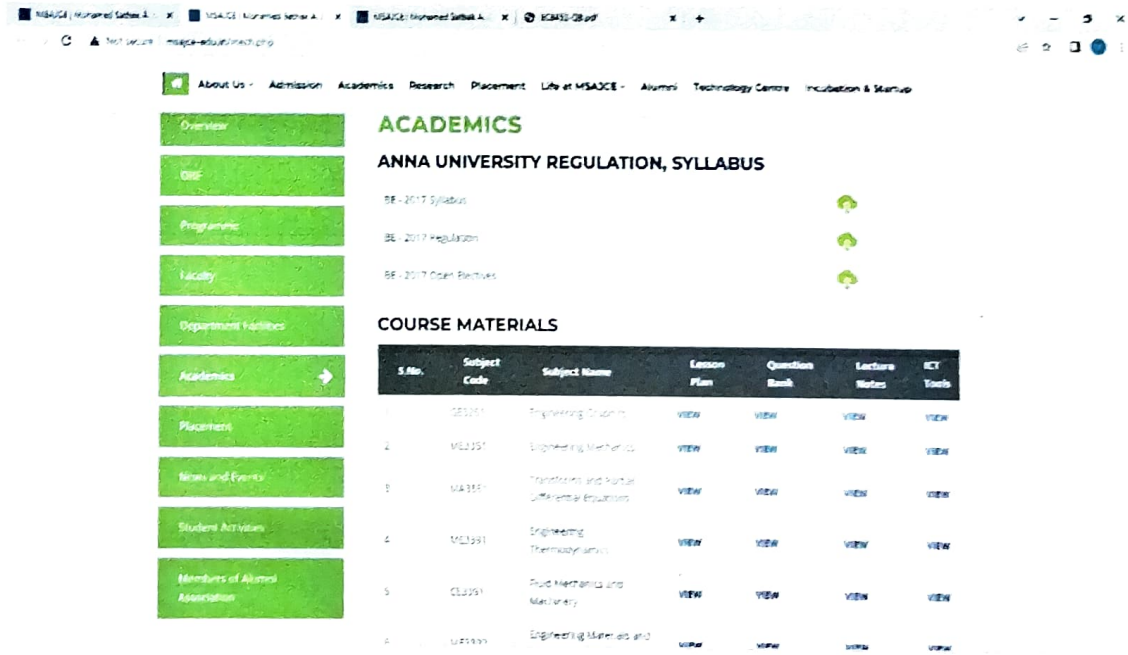
Since the bandwidth with negative feedback increases by factor (1+Aβ) and gain decreases by same factor, the gain bandwidth product of an amplifier does not altered, when negative feedback is introduced.

3. List the effects of negative feedback on the noise and bandwidth of an amplifier. (MAY 2016)
The effects of noise decreases and bandwidth increases of an negative feedback amplifier.

4. A voltage series feedback amplifier has a voltage gain with feedback as 83.33 and feedback ratio as 0.01. Calculate the voltage gain of the amplifier without feedback. (MAY 2016) (NOV 06)
Given: AVf=83.33, β=0.01
We know that, Avf = AV / 1+ AVβ
AV =83.33 /1+ (83.33*0.01) = 499.88

5. List the properties of negative feedback amplifier. (APRIL/MAY 2015)

Department of Mechanical Engineering



PPT

MOHAMED SATHAK A J COLLEGE OF ENGINEERING

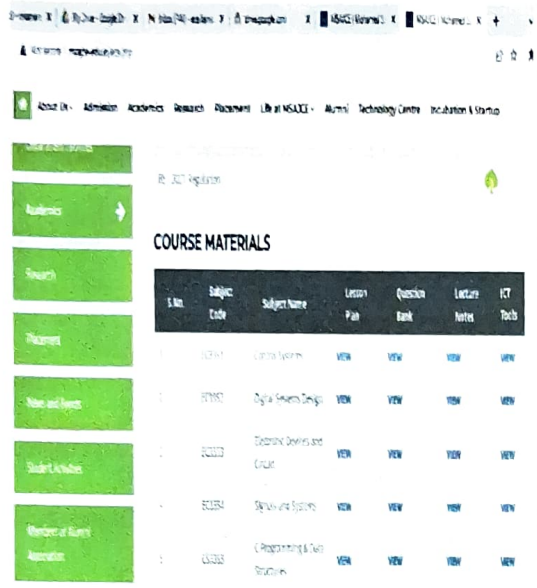
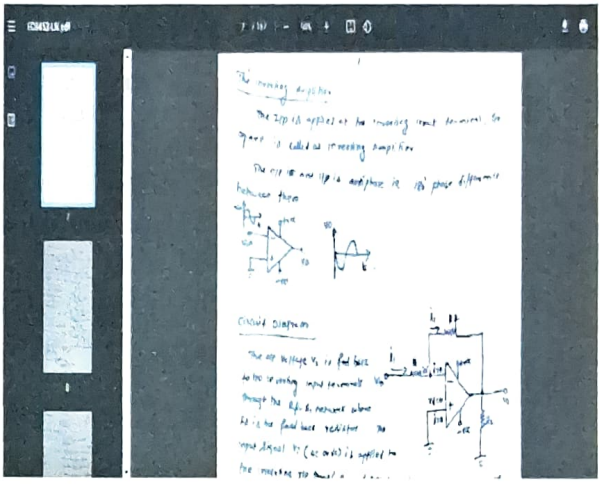
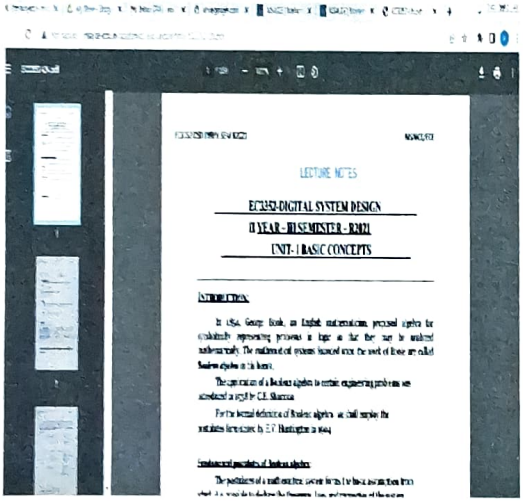
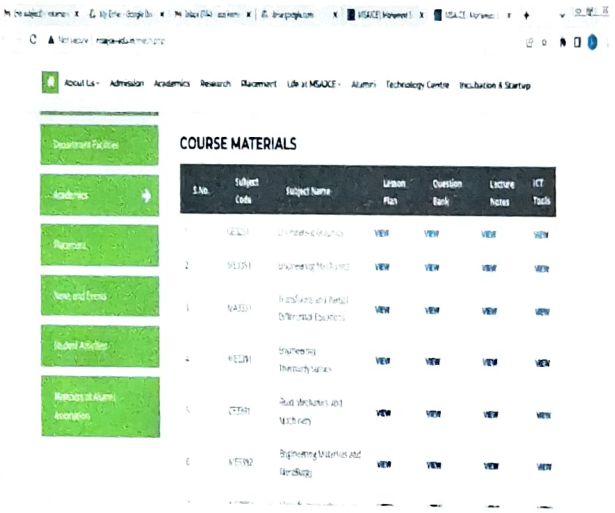
FLUID MECHANICS INTRODUCTION AND BASIC CONCEPTS

by
Dr.G.RAMESH

Objectives

- Understand the basic concepts of Fluid Mechanics.
- Recognize the various types of fluid flow problems encountered in practice.
- Model engineering problems and solve them in a systematic manner.
- Have a working knowledge of accuracy, precision, and significant digits, and recognize the importance of dimensional homogeneity in engineering calculations.

Simplified Notes



Handwritten Notes