VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS), MADURAI – 09.

DEPARTMENT OF CIVIL ENGINEERING

List of pedagogical techniques adopted for various subjects during the academic year 2023-24.

SL.No	Subject Code/Name	Year/Sem	Pedagogical Techniques
1	21CE301/Structural Analysis I	III/V	**YouTube Videos** – For better understanding the concept YouTube videos shared to the students.
2	21CE302/Design of Reinforced Cement Concrete Elements	III/V	**YouTube Videos** – For better understanding the concept YouTube videos shared to the students.
3	21CE209/Waste Water Engineering	II/IV	**Field Visit** – Visited water treatment plant to enrich their knowledge.
4	21CE201/Engineering Geology	II/III	**Animated Videos** – Displayed animated videos in the classroom for better understanding the concept.
5	21CE205/Surveying and Geomatics (TH + L)	II/III	**Collaborative Learning** – Industrial person trained the students about field surveying methods using total station.
6	21CE308/Estimation, Costing and Valuation Engineering	III/VI	**Collaborative Learning** – Industrial person trained the students about how estimation of building is done in real time.

21CE301/Structural Analysis I

Shared concept video to students before the day of discussing the same concept in the classroom

21CE302/Design of Reinforced Concrete Elements

Shared concept video to students before the day of discussing the same concept in the classroom

21CE209/Waste Water Engineering

Visited treatment plant to improve their practical knowledge about water treatment process

21CE201/Engineering Geology

Displayed animated videos in the classroom for better understanding the concept

21CE205/Surveying and Geomatics (TH + L)

Industrial person trained the students about field surveying methods using total station

21CE308/Estimation, Costing and Valuation Engineering

Industrial person trained the students about how estimation of building is done in real time

Teachers use ICT-enabled tools including online resources for effective teaching and learning:

In our department, third Saturday of every month is considered as a pedagogy day. On that day, New pedagogy- innovative Teaching & learning methodology such as Role-play, Flipped Classroom, Project, Activity based learning, Interactive & Peer Discussion and self-learning cum seminar are used for making the students more interactive and understandable concepts.

Students enjoys this learning because of their involvement instead of regular teaching. Here, the Faculty will teach the concept theoretically, then ask the students-team for Role-play, by which slow-learners also can understand the concept easily.

With these methodologies, students enthusiastically participated and faculties are getting more response when they raised random questions. Faculties are expecting more pupils to participate in the events but few pupils will hesitate to come forward. So these events give opportunities in circular basis.

Overall, these kind of teaching methodologies improves the student involvement towards the concept/Topic/Subjects. Some of the activities are given below.

Role Play:

Role play is a form of experiential learning. Students take on assigned roles and act out those roles through a scripted play. The role play can be carried out one-to-one (individual role play) or as a group role play with each member in the group taking on a role/character. Roles and rules for a role play are clearly defined in the script. Role plays can provide very powerful learning experiences for students by immersing them in simulated real world situations in which students act out a particular role/character in a safe environment.

Collaborative Learning:

Collaborative learning is a situation in which two or more people learn or attempt to learn something together. Unlike individual learning, people engaged in collaborative learning capitalize on one another's resources and skills (asking one another for information, evaluating one another's ideas, monitoring one another's work, etc.). More specifically, collaborative learning is based on the model that knowledge can be created within a population where members actively interact by sharing experiences and take on asymmetric roles.

Flipped Classroom:

A flipped classroom is an instructional strategy and a type of blended learning. It aims to increase student engagement and learning by having pupils complete readings at home, and work on live problem-solving during class time. This pedagogical style moves activities, including those that may have traditionally been considered homework, into the classroom. With a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home, while actively engaging concepts in the classroom with a mentor's guidance.

Project Based Learning:

Project-based learning (PBL) is a teaching method that involves a dynamic classroom approach in which it is believed that students acquire a deeper knowledge through active exploration of real-world challenges and problems. Students learn about a subject by working for an extended period of time to investigate and respond to a complex question, challenge, or problem. It is a style of active learning and inquiry-based learning. PBL contrasts with paper-based, rote memorization, or teacher-led instruction that

presents established facts or portrays a smooth path to knowledge by instead posing questions, problems, or scenarios

Link for document:

https://sites.google.com/vcet.ac.in/pedagogy-cse/home/pedagogy-23-24

Velammal College of Engineering &Technology(Autonomous), Madural

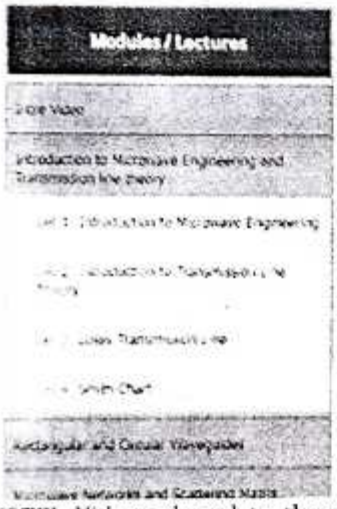
Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC302-Transmission Lines and RF Systems
Batch	2022- 2026
Year/Semester/Section	III/V/A
Course Component	CORE
Name of the Instructor	Dr.S.Murugan

Pedagogical Technique 1

Pedagogical Technique	Name of the topic(s)
NPTEL Videos	Single stub matching and double stub matching



NPTEL Videos shared to the students for the above mentioned topics. It has played in the classroom on 29/08/2024 .

29/8/24 Course In- charge

29/8/24 Course Coordinator

29/8/24 Module Coordinator

29/08/24 HoD/ECE

Velammal College of Engineering &Technology(Autonomous), Madurai

Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC302–Transmission Lines and RF Systems
Batch	2022- 2026
Year/Semester/Section	III/V/ A
Course Component	CORE
Name of the Instructor	Dr.S.Murugan

Pedagogical Technique 2

Pedagogical Technique	Name of the topic(s)
Problem Solving TPS, PS (GATE)	1. Finding different line parameters 2. Characteristics of Parallel plate waveguide.

Gate Problems has been solved for the above mentioned topics on 2/9/2024 through TPS technique

S. Murugan 2/9/24
Course In- charge

S. Murugan 2/9/24
Course Coordinator

2/9/24
Module Coordinator

HoD/ECE 2/9/24

Velammal College of Engineering &Technology(Autonomous), Madurai

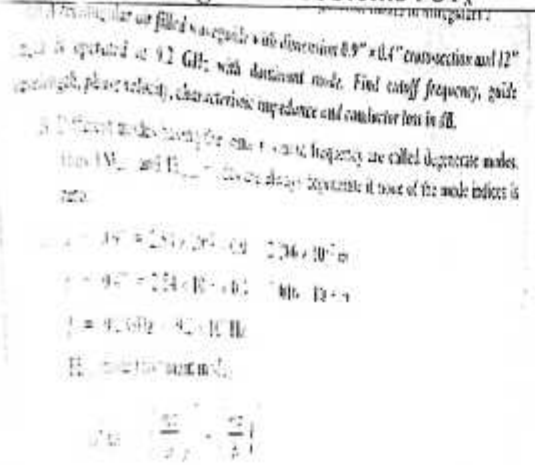
Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC302–Transmission Lines and RF Systems
Batch	2022- 2026
Year/Semester/Section	III/V/ A
Course Component	CORE
Name of the Instructor	Dr.S.Murugan

Pedagogical Technique 3

Pedagogical Technique	Name of the topic(s)
Problem Solving Text Problems PST_x	1. Rectangular waveguides



Guide wavelength $\lambda_g = \dfrac{\lambda}{\sqrt{1-\left(\frac{f_c}{f}\right)^2}}$

$\lambda_g = \dfrac{0.0978}{\sqrt{1-\left(\frac{6.56}{9.2}\right)^2}}$

$= 4.29 \times 10^{-2}$ m

Phase velocity $v_p = \dfrac{c}{\sqrt{1-\left(\frac{f_c}{f}\right)^2}}$

$= \dfrac{3 \times 10^8}{\sqrt{1-\left(\frac{6.56}{9.2}\right)^2}}$

$= 4.278 \times 10^8$ m/sec

Text Problems has been solved for the above mentioned topics on Rectangular waveguides on 3/10/2024.

S. Murugan 3/10/24 — Course In- charge

S. Murugan 3/10/24 — Course Coordinator

3/10/24 — Module Coordinator

03/10/24 — HoD/ECE

Velammal College of Engineering & Technology (Autonomous), Madurai

Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC401–Microwave and Optical Engineering
Batch	2021-2025
Year/Semester/Section	IV/VII/ B
Course Component	Professional core
Name of the Instructor	Dr.P. Rajeswari

S.No	Pedagogical Technique	Name of the topic(s)
1.	Models	Directional couplers, Magic Tee , H plane Tee and E plane Tee
2.	PS(Tx)	Reflex Klystron, Travelling wave and single mode & multi mode fiber
3.	NPTEL Videos	Gunn diode,varactor and IMPATT diode

Course In charge Course Coordinator 10/7/24 Module Coordinator 10/7/24 HoD/ECE 10/07/24

Velammal College of Engineering & Technology (Autonomous), Madurai

Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

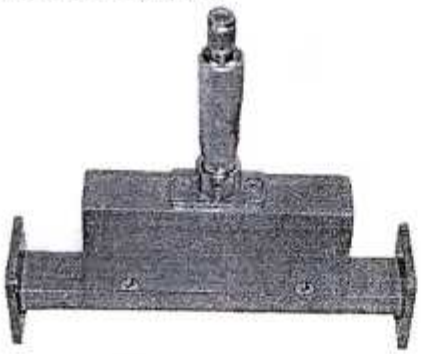
Degree	B.E-ECE
Course Code-Title	**21EC401 –Microwave and Optical Engineering**
Batch	2021-2025
Year/Semester/Section	IV/VII/A
Course Component	CORE
Name of the Instructor	Dr.P.Rajeswari

Pedagogical Technique 1

Pedagogical Technique	Name of the topic(s)
Models	Directional couplers, Magic Tee , H plane Tee and E plane Tee

MAGIC TEE

VARIABLE ATTENUATOR



WAVEGUIDE TERMINATION

Models shown to the students at the time handling for the above mentioned topics in the classroom on 24.07.2024,25.07.2024 and 31.07.2024 .

31/7/24

Course incharge/course coordinator

31/7/24

Module coordinator

31/07/24

HOD/ECE

Velammal College of Engineering & Technology (Autonomous), Madurai

Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	**21EC401 –Microwave and Optical Engineering**
Batch	2021-2025
Year/Semester/Section	IV/VII/A
Course Component	CORE
Name of the Instructor	Dr.P.Rajeswari

Pedagogical Technique 2

Pedagogical Technique 3

Pedagogical Technique	Name of the topic(s)
Problem Solving Text Problems PSTx	Reflex, Klystron, Travelling wave and single mode & multi mode fiber

Example 9-4-1: Reflex Klystron

A reflex klystron operates under the following conditions:

$V_0 = 600$ V $L = 1$ mm

$R_{sh} = 15\text{k}\Omega$ $\frac{f}{m} = 1.759 \times 10^{11}$ (MKS system)

$f_r = 9$ GHz

The tube is oscillating at f_r at the peak of the $n = 2$ mode or $1\frac{3}{4}$ mode. Assume that the transit time through the gap and beam loading can be neglected.

a. Find the value of the repeller voltage V_r.

b. Find the direct current necessary to give a microwave gap voltage of 200 V.

c. What is the electronic efficiency under this condition?

Solution

Example 9-5-1: Operation of Traveling-Wave Tube (TWT)

A traveling-wave tube (TWT) operates under the following parameters:

Beam voltage: $V_0 = 3$ kV

Beam current: $I_0 = 30$ mA

Characteristic impedance of helix: $Z_0 = 10\ \Omega$

Circuit length: $N = 50$

Frequency: $f = 10$ GHz

a. From Eq. (9-5-56) the gain parameter is

$$C = \left(\frac{I_0 Z_0}{4V_0}\right)^{1/3} = \left(\frac{30 \times 10^{-3} \times 10}{4 \times 3 \times 10^3}\right)^{1/3} = 2.92 \times 10^{-3}$$

b. From Eq. (9-5-80) the output power gain is

$$A_p = -9.54 + 4.73NC = -9.54 + 47.3 \times 50 \times 2.92 \times 10^{-3} = 59.52 \text{ dB}$$

c. The four propagation constants are

$$\beta_e = \frac{\omega}{v_0} = \left(\frac{2\pi \times 10^{10}}{0.593 \times 10^6 \sqrt{3} \times 10^3}\right) = 1.93 \times 10^3 \text{ rad/m}$$

$$\gamma_1 = -\beta_e C \frac{\sqrt{3}}{2} + j\beta_e\left(1 + \frac{C}{2}\right)$$

$$= -1.93 \times 10^3 \times 2.92 \times 10^{-3} \times 0.87 + j1.93 \times 10^3\left(1 + \frac{2.92 \times 10^{-3}}{2}\right)$$

$$= -49.03 + j1952$$

$$\gamma_2 = \beta_e C \frac{\sqrt{3}}{2} + j\beta_e\left(1 + \frac{C}{2}\right) = 49.03 + j1952$$

$$\gamma_3 = j\beta_e(1 - C) = j1.93 \times 10^3(1 - 2.92 \times 10^{-3})$$

$$= j1872.25$$

$$\gamma_4 = -j\beta_e\left(1 - \frac{C}{4}\right) = -j1.93 \times 10^3\left[1 - \frac{(2.92 \times 10^{-3})^2}{4}\right]$$

$$= -j1930$$

Text Problems has been solved for the above mentioned topics on Reflex,Klystron, Travelling wave and single mode & multi mode fiber on 09.09.2024 & 27.09.2024.The same topic has been given as assignment to students.

27/9/24 27/9/24 27/09/24

Course In- charge Course Coordinator Module Coordinator HoD/ECE

Velammal College of Engineering & Technology (Autonomous), Madurai

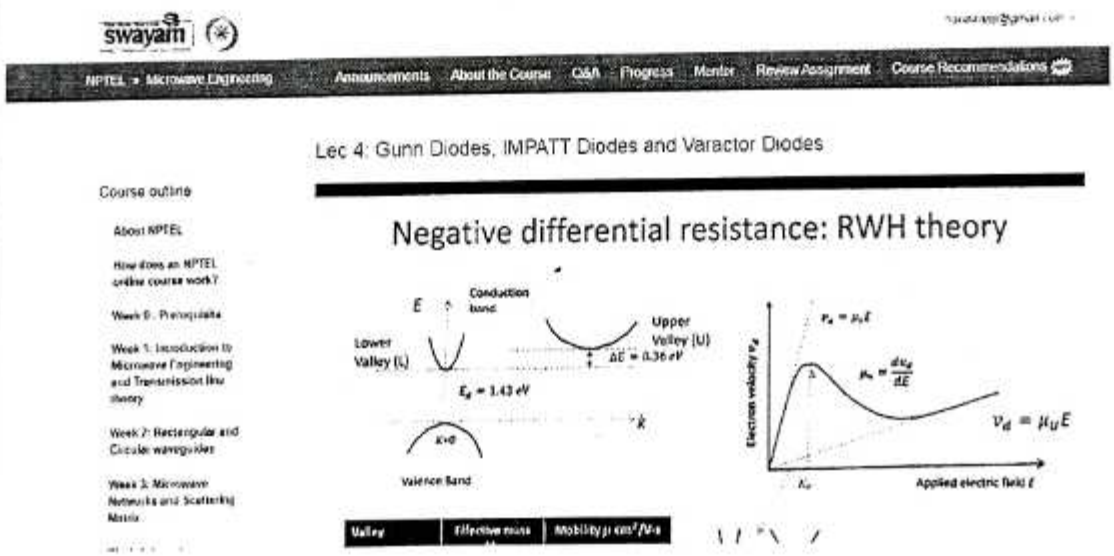
Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	**21EC401 –Microwave and Optical Engineering**
Batch	2021-2025
Year/Semester/Section	IV/VII/A
Course Component	CORE
Name of the Instructor	Dr.P.Rajeswari

Pedagogical Technique 3

Pedagogical Technique	Name of the topic(s)
NPTEL Videos	Gunn diode,varactor and IMPATT diode



NPTEL Videos shared to the students for the above mentioned topics. It has played in the classroom on 24.08.24

Course In- charge/Course Coordinator

Module Coordinator

HoD/ECE

Velammal College of Engineering &Technology(Autonomous), Madurai

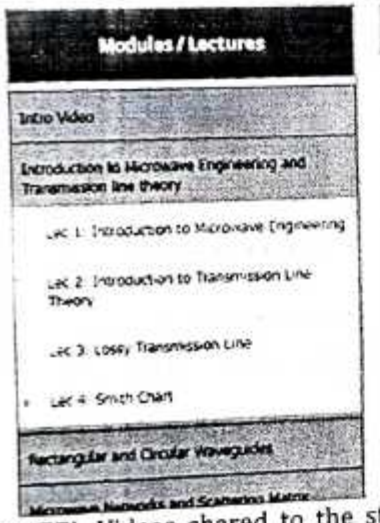
Department of Electronics and Communication Engineering

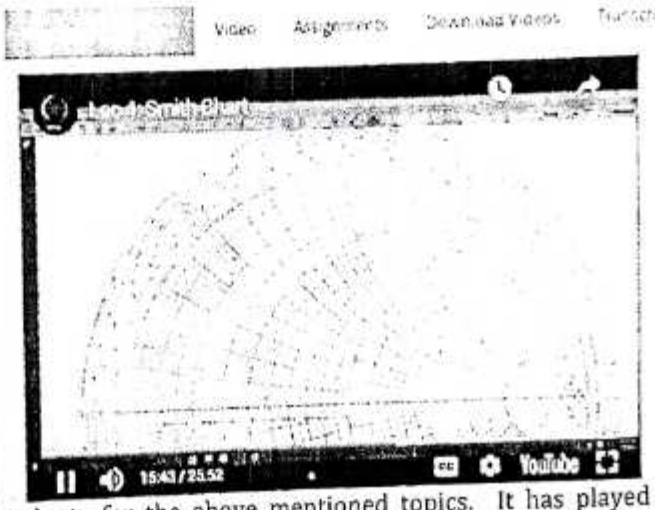
List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC302-Transmission Lines and RF Systems
Batch	2022- 2026
Year/Semester/Section	III/V/B
Course Component	CORE
Name of the Instructor	Dr.S.Regina

Pedagogical Technique 1

Pedagogical Technique	Name of the topic(s)
NPTEL Videos	Single stub matching and double stub matching





NPTEL Videos shared to the students for the above mentioned topics. It has played in the classroom on 16/08/2024, 30/08/2024, 05/09/2024 & 06/09/2024

Course In- charge | Course Coordinator | Module Coordinator | HoD/ECE

Velammal College of Engineering &Technology(Autonomous), Madurai

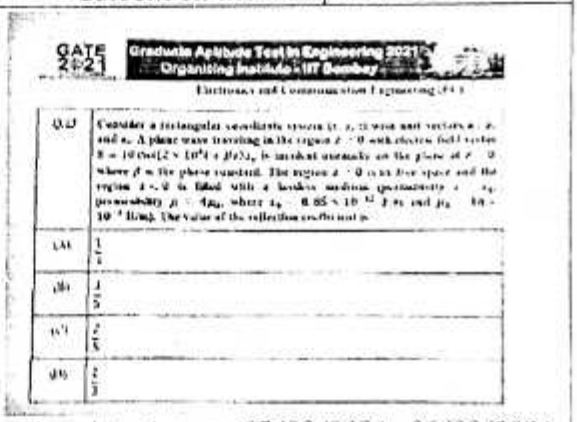
Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC302–Transmission Lines and RF Systems
Batch	2022- 2026
Year/Semester/Section	III/V/ B
Course Component	CORE
Name of the Instructor	Dr.S.Regina

Pedagogical Technique 2

Pedagogical Technique	Name of the topic(s)
Problem Solving TPS, PS (GATE)	1. Finding different line parameters using smith chart 2. Line of zero dissipation-Voltage and Current on the dissipationless line



Gate Problems has solved for the above mentioned topics on 05/08/2024, 06/08/2024, 28/08/2024, 29/08/2024 & 30/08/2024 through TPS technique

Course In- charge | Course Coordinator | Module Coordinator | HoD/ECE

Velammal College of Engineering &Technology(Autonomous), Madurai

Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC302–Transmission Lines and RF Systems
Batch	2022- 2026
Year/Semester/Section	III/V/ B
Course Component	CORE
Name of the Instructor	Dr.S.Regina

Pedagogical Technique 3

Pedagogical Technique	Name of the topic(s)
Problem Solving Text Problems PSTx	1. Infinite length transmission line-wavelength, velocity of propagation

(a) A rectangular air filled waveguide with dimension 0.9" x 0.4" cross section and 12" length is operated at 9.2 GHz with dominant mode. Find cutoff frequency, guide wavelength, phase velocity, characteristic impedance and conductor loss in dB.

(i) Different modes having the same resonant frequency are called degenerate modes. Thus TM_{mn} and TE_{mn} modes are always degenerate if none of the mode indices is zero.

(ii) $a = 0.9" = 2.54 \times 10^{-2} \times 0.9 = 2.286 \times 10^{-2}$ m

$b = 0.4" = 2.54 \times 10^{-2} \times 0.4 = 1.016 \times 10^{-2}$ m

$f = 9.2$ GHz $= 9.2 \times 10^{9}$ Hz

TE_{10} mode (dominant mode)

$$\omega_c^2 \mu\varepsilon = \left(\frac{m\pi}{a}\right)^2 + \left(\frac{n\pi}{b}\right)^2$$

Guide wavelength $\lambda_g = \dfrac{\lambda}{\sqrt{1-\left(\frac{f_c}{f}\right)^2}}$

$$\lambda_g = \frac{0.0978}{\sqrt{1-\left(\frac{6.56}{9.2}\right)^2}}$$

$$= 4.29 \times 10^{-2} \text{ m}$$

Phase velocity $v_p = \dfrac{c}{\sqrt{1-\left(\frac{f_c}{f}\right)^2}}$

$$= \frac{3 \times 10^8}{\sqrt{1-\left(\frac{6.56}{9.2}\right)^2}}$$

$$= 4.278 \times 10^8 \text{ m/sec}$$

Text Problems has solved for the above mentioned topics on 25/07/2024, 26/07/2024, 28/09/2024 & 30/09/2024

S. Regina 22/7/24 — Course In- charge

S. Regina 22/7/24 — Course Coordinator

28/7/24 — Module Coordinator

22/07/24 — HoD/ECE

Velammal College of Engineering & Technology (Autonomous), Madurai
Department of Electronics and Communication Engineering
List of Innovative Pedagogical Techniques

Degree	**B.E. – ECE**
Course Code – Title	**EC8553 – Discrete-Time Signal Processing**
Batch	**2020-2024**
Year/Semester/Section	**III/ V/ B**
Course component	**Professional core**
Name of the Instructor	**Dr.P.Suveetha Dhanaselvam**

S.No	Pedagogical Technique	Name of the topic(s)
1.	Role Play	Decimation-in-frequency (DIF) Fast Fourier transform (FFT).
2.	Group Tasks	Problems in DFT, DIT and DIT

3/5/2022
Course I/C/Coordinator

2/5/22
Module Coordinator

Velammal College of Engineering & Technology (Autonomous), Madurai
Department of Electronics and Communication Engineering

Pedagogical Techniques-Proof

Degree	B.E. – ECE
Course Code – Title	EC8553 – Discrete-Time Signal Processing
Batch	2020-2024
Year/Semester/Section	III/ V/ B
Course component	Professional core
Name of the Instructor	Dr.P.Suveetha Dhanaselvam

Role Play

Group Tasks

P. S. 5/12/2022

Course I/C/Coordinator

3/12/22

Module Coordinator

Velammal College of Engineering & Technology (Autonomous), Madurai
Department of Electronics and Communication Engineering
List of Innovative Pedagogical Techniques

Degree	**B.E-ECE**
Course Code-Title	**21EC305 - VLSI and Chip Design**
Batch	**2021-2025**
Year/Semester/section	**III/VI/A & B**
Course Component	**Professional core**
Name of the Instructor	**Dr. P. Suveetha Dhanaselvam &** **Mr.B.Karthikeyan**

S.No	Pedagogical Technique	Name of the topic(s)
1.	Group Tasks	Stick Diagram, Layout diagrams
2.	Analogy	MOS Transistor
3.	NPTEL Videos	Cascode Voltage Switch Logic, Dynamic Circuits, Pass Transistor Logic

12/4/2023
Course I/C/Coordinator

12/4/2023
Module Coordinator

Velammal College of Engineering & Technology (Autonomous), Madurai
Department of Electronics and Communication Engineering

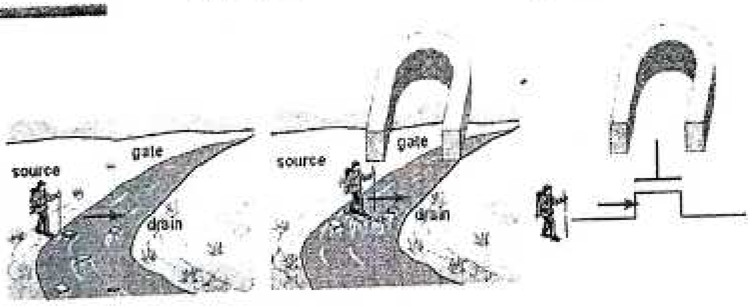
Pedagogical Techniques-Proof

Degree	B.E-ECE
Course Code-Title	21EC305 - VLSI and Chip Design
Batch	2021-2025
Year/Semester/section	III/VI/A & B
Course Component	Professional core
Name of the Instructor	Dr. P. Suveetha Dhanaselvam & Mr.B.Karthikeyan

Group Assignment

Analogy- MOSFET gate & Electron flow

CMOS Transistor Analogy



P. S. 12/4/2023
Course I/C/Coordinator

P.K. 12/4/2023
Module Coordinator

Velammal College of Engineering & Technology (Autonomous), Madurai
Department of Electronics and Communication Engineering
List of Innovative Pedagogical Techniques

Degree	**B.E-ECE**
Course Code-Title	**21EC203 / Signals and Systems**
Batch	**2023-2027**
Year/Semester/section	**II/III/B**
Course Component	**Professional Core**
Name of the Instructor	**Dr. P.Suveetha Dhanaselvam**

S.No	Pedagogical Technique	Name of the topic(s)
1.	Lecture with Software Demonstration	Step, Ramp, Pulse, Impulse, Sinusoidal, Exponential signals
		Fourier Transform in CT Signal Analysis
2.	Flash Cards	Fourier Transform – Definition and Properties
3.	NPTEL Videos	Z Transform – Properties of Z Transform

P. S. H 28/6/2024
Course I/C/Coordinator

05/07/2024
Module Coordinator

05/07/2024
HoD/ECE

VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY
[AUTONOMOUS], MADURAI
Department of Electronics and Communication Engineering

Pedagogical techniques-Proof

Degree	B.E-ECE
Course Code-Title	21EC203 / Signals and Systems
Batch	2023-2027
Year/Semester/section	II/III/B
Course Component	Professional Core
Name of the Instructor	Dr. P.Suveetha Dhanaselvam

Lecture with Software Demonstration- Step, Ramp, Pulse, Impulse, Sinusoidal, Exponential signals, Fourier Transform in CT Signal Analysis

Flash Cards

15/11/2024

Course I/C/Coordinator

15/11/24

Module Coordinator

15/11/24

HoD/ECE

Velammal College of Engineering & Technology (Autonomous), Madurai
Department of Electronics and Communication Engineering
List of Innovative Pedagogical Techniques

Degree	**B.E. – ECE**
Course Code – Title	**21EC303– Digital Signal Processing**
Batch	**2022 – 2026**
Year/Semester/Section	**III/ V/ A**
Course component	**Theory with Practical Course**
Name of the Instructor	**Dr.P.Suveetha Dhanaselvam**

S.No	Pedagogical Technique	Name of the topic(s)
1.	Lecture with Software Demonstration	Properties of DFT-periodicity, symmetry, circular convolution
2.	NPTEL Videos	Frequency sampling method
3.	Animation Videos	ADC-Quantization - Truncation and Rounding

28/6/24
Course I/C/Coordinator

05/07/2024
Module Coordinator

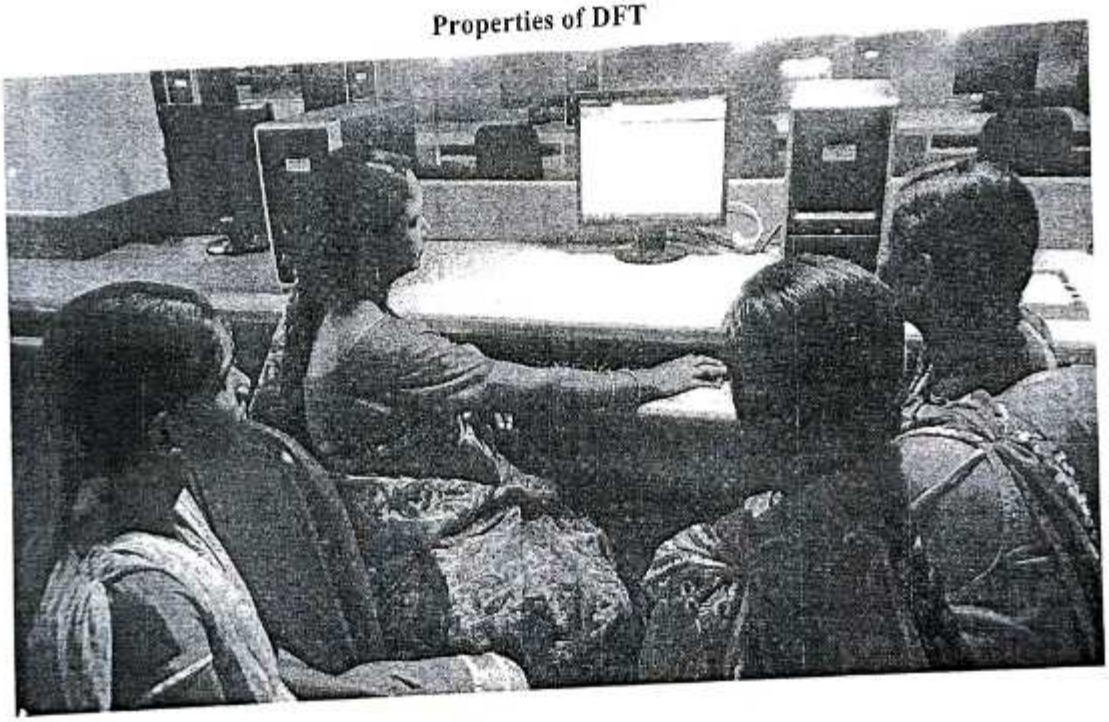
05/07/2024
HoD/ECE

Velammal College of Engineering & Technology (Autonomous), Madurai
Department of Electronics and Communication Engineering
Pedagogical Techniques-Proof

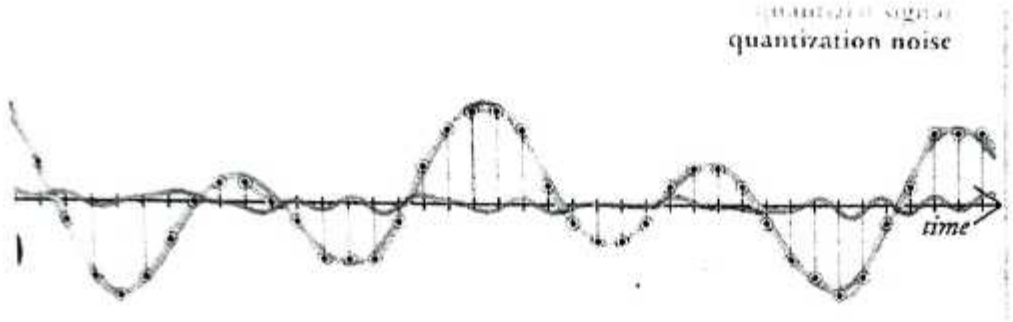
Degree	B.E. – ECE
Course Code – Title	21EC303– Digital Signal Processing
Batch	2022 – 2026
Year/Semester/Section	III/ V/ A
Course component	Theory with Practical Course
Name of the Instructor	Dr.P.Suveetha Dhanaselvam

Lecture with Software Demonstration

Properties of DFT



Animation Videos- ADC-Quantization - Truncation and Rounding



15/11/2024

Course I/C/Coordinator

15/11/24

Module Coordinator

15/11/24

HoD/ECE

Velammal College of Engineering & Technology(Autonomous), Madurai
Department of Electronics and Communication Engineering

List of innovative pedagogical techniques

Degree	B.E-ECE
Course Code-Title	21EC208 - Microprocessors and Microcontrollers
Batch	2022-2026
Year/Semester/section	II/IV/B
Course Component	Professional core
Name of the Instructor	Dr.S.Gandhimathi @ Usha

Ped

S.No	Pedagogical Technique	Name of the to
1.	Group Assignment	8086 Assembly Language Programs for various Arithmetic, Logic, Relational operations and String Manipulations.
2.	Technical Quiz	Interfacing concepts.
3.	Group Assignment	8051 Assembly Language Programs for various Arithmetic, Logic and Relational operations.

12/1/24
Course In-charge

18/01/24
Course Coordinator/Module Coordinator

K-kavitha 18/1/24
HOD/ECE

11

Group Assignment-I

21EC208 - Microprocessors and Microcontrollers

Class/Sem/Batch: II/IV-B/2022-2026

Topic: 8086 Assembly Language Programs for various Arithmetic, Logic, Relational operations and String Manipulations

Date of Announcement: **23-02-24**

Date of Submission : **04-03-24**

Program Logic (15)	15
Coding (20)	20
Presentation (3)	3
Group Involvement (10)	9
Reference (2)	2
Total	49

Group members: G. B. Aartee - 22ECEB01

S. Amrudha - 22ECEB02

A. Anisha - 22ECEB03

References: https://www.scribd.com

https://github.com/Amey-Thakur/8086/

8086 Assembly Language Programming by SCANLON, LEOJ

Assembly programming and the 8086 microprocessor by JONES D.R

VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS), MADURAI

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Technical Quiz - Questions

Subject Code/Name : 21EC208 / Microprocessors & Microcontrollers
Academic year/semester : 2023-24 / Even
Class & Sec : II ECE-B
Batch : 2022-26
Course In-charge : Dr.S.Gandhimathi @ Usha

1. Which of the following is correct about 8086 microprocessor?

A. Intel's first x86 processor
B. Motrola's first x86 processor
C. STMICROELECTRONICS's first x86 processor
D. NanoXplore x86 processor

2. Which of the following is the correct sequence of operations in a microprocessor?

A. Opcode fetch, memory read, memory write, I/O read, I/O write
B.Opcode fetch, memory write, memory read, I/O read, I/O write
C. I/O read, opcode fetch, memory read, memory write, I/O write
D. I/O read, opcode fetch, memory write, memory read, I/O write

3. For i/o of 8255,if -----, the word is taken as a bit set/rest word

A. d7=1
B. **d7=0**
C. d0=1
D. d0=0

4. 8255 has -------- i/o pins

A. 28
B. 26
C. **24**
D. 22

5. 8255 has three ----parallel port

A. **8bit**
B. 16bit
C. 32bit
D. 64bit

6. In ----, bidirectional data transfer is possible

A. mode 0
B. model
C. **mode2**
D. bsr

7. walkie-talkie is an example of .....serial communication

A. simplex
B. **half duplex**
C. full duplex
D. none of these

8. Transmission through telephone lines is an example of....serial communication

A. simplex
B. half duplex
C. **full duplex**
D. none of these

9. Asynchronous serial communication involves

A. start bit
B. stop bits
C. character data
D. **all of these**

10. To configure 8255 with port A output,Port B input port C lower output and port C upper input

A. mov al,0afh
B. **mov al,0aeh**
C. mov al,0ceh
D. mov a,0aah

11. A high on ---line indicates that the buffer register is empty

A. txrdy
B. **txe**
C. txc#
D. both b and c

12. ADC 0808 uses ----technique

A. **successive apraximation**
B. single step
C. dual slope
D. flash converter

13. The signals provided by ADC are

A. soc
B. eoc
C. ale
D. **all of these**

14. Flash ADC consist of....converters

A. 2^n
B. **2^n -1**
C. 2^n +1
D. none of these

15. 8253/54 has ----independent timers/counters

A. 1
B. 2
C. 3
D. 4

16. 8253/54 timers can be programmed in---modes

A. 1
B. 3
C. 6
D. 5

17. In mode 0 of 8253/54 ----disables counting

A. gate=1
B. gate=0
C. wr#=1
D. wr#=0

18. 8253/54 has c----command that allows the user to check the count value programmed mode and current status of the counter

A. write back
B. write ahead
C. read ahead
D. read back

19. For mode 3 of 8253/54, if the count is odd the output will be high for---

A. 2/(n+1)
B. (n+1)/2
C. 2/(n-1)
D. (n-1)/2

20. 8255 has three ----parallel ports

A. 8 bit
B. 16 bit
C. 32 bit
D. 64 bit

28/3/24 28/3/24 25/03/24

Course In-charge **Course Coordinator/Module Coordinator** **HOD/ECE**

MPMC Tharun

VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY(AUTONOMOUS), MADURAI
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Mini Project (Assignment-III) -Key

Topic : Build and Implement Control Applications using Arduino hardware.

Team Members:

1. Savita S (22ECEB22)
2. Anisha A (22ECEB03)
3. Vidhya Lakshmi S (22ECEB33)
4. Ganessga T (22ECEB10)

Year/Sec :II-ECE-B

Title : Development of an Alcohol detection system using MQ3 Gas Sensor

Course Code & Name : 21EC208 Microprocessors and Microcontrollers

Date of Submission : 13/05/2024

Rubrics:

Abstract (10)	10
H/W & S/W description (30)	30
Block diagram & Working (30)	25
Model (10)	10
Applications (10)	10
Results (10)	10
Total(100)	95

95/100

14/5/24

14/5/24

Signature of faculty

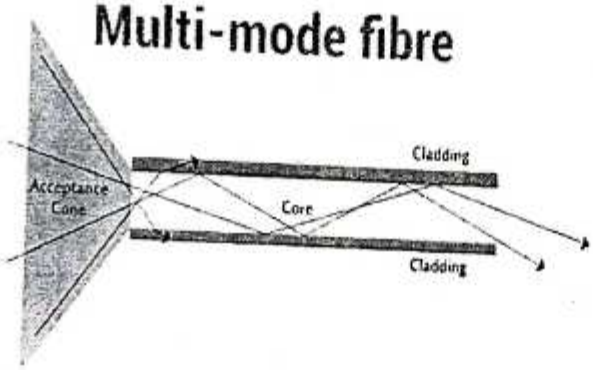
VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS),

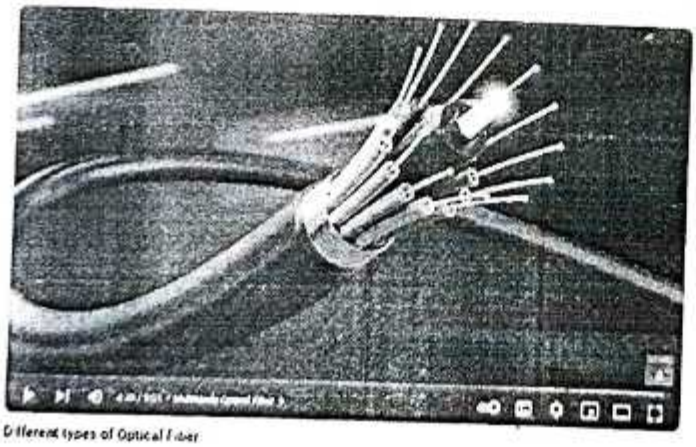
MADURAI

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Animated Videos- Classification of Optical fibers

Subject Code/Name	: EC8751 / Optical Communication
Academic year/semester	: 2023-24 / Odd
Class & Sec	: IV ECE- A & B
Batch	: 2020-24
Course In-charge	: Dr.S.Gandhimathi @ Usha
Date	: 18.08.23





Different types of Optical Fiber

S 18/8/23
Course In-charge / Course Coordinator

k-kavitha 18/8/23
Module Coordinator

k-kavitha 18/8/23
HOD/ECE

Velammal College Of Engineering & Technology (Autonomous), Madurai
Department of ECE

Technical Quiz

Subject Name : EC8751 – Optical Communication and Networks
Academic Year : (2023-24) ODD Semeser
Class : IV ECE A & B
Course Incharge: Dr.S.Gandhimmathi @ Usha
Topic : LED ,LASER and Photodiode
Date : 22.09.2023

1) What is the light source has been used in transmitter?
   1.LASER
   2.LED
   3.Both
   4.None

2) Which one is correct?
   1. **The light output of an Led is approximately proportional to the current passing through it.**
   2. A typical LED has an operating voltage of about 0.7
   3. The light output of an LED is approximately proportional to the voltage across it.
   4. The light output of an Led is inversely proportional to current passing through it.

3) Which term from the following is not related to LASERs?
   1. **Carrier recombination**
   2. Stimulated emission
   3. Population Inversion
   4. None of the above

4) A photodiode is constructed of GaAs, which has a band gap energy of 1.43eV at 300K. The long wavelength cut-off (λc) for GaAs is
   1. **869 nm**
   2. 890nm
   3. 950 nm
   4. 1050nm

5) Typical efficiency for green LED is

1. **0.15w/w**
2. 0.39w/w
3. 0.26w/w
4. 0.35w/w

6) From the following, what is a method of mixing colors to produce white light from an LED?

1. **Blue LED + green LED + red LED**
2. Pink :LED + infra red LED+ UV Led
3. Yellow LED + red LED + infrared LED
4. None of the above

7) Typical efficiency for red LED is

1. 0.25w/w
2. 0.15w/w
3. **0.39w/w**
4. 0.35w/w

8.The forward voltage across an LED is typically 0.7 V.

1. TRUE
2. **FALSE**

9.A photodiode is used in a reverse-bias position, and it will increase conduction as the light intensity increases.

1. **TRUE**
2. FALSE

10.OLEDs can be sprayed onto a substrate using an inkjet printer.

1. **TRUE**
2. FALSE

11.When no light is emitted from an LED, the forward current is almost negligible and is called the dark current.

1. TRUE
2. **FALSE**

12.An LED emits light when forward-biased.

1. **TRUE**
2. FALSE

13.LASER stands for **Light Amplification by Stimulated Emission by Radiation.**

14.**AC LED** is a LED with a built in converter.

15.**LED** can operate at lower current densities than the injection layer.

16.LED structure fabricated using **GaAs/AlGaAs** material system for operation in the shorter wavelength region.

17.Led donot have **thermal/ optical stabilization** circuit.

18.**LED** can be fabricated less expensively with higher yield.

19.Semiconductor material that is used for the active layer for a optical source must have a **direct bandgap light source materials.**

20. A heavily doped p-n junction diode which emits light when it is **___forward____** biased is called "Light Emitting Diode (LED)"

21. What is the principle of Light Emitting Diode (LED)?

When a suitable voltage is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons.

22.Material(s) used for red LED

1. GaP
2. gasp
3. AlGaAs
4. **All the above**

23.LED is a type of

1. Zener diode
2. **P-n junction diode**
3. Varactor diode
4. Gunn diode

24.Which class of LASER diode is suitable for use in hand held laser pointer?

1. Class 1
2. **Class2**
3. Class3
4. Class4

25.Advantage of photo transistor over photo diode

1. **They are more sensitive to light**
2. They are much smaller
3. They can be purchased in most stores

26.The fastest and most sensitive photot diode available is the

- **Avalanche photodiode**
- PIN diode
- photo-Darlington
- germanium photodiode
-

27. Principle of LASER?

A laser is a device that emits light through a process of optical amplification based on the stimulated emission of electromagnetic radiation.

28. Identify this diode.

(PIN diode)

S. [illegible] 22.9.23

Course In-charge / Course Coordinator

k-kavitha 22/9/23

Module Coordinator

k-kavitha 22/9/23

HOD/ECE

Velammal College of Engineering and Technology

(Autonomous)

Viraganoor, Madurai-625 009

pedagogical strategies

Generally defined as the theory and practice of teaching, pedagogy refers to the methodology and process of how instructors approach teaching and learning using a specific curriculum with specific goals in mind.

5 different Pedagogical approaches,

- Constructivist Approach,
- Collaborative Approach,
- Reflective Approach,
- Integrative Approach,
- The Inquiry-Based Approach.

Examples of pedagogical skills

- Communication.
- Adaptability. Every student has different needs and progresses at a different pace. ...
- Collaboration
- Inclusivity
- Compassion
- Review student evaluations. ...
- Discuss pedagogical skills with your colleague

Velammal College of Engineering and Technology

(Autonomous)

Viraganoor, Madurai-9

Pedagogical methodologies followed

Academic Year 2023 - 2024

II Year EEE

S.No	Sub Code	Subject Name	Name of the Staff	Pedagogial Method used
2	21EE201	Field Theory	Mrs.M.Devaki	Lecture with animated videos
3	21EE202	DC Machines and Transformers	Dr.T.Chandrasekar	Lecture with Demonstration
4	21EE203	Transmission and Distribution	Dr.N.Karpagam	Lecture with Demonstration
5	21EE204	Electronic Devices and Circuits	Dr.B.Kiruthiga	Lecture with animated videos
6	21EE205	Digital Logic Circuits	Dr.S.Senthilrani	Lecture with animated videos

III Year EEE

S.No	Sub Code	Subject Name	Name of the Staff	Pedagogial Method used
1	21EE301	Power System Analysis	Dr.S.Chellam	Lecture with software demonstration
2	21EE302	Power Electronics	Dr.A.Radhika	Lecture with demos
3	21EE303	Digital Signal Processing	Mrs.J.Rajeswari	Lecture with animated videos
4	21PEE01	Energy Utilization & Conservation	Dr.N.Karpagam	Lecture with animated videos
5	21PEE12	Special Electrical Machines	Dr.S.Dhanalakshmi	Lecture with animated videos
6	21MCC01	Constitution of India	Mr.A.Madhan	Lecture with videos

IV Year EEE

S.No	Sub Code	Subject Name	Name of the Staff	Pedagogial Method used
1	EE8701	High Voltage Engineering	Mrs.V.UmayalMuthu	Lecture with animated videos
2	EE8702	Power System Operation and Control	Dr.S.Dhanalakshmi	Lecture with animated videos
3	EE8703	Renewable Energy Systems	Mrs.R.Saranya	Lecture with animated videos
4	EI8703	Biomedical instrumentation	Dr.R.Narmatha banu	Lecture with Animated videos
5	EE8010	Power Systems Transients	Mrs.M.Devaki	Lecture with animated videos
6	OML751	Testing of Materials	Dr.A.Radhika	Lecture with demos

HoD / EEE

VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY, Madurai – 625 009

(Autonomous)

Department of Information Technology

2.2.1 B. Use of various instructional methods and pedagogical initiatives

Academic Year: 2023- 2024 **Semester : Even**

8/7/24

HoD/ IT

VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY, Madurai – 625 009

(Autonomous)

Department of Information Technology

2.2.1 B. Use of various instructional methods and pedagogical initiatives

Academic Year: 2023- 2024 Semester : Even

III / VI	**21IT306 / Fundamentals of Artificial Intelligence** a)Game Theory –Collaborative Learning (Seminar) b)Reasoning about Knowledge – Collaborative Learning (Seminar)	29 30
III / VI	**21IT307 / Internet of Things** a)IoT Enabling Technologies – Role Play b)IoT Reference Architecture - Collaborative Learning (Seminar) c)Zigbee Architecture - Collaborative Learning (Seminar) d)IoT System Building Blocks – Arduino Board Details – L+DE(Software)	31 32 33 34 35
III / VI	**21PCS12 / Android App Development** a)Expanding the user Experience: Action bars, Menu – L+DE(Software)	36 37

HoD/ IT

Velammal College of Engineering and Technology, Madurai - 625 009

(Autonomous)

Department of Information Technology

Academic Year 2023-2024 (Even Semester)

Year/Sem/Sec: I/II/A

Batch: 2023-2027

Course Code/Name: 21CS103/ Programming in C

VCET Regulation: 2021

Course In-charge: Mrs. A. Periya Nayaki, AP-III/IT

L+DE(S): LOOPING STATEMENTS

Description: In any programming language including C, loops are used to execute a set of statements peatedly until a particular condition is satisfied. There are mainly two types of loops: Entry Controlled oops: In this type of loops the test condition is tested before entering the loop body. for Loop and while oop are entry-controlled loops. Exit Controlled Loops: In this type of loops, the test condition is tested or valuated at the end of loop body. Therefore, the loop body will execute atleast once, irrespective of whether the test condition is true or false. do – while loop is exit controlled loop. This looping statements as been demonstrated using CodeBlocks software. Code:Blocks is a free C/C++ and Fortran IDE built to neet the most demanding needs of its users. It is designed to be very extensible and fully configurable. A ery easy to use IdE with a free access makes it the best choice for c/c++ programmers and provide great eatures that makes the user experience very smooth. It is a superb IDE which is free, easy, and reliable. his software is a masterpiece and every beginner should start its programming journey from this oftware.

L+DE(S): Looping Statements (CodeBlocks) – A Section on 28.02.2024

urse in-charge
eriya Nayaki, AP-III

Course Coordinator
Mrs. A. Periya Nayaki, AP-III

Module Coordinator
Mrs. M. Prabha, AP-II

HoD/IT
Dr. R. Kavitha

Velammal College of Engineering and Technology, Madurai - 625 009

(Autonomous)

Department of Information Technology

Academic Year 2023-2024 (Even Semester)

Year/Sem/Sec: I/II/A

Batch: 2023-2027

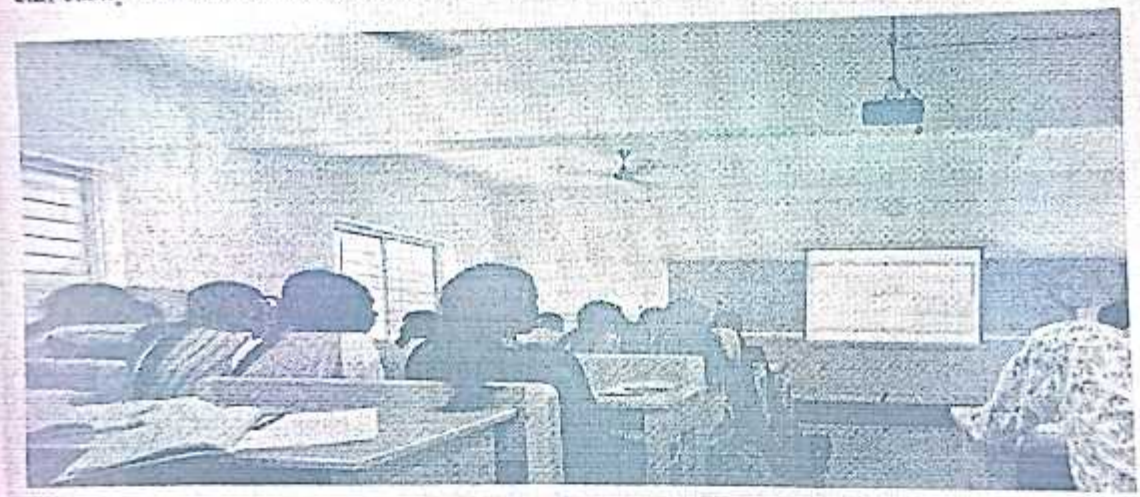
Course Code/Name: 21CS103/ Programming in C

VCET Regulation: 2021

Course In-charge: Mrs. A. Periya Nayaki, AP-III/IT

L+AV: SELECTION SORT

Description: An animated video was played on the topic **"Selection Sort".** The video clearly explained the step wise execution of selection sort along with the algorithm. The students can easily understand the concept of selection sorting through video.



L+AV: Selection Sort – A Section

Course in-charge
. Periya Nayaki, AP-III

Module Coordinator
Mrs. M. Prabha, AP-II

HoD/IT
Dr. R. Kavitha

Velammal College of Engineering and Technology, Madurai - 625 009

(Autonomous)

Department of Information Technology

Academic Year 2023-2024 (Even Semester)

Year/Sem/Sec: I/II/A

Batch: 2023-2027

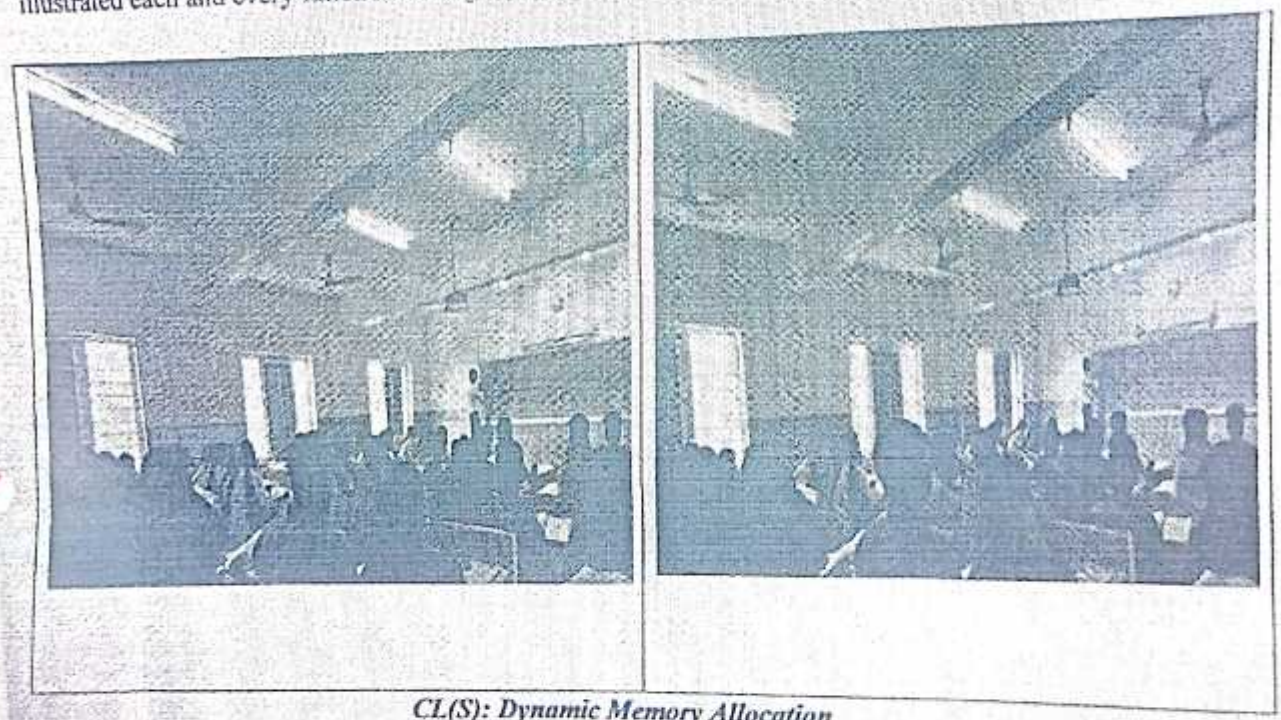
Course Code/Name: 21CS103/ Programming in C

VCET Regulation: 2021

Course In-charge: Mrs. A. Periya Nayaki, AP-III/IT

CL(S): DYNAMIC MEMORY ALLOCATION

Mr. Praveen Raaj from I/A has taken the seminar on Dynamic Memory Allocation in C Programming. He has clearly explained the functions of DMA (malloc(), calloc(), realloc(), free()) using blackboard. He illustrated each and every functions using sample code.



CL(S): Dynamic Memory Allocation

Course in-charge
A. Periya Nayaki, AP-III

Course Coordinator
Mrs. A. Periya Nayaki, AP-III

Module Coordinator
Mrs. M. Prabha, AP-II

HoD/IT
Dr. R. Kavitha

Velammal College of Engineering and Technology, Madurai

(Autonomous)

Department of Information Technology

Academic Year 2023-2024 (EVEN Semester)

Batch: 2023-2027 | Year/Sem/Sec: I/II/B

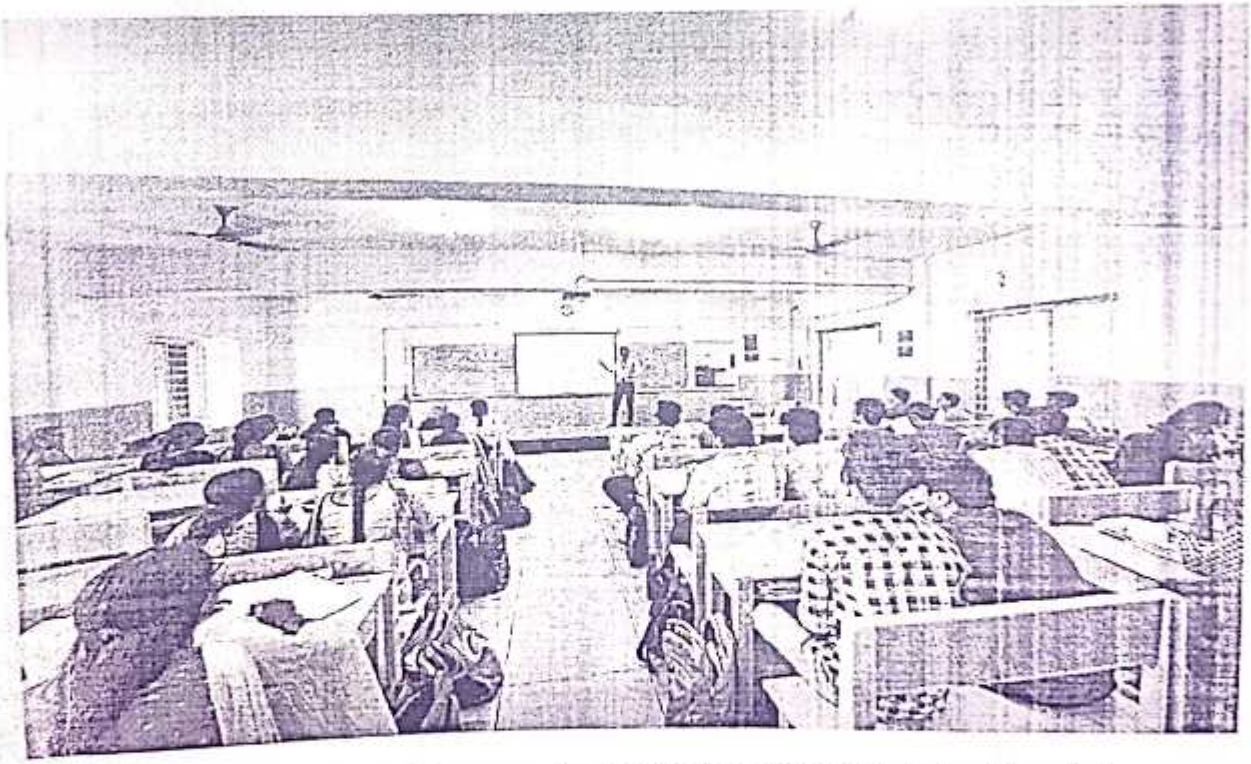
Subject Code/Name: 21CS103 / Programming in C | Regulation: 2021

Course In-charge: Mrs.K.Penyameen, AP-III | Date: 13.03.2024

Description: L+DE (Software) on "Binary search Algorithm" (Unit II – CO2, K2)

In this class, concepts of Binary search algorithm was explained and demonstrated. Division of search space and each traversal for very iteration was clearly illustrated .Teaching methodology Lecture with Demonstration (Software) was adopted for better understanding.

C Compilers like Turbo C, Watcom C/C++, Visual Studio were discussed about its features. Students were asked to try program with these software in their laboratory classes or home. Using Turbo C compiler Coding for Binary search Algorithm was demonstrated and executed at class session. At the end, students understood the concepts very well by asking the questions .



L+DE (Software) on "Binary search Algorithm" on 13.03.2024 during 6th period

Course in-charge
Mr.K.Penyameen

20/3/24
Course Coordinator
Mrs.A.Periyanayaki

13.03.2024
Module Coordinator
Mrs.M.Prabha

25/3/24
HoD/IT
Dr. R. Kavitha

VELAMMAL COLLEGE OF ENGINEERING AND TECHNOLOGY, Madurai – 625 009

(Autonomous)

Department of Information Technology

2.2.1 B. Use of various instructional methods and pedagogical initiatives

Academic Year: 2023- 2024 **Semester : Odd**

8/12/24

HoD/ IT

HOD/IT 22/08/24

Velammal College of Engineering and Technology, Madurai

Autonomous

Department of Information Technology

Academic Year 2023-2024 (Odd Semester)

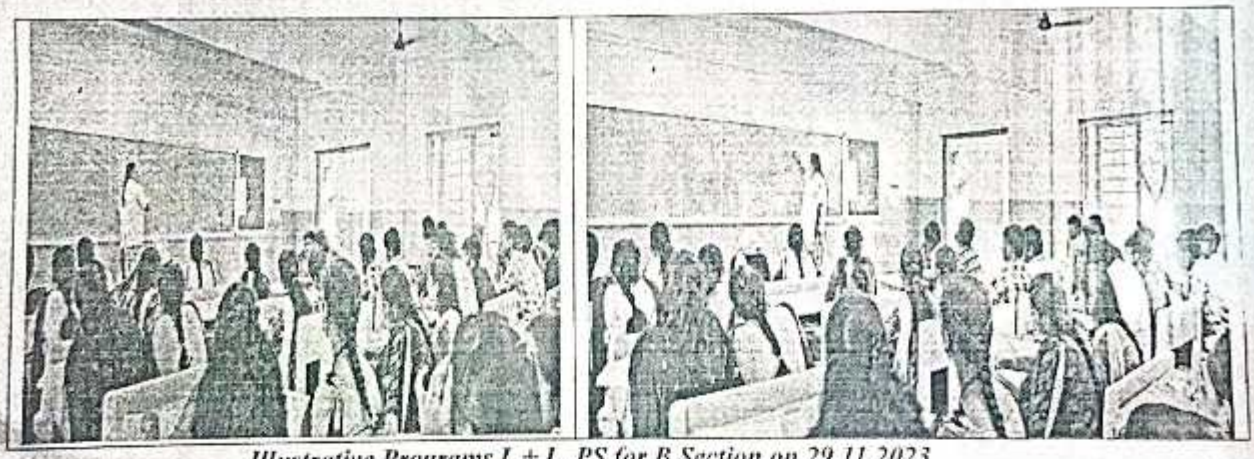
Batch : 2023-2027 **Year /Sem /Sec:** I/ I/A & B
Course Code / Name: 21CS101 / Problem Solving and Python Programming **Regulation** : 2021
Course In-Charge : Mrs. A. Periya Nayaki, AP – III / IT

L + I , PS (Txt) - "Illustrative Programs : Simple Sorting"

Description: Discussed about how to write a python script to perform sorting of n values using various following sorting techniques:

- Selection Sort
- Insertion Sort
- Merge Sort

These sorting methods were explained with illustrative problems in classroom. Students were given some problems for solving and mistakes made them were discussed and rectified.



Illustrative Programs L + I , PS for B Section on 29.11.2023

Illustrative Programs L + I , PS for A Section on 24.11.2023

Course In-Charge

HoD/IT

Velammal College of Engineering and Technology, Madurai

Autonomous

Department of Information Technology

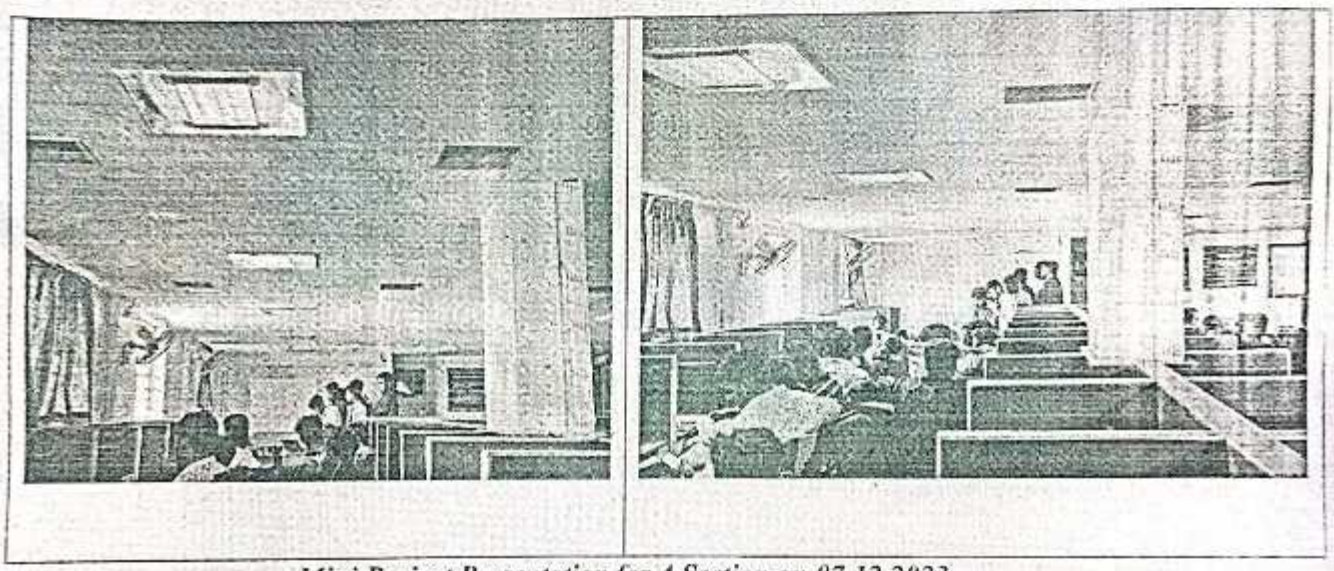
Academic Year 2023-2024 (Odd Semester)

Batch : 2023-2027 **Year /Sem /Sec:** I/ I/A & B

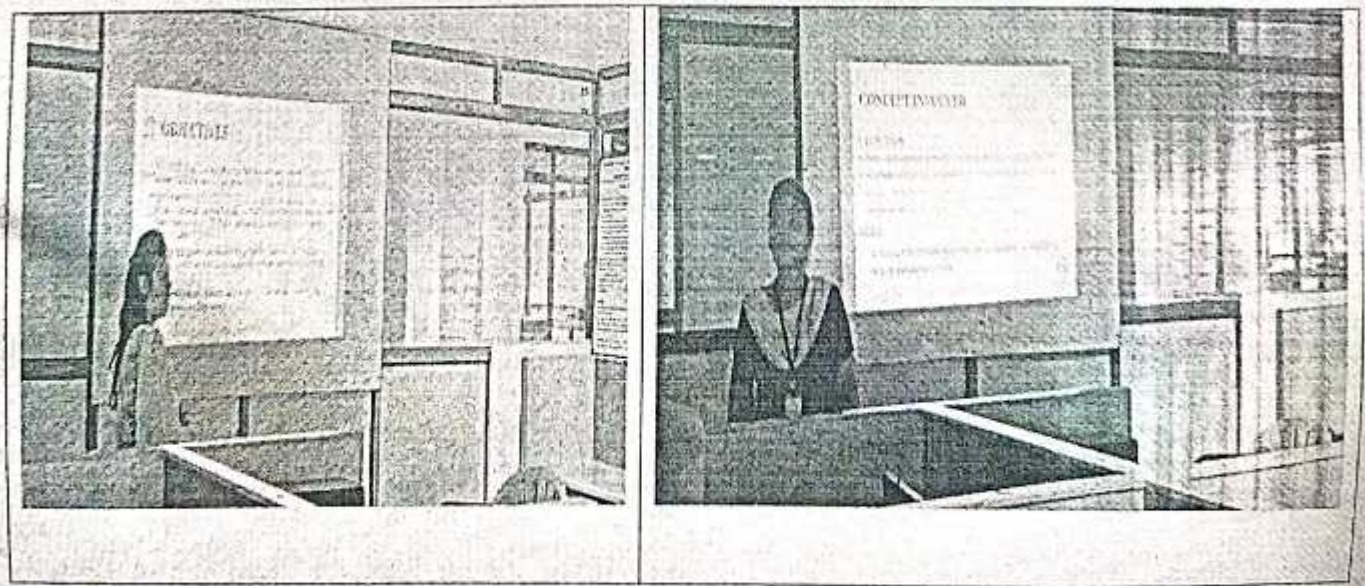
Course Code / Name: 21CS101 / Problem Solving and Python Programming **Regulation** : 2021

Course In-Charge : Mrs. A. Periya Nayaki, AP – III / IT

Mini Project Presentation



Mini Project Presentation for A Section on 07.12.2023



Mini Project Presentation for B Section on 08.12.2023

Course In-Charge

HoD/IT

Velammal College of Engineering and Technology, Madurai - 625009							
Department of Mechanical Engineering							
Pedagogy Initiatives by Faculty (AY 2023-24 - ODD & EVEN)							
S.No.	**Name**	**Sub.Code**	**Subject Name**	**Year & Section**	**Pedagogy Initiatives**	**Relevance to COs**	**Relevance to POs**
1	**Dr. G. Manikandan**	21PME 35	Total Quality Management	IV	Goal Post Game	CO2, CO3, CO4	PO1, PO2,PO3,PO4,PO5, PO11
					Deming Principles - Mnemonics	CO1	PO1, PO2,PO3,PO4,PO5, PO11
					Brainstorming in QFD	CO4	PO1, PO2,PO3,PO4,PO5, PO11
2	**Dr. V. Anbumalar**	21PME10	Nondestructive Testing	III	Demontration of LPT	CO2	PO1, PO2, PO10
		21PME10	Nondestructive Testing	III	Demontration of MPT	CO2	PO1, PO2, PO10
3	**Dr. M. Maran**	21ME302	Productivity and Quality	III	Role play - Types of Manager Case Study - TPM Implementation	CO1 CO5	PO1, PO2, PO11
		21ME305	Metrology and Measurements	III	Lab visit & Demo	CO1 & CO2	PO1
		21ME101	Engineeing Graphics	I & AIDS	1. Projection of Planes using models 2. Projection of Solids using models 3. Development of surfaces using models	CO2, CO3 & CO4	PO1 & PO5

		MG8091	Entrepreneurship Development	III & CSE (OE)	1. Assignment 2 (Great Learning certification) 2. Assigment 3 (Team based case study)	CO1 - CO5	PO5,PO10 & PO12
4	**Dr. T. Amuthan**	21ME101	Engineeing Graphics	I & IT B Sec	1. Projection of Planes using models 2. Projection of Solids using models 3. Development of surfaces using models	CO2, CO3 & CO4	PO1 & PO5
		21ME203	Engineering Metallurgy (TwP)	II	Lab visit - Jominy End Quench test (Lab demo)	CO1, CO2 & CO3	PO1
5	**Dr. B. Varun Kumar**	21ME304	Heat & Mass Transfer	III/Mech	Lab Demo in Thermal Lab	CO1, CO2, CO3	PO1
6	**Mr. R. Karthick**	21ME206	Kinematics and Dynamics of Machines	II MECH	Lecture with Model - Quick Return Mechanism	CO1, CO2	PO1, PO2