Various ways and means adopted for an effective planning and delivery of the Syllabus is carried out through several activities. All these activities are well documented namely:

Academic Calendars
Time Table
Micro Lesson plans
Pedagogical Methods
Orientation Programmes
Seminars / Workshops /Conferences
Guest Lectures
Refreshers courses /FDPs
Well-equipped Laboratories
Central Library
Projects

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Directorate of Academic Planning

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA-533003, Andhra Pradesh, INDIA
(Established by AP Government Act No. 30 of 2008)

Lr. No. JNTUK/DAP/AC/B. Tech/I Year/2020-21 *Date: 05-01-2021*

Dr. R. Srinivasa Rao,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges.
JNTUK, Kakinada.

Academic Calendar for I Year B. Tech
Academic year 2020-21

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**06.01.2021**		
I Unit of Instruction	**06.01.2021**	20.02.2021	7W
I Mid Examinations	15.02.2021	20.02.2021	1W
II Unit of Instructions	22.02.2021	10.04.2021	7W
II Mid Examinations	05.04.2021	10.04.2021	1W
Preparation & Practicals	12.04.2021	17.04.2021	1W
End Examinations	19.04.2021	01.05.2021	2W
Commencement of II Semester Class Work	**03.05.2021**		
II SEMESTER			
I Unit of Instructions	**03.05.2021**	19.06.2021	7W
I Mid Examinations	14.06.2021	19.06.2021	1W
II Unit of Instructions	21.06.2021	31.07.2021	7W
II Mid Examinations	26.07.2021	31.07.2021	1W
Preparation & Practicals	02.08.2021	07.08.2021	1W
End Examinations	09.08.2021	21.08.2021	2W
Commencement of next Year Class Work	**30.08.2021**		
Note: Calendar is prepared with 8 hrs/day hence 7 weeks per instruction period Internal Examinations shall be conducted during the instructional days			

R. Srinivas Director Academic Planning JNTUK Kakinada

Director Academic Planning

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Lr. No. 01-08/ JNTUK/DAP/AC/B. Tech-B. Pharmacy/II-III-IV Year/2020-21 *Date: 04-08-2020*

Dr. R. Srinivasa Rao,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar for II, III and IV - B. Tech & B. Pharmacy
Academic year 2020-21

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**17.08.2020**		
I Unit of Instruction	17.08.2020	03.10.2020	7W
I Mid Examinations	28.09.2020	03.10.2020	
II Unit of Instructions	05.10.2020	21.11.2020	7W
II Mid Examinations	16.11.2020	21.11.2020	
Preparation & Practicals	23.11.2020	28.11.2020	1W
End Examinations	30.11.2020	12.12.2020	2W
Commencement of II Semester Class Work	**14.12.2020**		
II SEMESTER			
I Unit of Instructions	**14.12.2020**	30.01.2021	7W
I Mid Examinations	25.01.2021	30.01.2021	
II Unit of Instructions	01.02.2021	20.03.2021	7W
II Mid Examinations	15.03.2021	20.03.2021	
Preparation & Practicals	22.03.2021	27.03.2021	1W
End Examinations	29.03.2021	10.04.2021	2W
Commencement of next Year Class Work	**14.06.2021**		
Note: Calendar is prepared with 8 hrs/day hence 7 weeks per instruction period			

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Lr. No. 04-8/JNTUK/DAP/AC/II-IV Year/IMBA/2020-21 *Date: 04-08-2020*

Dr. R. Srinivasa Rao,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar of II, III, IV Year IMBA for Academic year 2020-21

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**17.08.2020**		
I Unit of Instruction	17.08.2020	03.10.2020	7W
I Mid Examinations	28.09.2020	03.10.2020	
II Unit of Instructions	05.10.2020	21.11.2020	7W
II Mid Examinations	16.11.2020	21.11.2020	
Preparation & Practicals	23.11.2020	28.11.2020	1W
End Examinations	30.11.2020	12.12.2020	2W
Commencement of II Semester Class Work	**14.12.2020**		
II SEMESTER			
I Unit of Instructions	**14.12.2020**	30.01.2021	7W
I Mid Examinations	25.01.2021	30.01.2021	
II Unit of Instructions	01.02.2021	20.03.2021	7W
II Mid Examinations	15.03.2021	20.03.2021	
Preparation & Practicals	22.03.2021	27.03.2021	1W
End Examinations	29.03.2021	10.04.2021	2W
Commencement of next Year Class Work	**14.06.2021**		
Note: Calendar is prepared with 8 hrs/day hence 7 weeks per instruction period			

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Lr. No. 05-8/JNTUK/DAP/AC/V Year/IMBA/2020-21 *Date: 04-08-2020*

Dr. R. Srinivasa Rao,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar of V Year IMBA for Academic year 2020-21

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**17.08.2020**		
I Unit of Instruction	17.08.2020	03.10.2020	7W
I Mid Examinations	28.09.2020	03.10.2020	
II Unit of Instructions	05.10.2020	21.11.2020	7W
II Mid Examinations	16.11.2020	21.11.2020	
Preparation & Practicals	23.11.2020	28.11.2020	1W
End Examinations	30.11.2020	12.12.2020	2W
Commencement of II Semester Class Work	**14.12.2020**		
II SEMESTER			
Commencement of Project Work	**14.12.2020**	20.03.2021	14W
Thesis submission duration	22.03.2021	17.04.2021	4W
Note: Calendar is prepared with 8 hrs/day hence 7 weeks per instruction period			

R. Srinivasa Rao
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Lr. No. 07-8/JNTUK/DAP/AC/II Year/MBA/2020-21 *Date: 04-08-2020*

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JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar of II Year MBA for Academic year 2020-21

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**17.08.2020**		
I Unit of Instruction	17.08.2020	03.10.2020	7W
I Mid Examinations	28.09.2020	03.10.2020	
II Unit of Instructions	05.10.2020	21.11.2020	7W
II Mid Examinations	16.11.2020	21.11.2020	
Preparation & Practicals	23.11.2020	28.11.2020	1W
End Examinations	30.11.2020	12.12.2020	2W
Commencement of II Semester Class Work	**14.12.2020**		
II SEMESTER			
I Unit of Instructions	**14.12.2020**	30.01.2021	7W
I Mid Examinations	25.01.2021	30.01.2021	
II Unit of Instructions	01.02.2021	20.03.2021	7W
II Mid Examinations	15.03.2021	20.03.2021	
Preparation & Practicals	22.03.2021	27.03.2021	1W
End Examinations	29.03.2021	10.04.2021	2W
Commencement of next Year Class Work	**14.06.2021**		
Note: Calendar is prepared with 8 hrs/day hence 7 weeks per instruction period			

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Time Table:

Andhra Loyola Institute of Engineering and Technology, Vijayawada
Department of Mechanical Engineering
Time Table of – II EEE

Academic Year: 2020-2021 **Sem-2**

DAY/HOUR	1	2	3		4	5	6	7
MON	EMF	ECA-II	**EM-I**		THPM	EDC	**EM-I**	
TUE	PLACEMENT TRAINING	ECA-II	EDC		**EM-I**	THPM	MEFA	EMF
WED	THPM	EDC	**EM-I**	LUNCH BREAK	MEFA	ECA-II	EMF	**EM-I**
THU	ECA-II	EMF	**EM-I**		EDC	PLACEMENT TRAINING	THPM	MEFA
FRI	MEFA	EMF	ECA-II		THPM	PLACEMENT TRAINING	EDC	EITK
SAT	THPM	ECA-II	EDC		MEFA	PLACEMENT	EMF	

S.No	Name Of The Faculty	Subject
1	Dr.M.Ajay Kumar	Electrical Circuit Analysis - Ii
2	Mr.M.Ramesh Kumar	Electrical Machines-I
3	Mr.G.Roopa Krishna Chandra	Electronic Devices And Circuits
4	Mr.M.Rama Krishna	Electro Magnetic Fields
5	Ms. B.Sri Chaitanya	Thermal And Hydro Prime Movers
6	Mrs.Vijaya Lakshmi	Managerial Economics & Financial Analysis
7	Ms. B.Sri Chaitanya /Mr. T.Subba Reddy	Thermal And Hydro Laboratory
8	Dr.M.Ajay Kumar/Ms.A.Sireesha	Electrical Circuits Laboratory

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- **Micro Lesson Plan:**

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Vijayawada

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

DETAILED LESSON PLAN

Academic Year: 2020-2021 **Faculty: Mr.M.Ramesh Kumar**

Programme	B.Tech, Electrical & Electronics Engineering
Semester	II Year - I Semester
Subject Title	Electrical Machines-I
Subject Code	R1921022
Class Hours	5 hours per week
Total Hours	70
Credits	3
Max Marks	100
Unit & Title	Unit-I: Construction and Operation of DC Machines
Teaching and Learning Tools	Black Board/ Power Point Presentation/Videos, E-material.

Course Objectives:

This subject provides students with

- To understand the construction, principle of operation and performance of DC machines.
- To study the characteristics, performance, methods of speed control and testing methods of DC motors.
- To predetermine the performance of single phase transformers with equivalent circuit models, methods of testing of single-phase transformer.
- To Analyze the three phase transformers and achieve three phase to two phase conversion.

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Session/ Module/ Day	Topic	Objectives	Before Class (Videos, E-Books, Case Studies)	In Class (Activities, Quiz, Solving Problems)	Post Class (Assignment , Discussion Forum)
Day-1	Introduction to Electrical Machines and Revising basic Electrical Circuits definitions and laws.	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	• Discuss pre-requisites (10 Min) • Class Delivery (30 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-2	Classification of Electrical Machines and Introduction to DC Machines.	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-3	Principle and Operation of a simple Machine using single loop generator	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-4	Construction of DC machine	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-5	EMF equation for generator	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.

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Day-6	Classification of DC machines based on excitation. (Separately-excited, Self-excited: Shunt Machines)	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-7	Classification of DC machines based on excitation. (Self-excited: Series, Compound Machines)	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	Learning outcomes – Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-8	Characteristics of DC Generators.	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-9	Open Circuit Characteristics of DC Shunt Generator	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.
Day-10	Applications of DC Generators	To revise the concepts of machines on specific parameters	https://www.electrical4u.com/applications-of-dc-generators/	Discuss pre-requisites (10 Min) PPT Presentation (30 Min) Poll activity (5 min) Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion.

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Day-11	Problems on Generated EMF, Shunt Generator	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion. ❖ Assignment on EMF equation
Day-12	Problems on Series and Compound Generator	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion. ❖ Assignment on Self-excited Machines
Day-13	Problems on Open Circuit Characteristics of DC Machine	To understand the construction, principle of operation and performance of DC machines	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Assimilate the concepts of electromechanical energy conversion. ❖ Assignment on critical speed and critical resistance calculation
Day-14	Introduction to DC Motors, Principle and operation of DC Motor	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.

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Day-15	Classification of Motors and their relevant equations	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-16	Significance of Back-EMF and Torque	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-17	Classification of DC machines based on excitation. (Separately-excited, Self-excited: Shunt Machines)	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-18	Classification of DC machines based on excitation. (Self-excited: Series, Compound Machines)	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-19	Classification of Torques in DC Motors	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutatio

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					n in dc machines.
Day-20	Armature Reaction	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf https://www.electrical4u.com/armature-reaction-in-dc-machine/	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-21	Commutation	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf https://www.electricalstudynotes.com/2017/05/commutation.html	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-22	Different types of characteristics to determine Performance of DC Motor (Separately – Excited, Shunt)	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-23	Different types of characteristics to determine Performance of DC Motor (Series, Compound Motor)	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.

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Day-24	Losses in a DC Machine	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf https://www.electrical4u.com/losses-in-dc-machine/	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-25	Efficiency of a DC Machine	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf https://www.electrical4u.com/losses-in-dc-machine/	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-26	Applications of DC Motors	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf https://circuitglobe.com/applications-of-dc-machines.html	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-27	Problems on Generated EMF, Shunt Motor	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines. ❖ Assignment of Back-EMF

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Day-28	Problems on Series and Compound Motor	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines. ❖ Assignment of self Excited Machines-EMF
Day-29	Problems on losses and efficiency	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines. ❖ Assignment on efficiency calculation
Day-30	Problems on losses and efficiency	To describe the effect of Armature Reaction, importance of Commutation and losses in a DC Machine.	Electrical Machines text book	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
Day-31	Introduction to the importance of Starter in Machines	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.

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Day-32	Types of starters used for DC motor starting.	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-33	Types of starters used for DC motor starting.	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-34	Speed Control of DC Machines (Shunt Motor)	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.electrical4u.com/speed-control-of-dc-motor/	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-35	Speed Control of DC Machines-(Series Motor)	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.electrical4u.com/speed-control-of-dc-motor/	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-36	Testing of DC Machines-Brake test	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.

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Day-37	Testing of DC Machines- Swinburne's test	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-38	Testing of DC Machines- Hopkinson's test	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.electrical4u.com/hopkinsons-test/	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-39	Testing of DC Machines- Retardation test	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.electricalengineeringinfo.com/2014/03/Retardation-test-on-dc-machines.html	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-40	Separation of Losses	To study the methods of speed control and methods of testing methods to calculate the efficiency	Electrical Machines text book https://www.slideshare.net/sureshshindhe1/separation-of-losses-in-a-dc-shunt-motor	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Understand the torque production mechanism and control the speed of dc motors.
Day-41	Introduction to Transformers, laws, Types of Transformers based on operation	To explain the principle and operation of transformer, equivalent circuit models of transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single phase transformers .

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Day-42	Construction of Transformers in detail, Transformation Ratio	To explain the principle and operation of transformer, equivalent circuit models of transformers	https://www.youtube.com/watch?v=Cx4_7lIjoBA https://www.electricaleasy.com/2014/03/electrical-transformer-basic.html	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers .
Day-43	Principle of Operation of transformer	To explain the principle and operation of transformer, equivalent circuit models of transformers	https://www.electronics-tutorials.ws/transformer/transformer-basics.html https://www.youtube.com/watch?v=agujzHdvtjc	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers .
Day-44	EMF Equation for transformers	To explain the principle and operation of transformer, equivalent circuit models of transformers	https://circuitglobe.com/emf-equation-of-the-transformer.html	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers .
Day-45	Phasor diagram of transformer at different loads	To explain the principle and operation of transformer, equivalent circuit models of transformers	https://www.youtube.com/results?search_query=phasor+diagram+of+transformer	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers .

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Day-46	Implementation of Equivalent Circuit for Transformer	To explain the principle and operation of transformer, equivalent circuit models of transformers	https://www.youtube.com/results?search_query=equivalent+circuit+of+transformer	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single phase transformers .
Day-47	Voltage Regulation of Transformer	To explain the principle and operation of transformer, equivalent circuit models of transformers	https://www.electrical4u.com/voltage-regulation-of-transformer/	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers .
Day-48	Losses and Efficiency of Transformer	To explain the principle and operation of transformer, equivalent circuit models of transformers	https://www.electricaleasy.com/2014/04/transformer-losses-and-efficiency.html	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers .
Day-49	Effect of variation of frequency and supply voltage on losses	To explain the principle and operation of transformer, equivalent circuit models of transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers .

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Day-50	All-day Efficiency, Problem	To explain the principle and operation of transformer, equivalent circuit models of transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single phase transformers .
Day-51	Problems on EMF Equation	To explain the principle and operation of transformer, equivalent circuit models of transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single phase transformers . ❖ Assignment on EMF calculation
Day-52	Problems on Voltage Regulation	To explain the principle and operation of transformer, equivalent circuit models of transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Analyze the performance ; predetermine regulation, losses and efficiency of single-phase transformers . ❖ Assignment on VR calculation
Day-53	Problems on losses and Efficiency	To explain the principle and operation of transformer, equivalent circuit models of transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able ❖ Analyze the performance ; predetermine regulation, losses and

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					efficiency of single-phase transformers . ❖ Assignment on Efficiency calculation
Day-54	Introduction to testing of single phase Transformers OC, SC Test	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers	https://www.ee.iitb.ac.in/course/~emlab/assets/oc_sc.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers , control voltages with tap changing methods and achieve three-phase to two-phase transformation.
Day-55	Sumpner's test, separation of losses	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect 3- phase transformers	https://circuitglobe.com/sumpners-test-or-back-to-back-test-on-transformer.html	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.
Day-56	parallel operation with equal voltage ratios	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers	https://www.electrical4u.com/parallel-operation-of-transformers/	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers , control voltages with tap changing methods and achieve three-phase to two-phase transformation.

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Day-57	Auto Transformer and comparison with ordinary transformer	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.
Day-58	Problems on OC and SC test of transformer	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.
Day-59	Problems on OC and SC test of transformer	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.
Day-60	Poly-phase connections - Y/Y, Y/Δ,	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers.	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-

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					phase transformation.
Day-61	Poly-phase connections -Δ/Y, Δ/Δ and open Δ	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers	Electrical Machines text book https://www.amieindia.in/downloads/ebooks/electrical2-theraja.pdf	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.
Day-62	Scott connection	To Analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers	Electrical Machines Text Book https://circuitglobe.com/scott-t-transformer-connection.html	• Revise Previous Class (5 Min) • PPT Presentation (35 Min) • **Poll activity** (5 min) • Summery (5min)	**Learning outcomes –** Students should be able to: ❖ Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.

Course Outcomes:

Upon successful completion of this course, student should be able to:

CO1:- To explain the construction, principle of operation and performance of DC machines.

CO2:- To describe the importance, effect and remedial methods of Armature Reaction, commutation and Losses in a DC Machine.

CO3:- To study the different methods of speed control and analyze the methods to test the performance of DC Machines to calculate the efficiency at any load.

CO4:- To explain the principle and operation of transformer, equivalent circuit models of transformers.

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CO5:- To analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers.

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LESSON PLAN - DAY WISE

Course Outcomes:

S. No	Outcomes	Lesson Objectives
1	Factual	❖ Explain the concepts of electromechanical energy conversion and their operation.
2	Conceptual	❖ Mitigate the ill-effects of armature reaction and improve commutation in dc machines. ❖ Understand the torque production mechanism and control the speed of dc motors.
3	Procedural	❖ Analyze the performance of single-phase transformers. ❖ Predetermine regulation, losses and efficiency of single-phase transformers.
4	Applied	❖ Parallel transformers, control voltages with tap changing methods and achieve three phases to two-phase transformation.

Schedule and Sequence: Day Plan

Text Books:

1. Electrical Machines by P.S. Bhimbra, Khanna Publishers
2. Electric Machinery by A.E.Fitzgerald,Charles Kingsley, Stephen D.Umans, TMH

Reference Books:

1. Electrical Machines by D. P.Kothari, I .J .Nagarth,Mc Graw Hill Publications, 4th edition
2. Electrical Machines by R.K.Rajput, Lakshmi publications, 5th edition.
3. Electrical Machinery by Abijith Chakrabarthi and Sudhipta Debnath, Mc Graw Hill education 2015
4. Electrical Machinery Fundamentals by Stephen J Chapman Mc Graw Hill education 2010
5. Electric Machines by Mulukutla S.Sarma&Mukesh k.Pathak, CENGAGE Learning.
6. Theory & Performance of Electrical Machines by J.B.Guptha. S.K.Kataria & Son

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Vijayawada

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

METHODS IMPLEMENTED IN MICRO LESSON PLAN

Academic Year: 2020-2021 **Faculty: Mr.M.Ramesh Kumar**

Programme	B.Tech, Electrical & Electronics Engineering
Semester	II Year - I Semester
Subject Title	Electrical Machines-I
Subject Code	R1921022
Class Hours	5 hours per week
Total Hours	70
Credits	3
Max Marks	100
Unit & Title	Unit-I: Construction and Operation of DC Machines
Teaching and Learning Tools	Black Board/ Power Point Presentation/Videos, E-material.

Detailed – Lesson 1 **Construction and Operation of DC Machines** **Lesson Objectives:**	
Factual	Students will be able to understand the parts of a DC Machine and observe the difference between AC and DC Machine.
Conceptual	Students will be able to Classify the Machines based on the connection and also on Excitation.
Procedural	Students should be able to Analyze the characteristics of DC Machines based on the expressions of Voltage, Current.

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Applied	Students should be able to solve the problems with the help of pre-defined formulae.

Taxonomy of Objectives:

Taxonomy of Objectives						
Knowledge Dimension	**The Cognitive Process Dimension**					
	Remember	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
Factual Knowledge	1					
Conceptual Knowledge		2, 3				
Procedural Knowledge			4			
Meta Cognitive Knowledge						

Prerequisite Knowledge:

Magnetism, Flemings Right- & Left-Hand Rules, Faradays Law of Electromagnetic Induction, Kirchoffs Laws and Ohms Law.

Micro Lesson Plan: Day -1. Construction of DC Machine

1. Pre-task Activity- Introducing the Machine

In pre-task, i planned to give introduction about the machine and recall the basic definitions.

Video Link: https://youtu.be/d_LOXUEFA-o

2. In-class Activity: Construction of DC Machine

Key Words to Remember:

Yoke, Pole Core, Armature Core, Armature Winding, Commutator, Brushes & Brush Holders.

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Teacher/Instructor: Mr. Ramesh Kumar
Department of Electrical & Electronics Engineering
Assistant Professor of EEE

Lesson Plan for a Day
Term/Semester/Year: Sem- I- Syllabus 2019 -20

MICRO LESSON PLAN

(ACCORDING TO BLOOMS DIGITAL TAXONOMY)

Programme	B. Tech, Electrical & Electronics Engineering
Semester	II Year - I Semester
Subject Title	Electrical Machines-I
Subject Code	R1921022
Class Hours	5- Hours per week
Total Hours	70
Credits	3
Max Marks	100
Unit & Title	Unit-I: Construction and Operation of DC Machines
Teaching and Learning	Black Board/ Power Point Presentation/Videos, E-material.

Detailed – Lesson 1 **Construction and Operation of DC Machines** **Lesson Objectives:**	
Factual	Students will be able to understand the parts of a DC Machine and observe the difference between AC and DC Machine.
Conceptual	Students will be able to Classify the Machines based on the connection and also on Excitation.
Procedural	Students should be able to Analyze the characteristics of DC Machines based on the expressions of Voltage, Current.
Applied	Students should be able to solve the problems with the help of pre-defined formulae.

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Prerequisite Knowledge:

Magnetism, Flemings Right- & Left-Hand Rules, Faradays Law of Electromagnetic Induction, Kirchoffs Laws and Ohms Law.

Micro Lesson Plan: Day -1. Construction of DC Machine

1. Pre-task Activity- Introducing the Machine

In pre-task, i planned to give introduction about the machine and recall the basic definitions.

Video Link: https://youtu.be/d_LOXUEFA-o

2. In-class Activity: Construction of DC Machine

Key Words to Remember:

Yoke, Pole Core, Armature Core, Armature Winding, Commutator, Brushes and Brush Holders.

❖ How to Draw the Construction of DC Machine?

➢ The DC Machine can be drawn just by drawing 11 Circles.

Circle-1: Shaft

Circle-2 & Circle-3: Commutator
Commutator Segments

Circle-4: Magnetic Flux lines in Armature

Circle-5 & Circle-6: Armature Core,
Armature Slots
Armature Teeth

Circle-7 & Circle-8: Pole shoe

Circle-8 & Circle-9: Pole Core

Circle-10: Magnetic Flux Lines

Circle-11: Yoke

Note: Thick Circles: 1,2,3,11
Thin Circles: 4,5,6,7,8,9,10

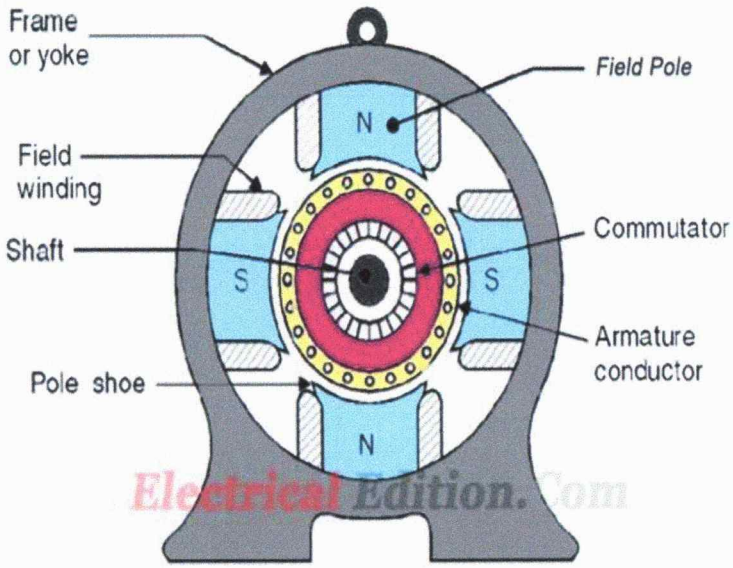

Fig .1 Construction of a DC Machine

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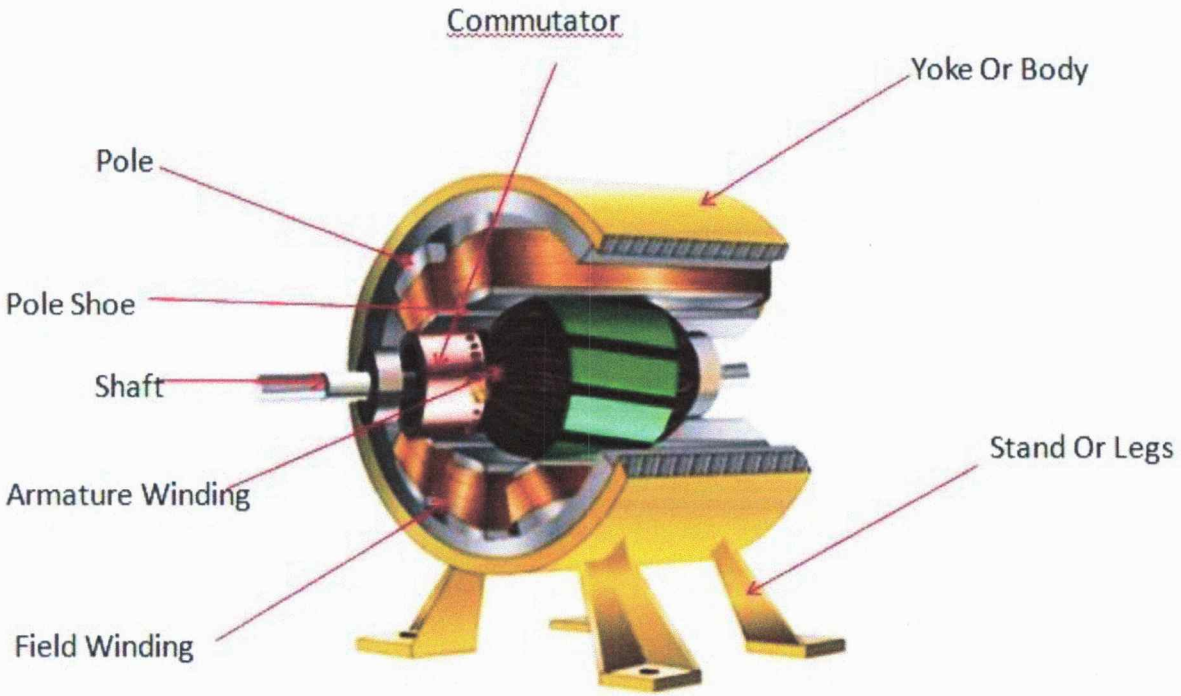

Fig.2 Practical DC Machine Construction

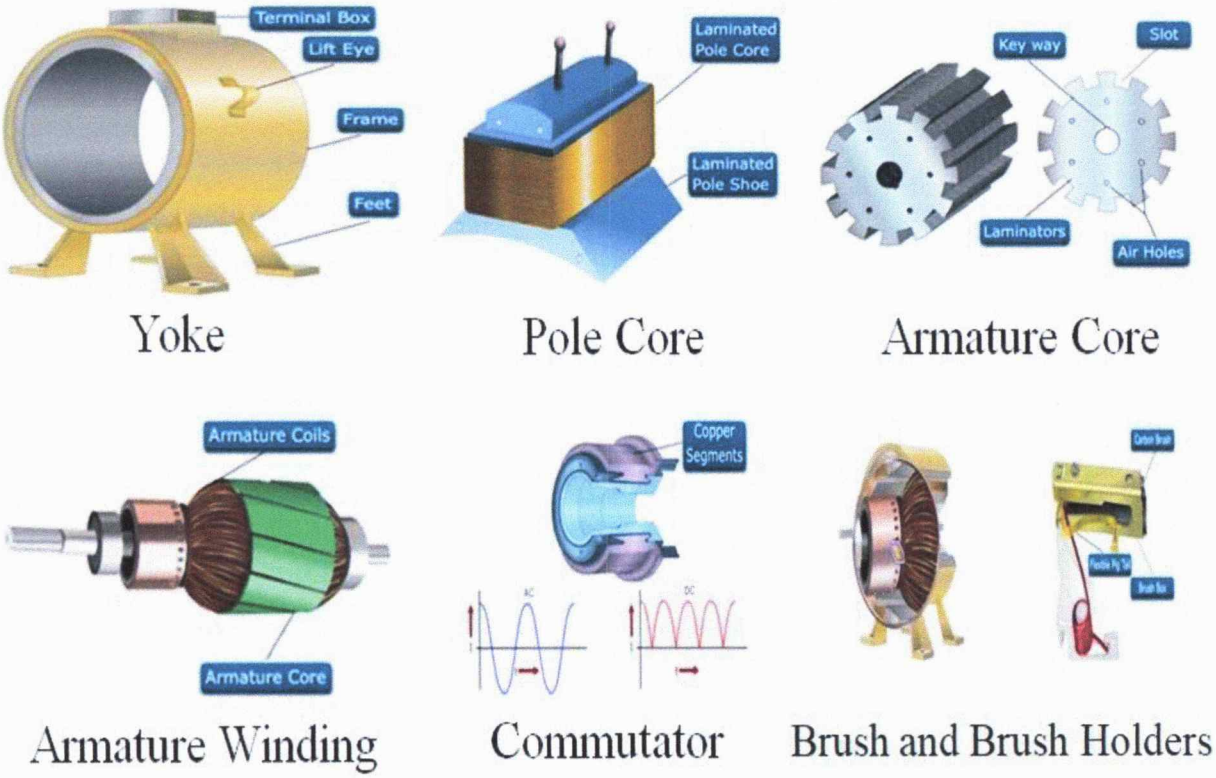

Fig.3 Key Parts of a DC Machine

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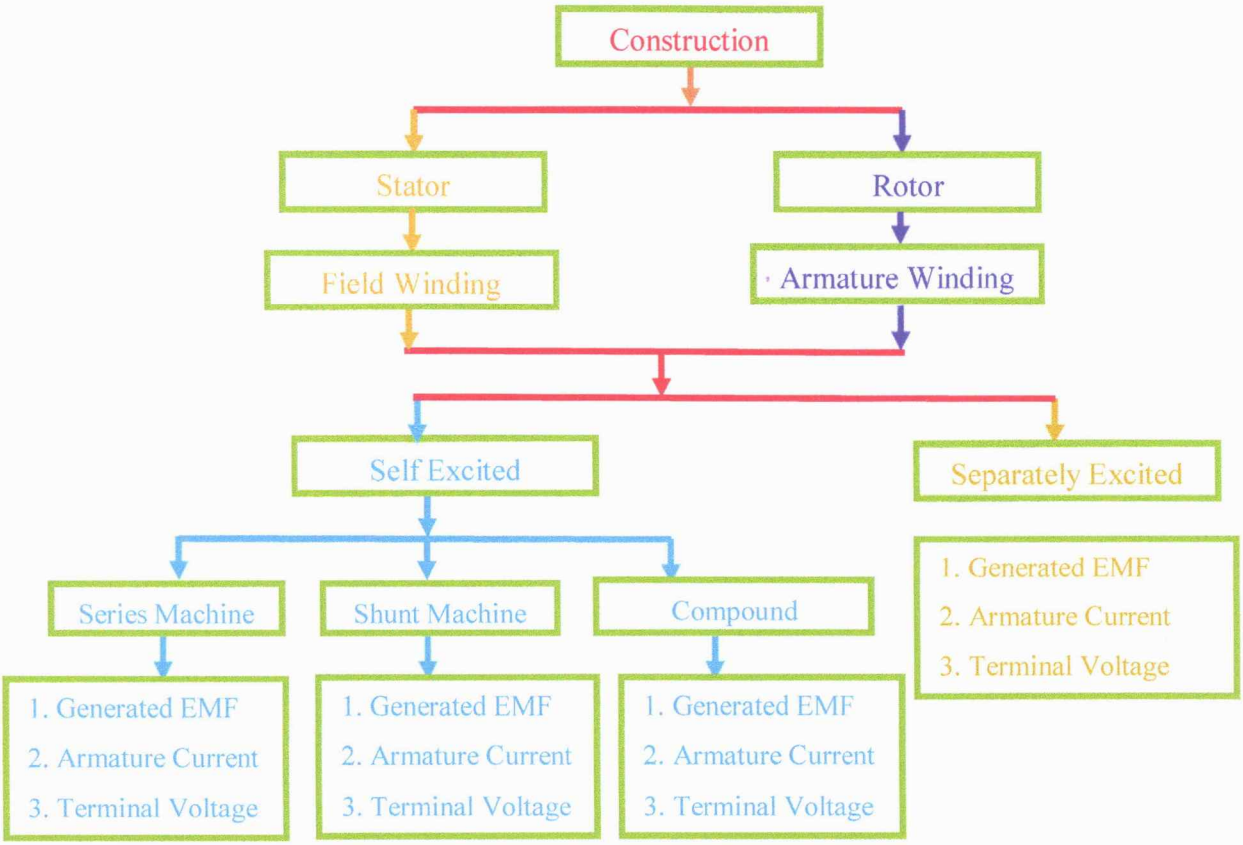

Fig.4 Block Diagram Representation for Classification of a DC Machine

3. Post – task Activity:

In Post task activity revising the class, clarifying the doubts and asking questions to know the response.

Question 1:

1. Where is field winding mounted in a DC machine?
   a. Stator b. Rotor c. Any Where on Stator or Rotor d. Absent

Question 2:

2. Which of the following part is used in construction of DC machine but not in AC machine?
   a. Armature winding b. Field Winding c. Commutator d. Shaft

Question 3:

3. Which material is used for brushes in dc machines?
   a. Iron b. Carbon c. Aluminium d. Steel

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5. Summary

- Faradays First law states that whenever a conductor cuts the Magnetic Field an EMF is induced.
- Yoke is to provide Protection and Mechanical Strength for Field Pole.
- Pole core consists of Field Winding and the Pole shoe.
  - The purpose of field winding is to produce artificial magnetic field called a Main Flux.
  - The purpose of pole shoe is to project the main flux on to the armature conductors to induce EMF.
- Armature core consists of Armature Slots, Armature Teeth and Armature Winding.
  - The purpose of armature slots is to house the armature conductors called as armature winding.
  - The purpose of armature winding is to generate EMF and to deliver current to external circuit through Brushes.
- The EMF that we are obtaining from armature winding is Alternating in nature but we have the applications on Direct quantity that's why are using Commutator known as split rings. Commutator is used to convert Alternating Quantity to DC Quantity.
- The Brushes are connected to the commutator to collect the current from the armature winding and supply to the external load.

6. References

1. Electrical Machines by P.S. Bhimbra, Khanna Publishers.
2. Electrical Machinery by Abijith Chakrabarthi & Sudhipta Debnath, McGraw Hill education 2015.
3. Electrical Machines by R.K.Rajput, Lakshmi publications, 5th edition.

Course Outcomes:

CO1:- To explain the construction, principle of operation and performance of DC machines.

CO2:- To describe the importance, effect and remedial methods of Armature Reaction, commutation and Losses in a DC Machine.

CO3:- To study the different methods of speed control and analyze the methods to test the performance of DC Machines to calculate the efficiency at any load.

CO4:- To explain the principle and operation of transformer, equivalent circuit models of transformers.

CO5:- To analyze the different testing methods for single-phase transformers, Poly-phase Connections to connect three phase transformers

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CO-PO Mapping Table:

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	-	2	-	-	-	-	2	-	-	-	2	-
CO2	3	3	-	2	-	-	-	-	2	-	-	-	2	-
CO3	2	3	-	2	-	-	-	-	2	-	-	-	2	-
CO4	3	3	-	2	-	-	-	-	2	-	-	-	2	-
CO5	3	2	-	2	-	-	-	-	2	-	-	-	2	-

CO-PO MAPPING JUSTIFICATION:

- The course outcomes CO1, CO3 are moderately mapped & CO2, CO4, and CO5 are highly mapped with PO1 because of the huge mathematical calculations and remembering the basics to understand the concepts.
- The course outcomes CO1, CO2, CO3 & CO4 are highly mapped, and CO5 is moderately mapped with PO2 because of the involvement of design aspects to reduce the losses.
- The course outcomes CO1, CO2, CO3, CO4, and CO5 are moderately mapped with PO4 due to the requirement of concepts related to machines for better understanding.
- The course outcomes CO1, CO2, CO3, CO4, and CO5 are moderately mapped with PO9 because of the involvement of new design methods and parameter calculation to improve the machine efficiency.
- The course outcomes CO1, CO2, CO3, CO4, and CO5 are moderately mapped with PSO1 because of the requirement of exact values of the parameters to reduce the losses and indirectly helping the machine to grab more applications in real world.

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Micro Lesson Plan:

Subject : DATA STRUCTURES		
Year : I B-Tech	Semester: II	Branch : IT
Faculty : L KANYA KUMARI	Reg : R20	Academic Year : **2020-21**

COURSE OBJECTIVES:

- Introduce the fundamental concept of data structures and abstract data types
- Emphasize the importance of data structures in developing and implementing efficient algorithms
- Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

COURSE OUTCOMES:

After completing this course, a student will be able to:

1	**Factual**	CO1 : Summarize the properties, interfaces, and behaviors of basic abstract data types.
2	**Conceptual**	CO2 : Discuss the computational efficiency of the principal algorithms for sorting & searching.
3	**Procedural**	CO3 : Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs. CO4 : Demonstrate different methods for traversing trees
4	**Applied**	CO5 : Apply different types of data structures using any programming languages to solve real time applications

TEXT BOOKS:

1) Data Structures Using C. 2nd Edition. Reema Thareja, Oxford.
2) Data Structures and algorithm analysis in C, 2nded, Mark Allen Weiss

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CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Introduction to Data Structures	To introduce data structures concept	Video Link : https://www.youtube.com/watch?v=StLSP-v3LdE Text Book : Pdf (e-book) Upload Web Link : https://www.studytonight.com/data-structures/introduction-to-data-structures	Discussion on pre-requisites (10 Min) PPT presentation (30 Min) Discussion or **Poll activity** (5 min) Summery (5min) Doubts clari-fication (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
2.	Classification of Data Structures	To understand the classification of data structures	Video Link : https://www.youtube.com/watch?v=T9DSBhBR_I4 Web Link: https://subscription.packtpub.com/book/application_development/9781789618501/1/ch01lvl1sec11/classification-of-data-structures-and-structural-design-patterns#:~:text=Linear%20data%20structures%20are%20lists,%2C%20tree%20sets%2C%20and%20sequences.	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (10 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
3.	Operations on Data Structures,	To understand the operations performed on data structures	Video Link : https://www.youtube.com/watch?v=lHVMJbbyTfg Web Link : https://scanftree.com/Data_Structure/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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				Example (15 min) Doubts clarification (10 min)	
4.	Abstract Data Type (ADT)	To understand ADT	Video Link : https://www.youtube.com/watch?v=n0e27Cpc88E Web Link : https://www.geeksforgeeks.org/abstract-data-types/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
5.	Preliminaries of algorithms	To understand the algorithm preliminaries	Video Link : https://www.youtube.com/watch?v=HtSuA80QTyo Web Link : http://cs.tsu.edu/ghemri/CS248/ClassNotes/Algorithm%20Analysis_2.pdf	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
6.	Time and Space complexity.	To understand time and space complexity	Video Link : https://www.youtube.com/watch?v=Si9MzFqBs8E Web Link : https://afteracademy.com/blog/time-and-space-complexity-analysis-of-algorithm	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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				Example (15 min) Doubts clarification (10 min)	Exercises to solve
7.	Linear search	To understand Linear search technique	Video Link : https://www.youtube.com/watch?v=C46QfTjVCNU Web Link : https://www.geeksforgeeks.org/linear-search/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Exercises to solve
8.	Binary search	To understand binary search technique	Video Link : https://www.youtube.com/watch?v=P3YID7liBug Web Link : https://www.geeksforgeeks.org/binary-search/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Exercises to solve
9.	Fibonacci search	To understand fibonacci search technique	Video Link : https://www.youtube.com/watch?v=fDeR4GBNaqM Web Link : https://www.geeksforgeeks.org/fibonacci-search/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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				Example (15 min) Doubts clarification (10 min)	Quiz
10.	Insertion sort	To understand Insertion sort	Video Link : https://www.youtube.com/watch?v=yCxV0kBpA6M Web Link : https://www.geeksforgeeks.org/insertion-sort/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Quiz
11.	Selection sort	To understand Selection sort technique	Video Link : https://www.youtube.com/watch?v=9oWd4VJOwr0 Web Link : https://www.geeksforgeeks.org/selection-sort/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Assignment – 1
12.	Bubble sort	To understand bubble sort technique	Video Link : https://www.youtube.com/watch?v=o4bAoo_gFBU Web Link : https://www.geeksforgeeks.org/bubble-sort/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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				Example (15 min) Doubts clarification (10 min)	Assignment – 1
13.	Quick sort	To understand quick sort technique	Video Link : https://www.youtube.com/watch?v=QN9hnmAgmOc Web Link : https://www.geeksforgeeks.org/quick-sort/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Assignment – 1
14.	Radix sort	To understand radix sort technique	Video Link : https://www.youtube.com/watch?v=JMlYkE8hGJM Web Link : https://www.geeksforgeeks.org/radix-sort/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Assignment – 1
15.	Merge sort	To understand merge sort technique	Video Link : https://www.youtube.com/watch?v=jlHkDBEumP0 Web Link : https://www.geeksforgeeks.org/merge-sort/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (20 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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				Example (15 min) Doubts clarification (10 min)	Assignment – 1

UNIT – 2 : LINKED LIST **[Total Classes : 10]**

Activity:

1	**Factual**	Reading Prerequisite concepts- Definitions Videos related to Linked Lists, Referring the content on the Internet
2	**Conceptual**	Video Lectures related to DS NPTEL Videos Links from the Internet Animations of Linked Lists Explained Examples from Internet
3	**Procedural**	Refer to text book content Syntax with examples(simple to complex)
4	**Applied**	Installation demo / Video demo Implementing Programs Assignments Quiz etc…

Activity / Schedule of UNIT-2 :

Pre-Class : Videos, E-books, Web links, Case Studies etc…
In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..
Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc….

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CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Linked List: Introduction, Single linked list	To understand about linked list	Video Link : https://www.youtube.com/watch?v=dmb1i4oN5oE Web Link : https://www.tutorialspoint.com/data_structures_algorithms/linked_list_algorithms.htm#:~:text=Advertisements,used%20data%20structure%20after%20array.	Discussion on pre-requisites (10 Min) PPT presentation (30 Min) Discussion or **Poll activity** (5 min) Summery (5min) Doubts clari-fication (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
2.	Representation of Linked list in memory, Operations on Single Linked list-Insertion	To understand insertion operation	Video Link : https://www.youtube.com/watch?v=dq3F3e9o2DM Web Link : https://www.tutorialspoint.com/data_structures_algorithms/linked_list_algorithms.htm#:~:text=Advertisements,used%20data%20structure%20after%20array	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
3.	Deletion	To understand deletion operation	Video Link : https://www.youtube.com/watch?v=ClvYytk5Rlg Web Link : https://www.tutorialspoint.com/data_structures_algorithms/linked_list_algorithms.htm#:~:text=Advertisements,used%20data%20structure%20after%20array	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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4.	Search and Traversal ,Reversing Single Linked list	To understand Search and reverse operations	Video Link : https://www.youtube.com/watch?v=Tk_fi5l8cag Web Link : https://www.tutorialspoint.com/data_structures_algorithms/linked_list_algorithms.htm#:~:text=Advertisements,used%20data%20structure%20after%20array	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
5.	Applications on Single Linked list- Polynomial Expression Representation	To understand application of single linked list	Video Link : https://www.youtube.com/watch?v=hM-rvbVJ4Po Web Link : https://www.geeksforgeeks.org/adding-two-polynomials-using-linked-list/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
6.	Addition and Multiplication	To understand addition and multiplication of 2 polynomials	Video Link : https://www.youtube.com/watch?v=hAu7vIbqjKQ Web Link : https://www.geeksforgeeks.org/adding-two-polynomials-using-linked-list/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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7.	Sparse Matrix Representation using Linked List	To understand about sparse matrix	Video Link : https://www.youtube.com/watch?v=V3TAtTtC4Xs Web Link : http://www.btechsmartclass.com/data_structures/sparse-matrix.html	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
8.	Advantages and Disadvantages of Single Linked list	To know the advantages and disadvantages of linked lists	Video Link : https://www.youtube.com/watch?v=lAn95WaWsq8 Web Link : https://www.thecrazyprogrammer.com/2016/11/advantages-disadvantages-linked-list.html	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
9.	Double Linked list-Insertion, Deletion	To understand the operations on DLL	Video Link : https://www.youtube.com/watch?v=v4szCPs9yEY Web Link : https://www.geeksforgeeks.org/doubly-linked-list/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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10.	Circular Linked list-Insertion, Deletion	To understand operations on CLL	Video Link : https://www.youtube.com/watch?v=fmfx1C4TTxw Web Link : https://www.geeksforgeeks.org/circular-linked-list/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

UNIT – 3 : Queues and Stacks **[Total Classes : 10]**

Activity:

1	**Factual**	Reading Prerequisite concepts-definitions, Videos related to stacks and queues, Referring the content on the Internet
2	**Conceptual**	Video Lectures related to Big data NPTEL Videos Links from the Internet Animations of stacks and queues Explained Examples from Internet
3	**Procedural**	Refer to text book content Syntax with examples(simple to complex)
4	**Applied**	Installation demo / Video demo Implementing Programs Assignments Quiz etc…

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Activity / Schedule of UNIT-3 :

Pre-Class : Videos, E-books, Web links, Case Studies etc…
In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..
Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc….

CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Queues: Introduction to Queues, Representation of Queues-using Arrays	To understand queue data structure	Video Link : https://www.youtube.com/watch?v=YqrFeU90Coo Web Link : https://www.sanfoundry.com/c-program-queue-using-array/	Discussion on pre-requisites (10 Min) PPT presentation (30 Min) Discussion or **Poll activity** (5 min) Summery (5min) Doubts clari-fication (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
2.	Queues using linked list	To understand queues using linked lists	Video Link : https://www.youtube.com/watch?v=RN1wzY_tnYU Web Link : https://www.geeksforgeeks.org/queue-linked-list-implementation/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
3.	Application of Queues-Circular Queues	To understand CLL	Video Link : https://www.youtube.com/watch?v=40Ttkii9NPA Web Link :	Revise previous class – (5 mins) Asking Questions on previous class	Discussion Forum on the topic in the group Review on the topic

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			https://www.geeksforgeeks.org/circular-queue-set-2-circular-linked-list-implementation/	randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Share material on the topic
4.	Deques	To understand Dequeus	Video Link : \https://www.youtube.com/watch?v=PjD31Yyhc_U Web Link : https://runestone.academy/runestone/books/published/pythonds/BasicDS/TheDequeAbstractDataType.html	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
5.	Priority Queues, Multiple Queues	To understand priority queues	Video Link : https://www.youtube.com/watch?v=NlEwbC6Nt0c Web Link : https://www.geeksforgeeks.org/priority-queue-set-1-introduction/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
6.	Stacks: Introduction to Stacks, Array Representation of Stacks, Operations on Stacks	To understand implementation of stacks using arrays	Video Link : https://www.youtube.com/watch?v=VmsTAVpz0xo Web Link :	Revise previous class – (5 mins) Asking Questions on previous class	Discussion Forum on the topic in the group

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			https://www.geeksforgeeks.org/stack-data-structure-introduction-program/	randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Review on the topic Share material on the topic
7.	Stacks using linked list	To implement stacks using linked lists	Video Link : https://www.youtube.com/watch?v=T_UXDTy23DQ Web Link : https://www.geeksforgeeks.org/implement-a-stack-using-singly-linked-list/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
8.	Applications-Reversing list, Factorial Calculation	To understand recursion and applcations	Web Link : https://www.programiz.com/c-programming/examples/factorial-recursion	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
9.	Infix to Postfix Conversion	To implement infix to post fix expression	Video Link : https://www.youtube.com/watch?v=PAceaOSnxQs Web Link :	Revise previous class – (5 mins) Asking Questions on previous class	Discussion Forum on the topic in the group

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			https://www.geeksforgeeks.org/stack-set-2-infix-to-postfix/	randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Review on the topic Share material on the topic
10.	Evaluating Postfix Expressions	To implement evaluation of postfix expression	Video Link : https://www.youtube.com/watch?v=u3paQa8KXu0 Web Link : https://www.geeksforgeeks.org/stack-set-4-evaluation-postfix-expression/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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UNIT – 4 : Tress **[Total Classes : 8]**

Activity:

1	**Factual**	Reading Prerequisite concepts Basic definitions, Videos related to trees, Referring the content on the Internet
2	**Conceptual**	Video Lectures related to Trees NPTEL Videos Links from the Internet Animations of Trees Explained Examples from Internet
3	**Procedural**	Refer to text book content Installation and Procedure Syntax with examples(simple to complex)
4	**Applied**	Implementing ProgramsAssignments Quiz etc…

Activity / Schedule of UNIT-4 :

Pre-Class : Videos, E-books, Web links, Case Studies etc…
In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..
Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc….

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CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Trees: Basic Terminology in Trees, Binary Trees- Properties,	To understand tree data structures	Video Link : https://www.youtube.com/watch?v=vvey2QCs98o Web Link : https://www.includehelp.com/data-structure-tutorial/binary-tree-definition-and-its-properties.aspx#:~:text=A%20binary%20tree%20is%20a,can%20be%20called%20as%20branches.	Discussion on pre-requisites (10 Min) PPT presentation (30 Min) Discussion or **Poll activity** (5 min) Summery (5min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
2.	Representation of Binary Trees using Arrays and Linked lists	To understand binary trees representation	Video Link : https://www.youtube.com/watch?v=2vYVemG0LkY Web Link : http://www.btechsmartclass.com/data_structures/binary-tree-representations.html	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
3.	Binary Search Trees- Basic Concepts, BST Operations: Insertion	To understand binary search tree	Video Link : https://www.youtube.com/watch?v=cySVml6e_Fc Web Link : https://www.geeksforgeeks.org/binary-search-tree-set-1-search-and-insertion/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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				Doubts clarification (10 min)	
4.	Deletion	To implement deletion operation on BST	Video Link : https://www.youtube.com/watch?v=cySVml6e_Fc Web Link : https://www.geeksforgeeks.org/binary-search-tree-set-2-delete/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
5.	Tree Traversals	To understand tree traversals	Video Link : https://www.youtube.com/watch?v=-b2lciNd2L4 Web Link : https://www.geeksforgeeks.org/tree-traversals-inorder-preorder-and-postorder/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
6.	Applications -Expression Trees, Heap Sort,	To understand the heap sort	Video Link : https://www.youtube.com/watch?v=Q_eia3jC9Ts Web Link : https://www.geeksforgeeks.org/heap-data-structure/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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				Doubts clarification (10 min)	
7.	Balanced Binary Trees- AVL Trees	To understand AVL trees	Video Link : https://www.youtube.com/watch?v=_8qqlVH5NC0 Web Link : https://www.geeksforgeeks.org/avl-tree-set-1-insertion/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic
8.	Insertion, Deletion and Rotations.	To understand the operations on AVL trees	Video Link : https://www.youtube.com/watch?v=_8qqlVH5NC0 Web Link : https://www.geeksforgeeks.org/avl-tree-set-1-insertion/	Revise previous class – (5 mins) Asking Questions on previous class randomely (5 Mins) PPT presentation (30 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic

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UNIT –5: GRAPHS **[Total Classes: 11]**

Activity:

1	**Factual**	Reading Prerequisite concepts- Basic definitions, Referring the content on the Internet
2	**Conceptual**	Video Lectures related to graphs NPTEL Videos Links from the Internet Animations of different graphs types Explained Examples from Internet
3	**Procedural**	Refer to text book Installation and Procedure Syntax with examples (simple to complex)
4	**Applied**	Implementing Programs Assignments Quiz etc…

Activity / Schedule of UNIT-5:

Pre-Class: Videos, E-books, Web links, Case Studies etc…
In-Class: Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..
Post-Class: Discussion Forum, Review on topic, Assessment, Quiz, Notes etc….

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Teacher/Instructor: Mrs L Kanya kumari
Department of Information Technology
Assistant Professor

Lesson Plan for a Day
Term/Semester/Year: Sem- I - Syllabus 2020-21

MICRO LESSON PLAN

(ACCORDING TO BLOOMS DIGITAL TAXONOMY)

Programme	B Tech – R16 2020-21
Semester	IV Year - I Semester
Subject Title	Mobile Computing
Subject Code	R164105C
Class Hours	5 hours per week
Total Hours	60
Credits	3
Max Marks	100
Unit & Title	Unit 1 – Mobile and Hand-held devices
Teaching and Learning Tools	Blended Learning, Google classrooms, Smart Board, Pedagogy, E-material, Quiz for **Post Task**

Detailed -UNIT-1 **Introduction to Mobile Computing and GSM** **Lesson Objectives**	
Factual	Students will be able to understand how the communication will be held between the mobile devices and the architecture of mobile devices.
Conceptual	Students will be able to classify different types of wireless devices and working principles of those devices.
Procedural	Students will be able to analyze the characteristics of wireless devices depending on the size and characteristics.
Applied	Students will be able to distinguish different devices based on the applications

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Prerequisite Knowledge: Basic knowledge on mobile devices

Micro Lesson Plan: Day -1. INTRODUCTION

1. **Pre-task Activity- Introducing the different types of handheld devices**
   In pre-task, I planned to give the introduction and working of mobile devices.

   Video link: https://www.youtube.com/watch?v=mTh25nvES6Y

2. **In-class Activity: "Introduction to handheld devices"**

   Keywords to remember: mobile computers, media recorders and communication devices.

Fig 1. Mobile Computers

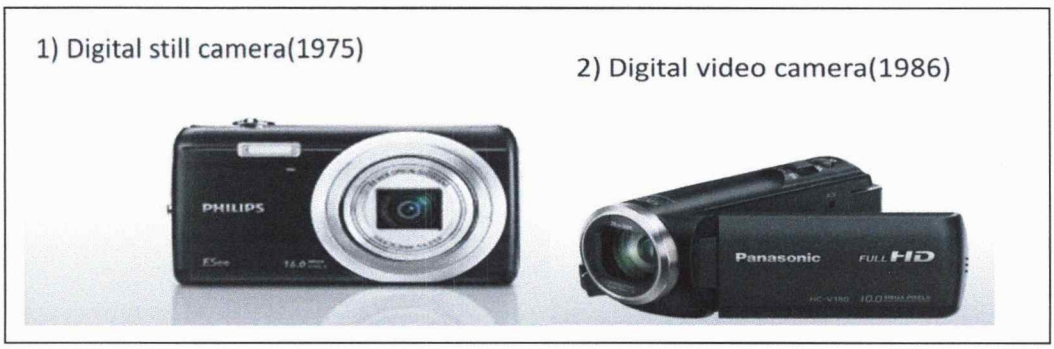

Fig 2. Media recorders

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Fig 3. Communication devices

3. Post – task Activity:

Graphical Representation of the creative response from the students of IT – (17-18) batch - Google classroom.

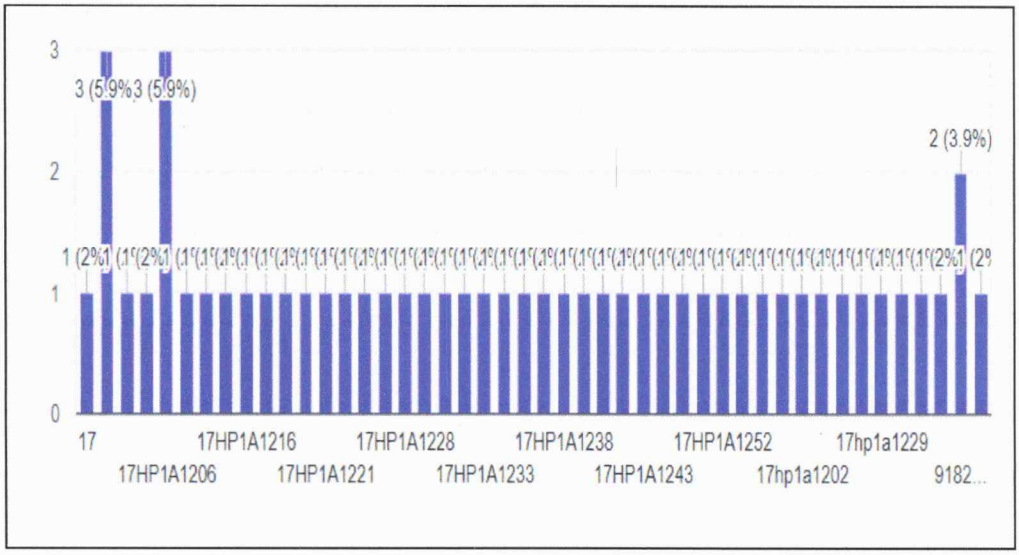

Fig 4. Quiz responses

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4. Students Involvement and points

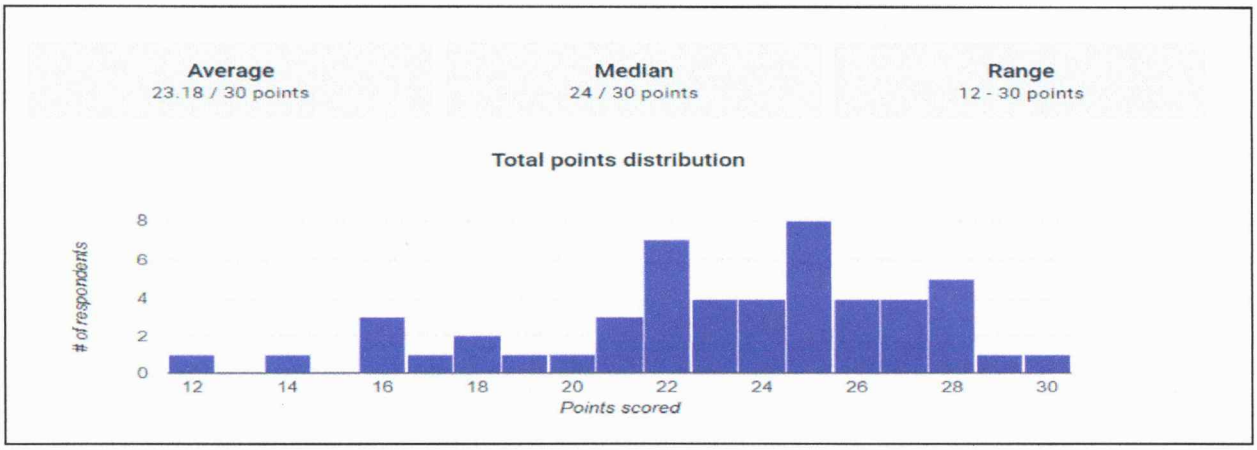
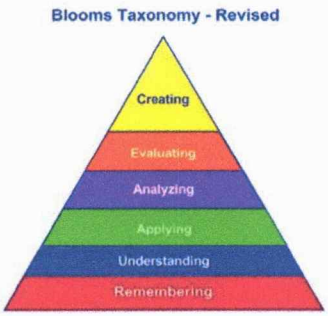


Fig 5. Quiz Points/ Marks



Taxonomy of Objectives: Specific Outcomes

Knowledge Dimension	The Cognitive Process Dimension					
	Remember	Understand	Apply	Analyze	Evaluate	Create
A. Factual Knowledge	SO-1,2	SO-1,2,3	SO-1,2,3			
B. Conceptual Knowledge	SO- 1,2,3	SO-1,2,3	SO-1,2,3			
C. Procedural Knowledge						

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D. Meta Cognitive Knowledge						

5. Discussion

- Students will be able to remember the different types of handheld devices characteristics and applications of devices
- The pre-task activity material will give them a conceptual knowledge about the properties of different handheld devices

6. Summary

This topic mainly concentrates on different types of handheld devices and their properties, advantages and disadvantages of devices. The diagrammatic representations, working procedure of those devices are also explained.

References

1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2009.
2. Raj Kamal, "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772

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• Time Table

DR.SR. CANDY DCUNHA - **Subject: ENGLISH**

DAY/HOUR	1	2	3	11:50	4	5	6	7	8
	9:00-10:00	10:00-10:55	10:55-11:50	12:45	12:45-1:40	1:40-2:30	2:30-3:20	3:20-4:10 EXAM	4:10-5:00 STUDY HOUR
MON				LUNCH					
TUE								CE	CE
WED		CE							
THU	CE				ECE-1				
FRI									
SAT	ECE-1					CE Revision			

Teacher/Instructor: Dr. Sr. Candy D'Cunha
Department of Science &Humanities
Associate Professor of English
Lesson Plan for a Day
Term/Semester/Year: Sem- I - Syllabus 2020-21

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MICRO LESSON PLAN

Main Objectives

- To develop fluency, confidence and accuracy in speaking English. A better career prospects as well as improvement in social life.
- To enhance students' knowledge of vocabulary in Engineering and vocabulary necessary for competitive exams like GRE.
- To support the intellectual development of students.
- Enabling all students to achieve the goals of human, social and career development as well as the community
- Learn basic LSRW abilities of English
- To attain fluency in speaking English
- Spend at least 10 minutes every day listening to a good video Lecture.
- To help students write creatively

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Detailed – Lesson 1 A Drawer Full of Happiness Lesson Objectives:		
1	Factual	Through this detailed Lesson '**A Drawer Full of Happiness'** students will develop an appreciation for language and literature. They will be able to explore creative insights through the text.
2	Conceptual	To understand the key concepts of Grammar and Vocabulary especially Naming Words and use them appropriately.
3	Procedural	Students should be able learn basic sounds and learn to identify those with various lexical.
4	Applied	To explore creative and imaginative ideas in a form of a project or any piece of formal writing. To understand social or transactional dialogues spoken by native speakers of English

Detailed Text: A Drawer Full of Happiness

Contents/Activities – Lesson 1

1	Factual	Reading Prescribed Text Basic Vocabulary & GRE Vocabulary Grammar LSRW Skills
	Conceptual	Video Lectures related to the text Grammar- Naming words Language Game

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3	Procedural	LSRW activities Quiz Discussion Board
4	Applied	Listening and Speaking activities Reading and Writing activities

Schedule and Sequence:

Day Plan for Lesson 1 - **A Drawer Full of Happiness**

Infotech Lesson 1 – Total Classes 4 per week

Session/week/ Module -1 Total Classes -4	**Topic**	**Objectives**	**Before Class - Videos, e-Books, Case studies**	**In-Class – Activities, Quiz (Micro teaching)**	**Post Class - Assignment, Discussion Forum**
Day-1	Introduction to **Drawer Full of Happiness**	To develop love for language and literature – through (Appreciating the text.)	Text book **e.g.** **A Drawer Full of Happiness** https://www.thehindu.com/opinion/open-page/a-drawer-full-of-happiness/article23343546.ece Videos Introduction to A Drawer Full of Happ	Brain storming Elicitation- on the topic of the text - (20 Min) Text – PPT (20 Min) Language game Puzzle, Quiz or **on the title of the text – Poll activity** (10 min) Students Creative response (10 min)	Learning outcome – • To understand the basic introductory note of the text • To understand the journalistic & creative style • To speak freely about the title of the text • To learn basic

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					vocabulary **Post on Discussion Forum**
Day-2	Text	To present creative insights of the writer through the text	Picture of1990s products – elicitation Share relevant pictures of the same https://www.google.com/search?sxsrf=ALeKk00IwiMMCL5WpkLMJfAICtEoUZWwKg:1593111298735&source=univ&tbm=isch&q=PICS+OF+1990+COSMETICS&sa **Source**: Internet	Revise previous class – (20 mins) Presenting Textual Ideas – (20 min) Language Game (10 min) Students Creative response (10 min)	Learning outcome • Students should be able to understand the basic idea of the text in the light of the title • They should learn basic grammar/ vocabulary dealt through language game • Answer questions related to the text
Day - 3	Grammar	To appreciate contextual Vocabulary and expressions through naming words.	Basic **noun** especially naming words / Video https://www.khanacademy.org/humanities/grammar/parts-of-speech-the-	PPT on **Noun** (20 min) Language game - **Functional words** (20 min) Solve problems - **Yes or no**	• Creative expression New insights through sentences (Present a topic)

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		Naming Words - .pptx	noun/grammar-nouns/v/introduction-to-singular-and-plural-nouns-the-parts-of-speech-grammar-khan-academy **Source**: Internet	**questions** – sheets etc (10 min) Do exercise (10 min)	**Post on Discussion Forum**
Day - 4	LSRW - Activity	To make students listen, speak, read and write through activities	Video clips for listening – text related or other Highlight short paragraphs from the text to explain punctuation- PPT	Video clips for listening – text related or other Highlight short paragraphs from the text to explain punctuation- PPT Video clips-speaking activity Observe a picture / Image Exploring creative insight (20 mim) Silent reading (20 mim) Learners Response (20 min)	Creative works through PPTS, any formal assignment. Able to write at least a few sentences correctly Able to write a few Dialogues Summary of the text Assignment / test on LMS
Revision					

Non -Detailed Text – Lesson 1

Deliverance by Premchand

Lesson Objectives:

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1	Factual	Through this non detailed Lesson '**Deliverance by Premchand**' students will develop extensive reading skill and comprehension for pleasure and profit.
2	Conceptual	To understand and identify the context, topic, and pieces of specific information through vocabulary and language.
3	Procedural	Through the text students will be able to understand the creative mind of the writer especially the element of translation.
4	Applied	To explore creative imagination in a form of a critical summary etc.

Non-Detailed Text: Deliverance by Premchand

Contents/Activities – Lesson 1

1	Factual	Presenting the text '**Deliverance by Premchand**' to discover the themes and motifs in the text.
2	Conceptual	Video Lectures related to the text to create pictorial effect upon the readers.
3	Procedural	To analysis various characters present in the text
4	Applied	To develop an appreciation for language and literature through creative expressions.

Schedule and Sequence: Non-Detailed Text: The Individual Society', Lesson 1
Day Plan for Lesson 1 - **Deliverance by Premchand**

Total Classes 4

Session/week/ Module -1	Topic	Objectives	Before Class - Videos, e-Books, Case studies	In-Class – Activities, Quiz	Post Class - Assignment,

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Total Classes 4				**(Micro teaching)**	**Discussion Forum**
Day-1	Introduction To the writer **-Premchand**	To explore the fatal effects of cast discrimination in Indian society and reflect upon the prejudiced norms highlighted in the text.	http://gclambathach.in/lms/Sadgati-Deliverance-1.pd - Critical appreciation of the text **Source**: Internet	Discussion 30 min 20 mins Elicitation 10 min Activity	A Few Insights about the writer **Post on Discussion Forum**
Day-2	Text	To present the summary of the text	https://litpile.wordpress.com/2017/07/31/the-deliverance-a-story-by-munshi-premchand/ - Text **Source**: Internet	40 min PPT 20 min Discussion/ Activity	Insights about the text **Post on Discussion Forum**
Day-3	Introduction to the characters of the text	To explore various qualities in the characters of the text	Handouts on characters: Dukhi Jhuria Pandit …. etc	30 min explanation on each character 30 min Discussion in groups	Create PPT about the characters **Post on Discussion Forum**
Day-4	Critical Appreciation / Themes/ Symbols/ rituals/ etc.	To instil in students, love for language through creative expression	http://gclambathach.in/lms/Sadgati-Deliverance-1.pd Re-reading the Critical Appreciation of the text **Source**: Internet	50 min Writing task- Character, Summary etc. 10 min	Assignment on the given theme **Post on Discussion Forum**
Revision					

Detailed – Lesson 2

Nehru's letter to his daughter Indira on her birthday

Lesson Objectives:

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1	Factual	To employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
2	Conceptual	Project the text Nehru's letter to his daughter Indira on her birthday.
3	Procedural	To speak about the various aspects / advice given by Nehru to his daughter.
4	Applied	To discover creative insights to write a 'Personal Letter '. Learners should be able to participate in activities such as role plays, discussions and structured talks/oral presentations in connection to Greetings and leave taking.

Detailed Text: Nehru's letter to his daughter Indira on her birthday

Contents/Activities – Lesson 2

1	Factual	Presenting the text in order to locate the underline meaning.
2	Conceptual	To understand the meaning of the given vocabulary and the related context in the letter.
3	Procedural	To pinpoint the message-oriented elements in the text.
4	Applied	To exhibit creative insights through letter writing - email To express freely the contextual dialogues.

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Schedule and Sequence: Detailed Text: Infotech - Lesson 2

Day Plan for Lesson 2 - **Nehru's letter to his daughter Indira on her birthday**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	Topic	Objectives	Before Class - Videos, e-Books, Case studies	In-Class – Activities, Quiz (Micro teaching)	Post Class - Assignment, Discussion Forum
Day-1	Introduction to the Text	To present Nehru's thoughts to his daughter Indira on his daughter's 13th Birthday.	**Text –** https://www.scoopwhoop.com/inothernews/nehrus-letter-to-indira-gandhi/ **Source**: Internet	Reading the text aloud 30 min Information about the text 20 mins Elicitation / Brainstorming 10 min Activity – Envelope activity	**Post on Discussion Forum** To create an email and with an official letter
Day-2	Explanation about the Text	To highlight various instances of the freedom movement.	Motivational Video on Freedom Movement https://www.youtube.com/watch=0PiOD8Tea-8 **Source**: Internet	Discussion on Freedom Movement 20 min Jot down the insights 20 mins Elicitation / Brainstorming 20 min Language Game on Vocabulary	Write a personal letter giving advice.
Day-3	Grammar	To understand appreciate the contextual vocabulary in the text	Use of articles and zero article; prepositions Videos on: Articles new preposition .pptx Articles.pptx	30 min explanation on each character	Create a few sentences and write them in your own words.

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Day-4	LSRW Skills	To make students listen, speak, read and write through task related activities	Quiz related actives will be assigned to the student before class which will cover various components of Grammar.	15 min Listening activity 15 mins Speaking Activity - drill 15 min Reading Activity 15 min Writing Activity	• Able to write the summary of the text. • Dialogues • Personal letter.

Revision

Non -Detailed – Lesson 2
Bosom Friend by Hira Bansode

Lesson Objectives:

1	Factual	Presenting the peom '**Bosom Friend by Hira Bansode'** to explore he themes in the poem
2	Conceptual	To understand the existing cast issues in India.
3	Procedural	To analysis Indianization in the text.
4	Applied	To develop an appreciation for language and literature through creative expressions and insights.

Non-Detailed Text

Contents/Activities – Lesson 2

1	Factual	Reciting the Poem to understand the implied meaning.

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2	Conceptual	Understanding the themes oppression, cast-discrimination and marginalization of Dalits in India.
3	Procedural	To appreciate language devices in the text.
4	Applied	To develop an appreciation for language and literature through creative expressions

Schedule and Sequence: Non-Detailed Text: The Individual Society', Lesson 2
Day Plan for Lesson 2 **- Bosom Friend by Hira Bansode**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	**Topic**	**Objectives**	**Before Class - Videos, e-Books, Case studies**	**In-Class – Activities, Quiz (Micro teaching)**	**Post Class - Assignment, Discussion Forum**
Day-1	Introduction to Non-Detailed Text	To explore various issues related to cast in the poem.	**Text – https://www. arsdcollege.ac.in/wp-content/ uploads /2020/05/AECC-Practice-Set-3.pdf** **Source**: Internet	Reading the poem aloud 10 min Explanation about the poem 30 mins Elicitation / Brainstorming 10 min Pair Activity	**Post on Discussion Forum**
Day-2	Explanation about the Text	To present the theme and summary of the poem	Video of the summary https://m.trending.network /view/qm0lTZ3ZG2s.htm **Source**: Internet	20 min Jot down the insights from the poem 20 mins Elicitation / Brainstorming 20 min Language Game on Vocabulary/ Indian vocabulary	Discussion on Dalit literature

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Day-3	Characters in the poem	To show the real meaning of **'Bosom Friend'**	Debate and discussion related questions to be given to the students.	30 min explanation on each character 30 mins Response from the learners	Writing a few thoughts on how to overcome social evils
Day-4	Critical implications of the text	To present overall idea in the text	Reading Material related to the poem	45 min Writing a summary and critical appreciation 15 mins Doubts clarification	**Post on Discussion Forum** Any other similar text with same theme – Assignment.
Revision					

Detailed – Lesson 3

Stephen Hawking- Positivity 'Benchmark'

Lesson Objectives:

1	Factual	Through this detailed Lesson **'Stephen Hawking- Positivity 'Benchmark'** students will develop an appreciation for language. They will be able to understand take Stephen Hawking's life as a role model.
2	Conceptual	To understand the key concepts of Grammar and Vocabulary especially Verbs - tenses; subject-verb agreement; direct and indirect speech, reporting verbs for upgrading grammatical skills.
3	Procedural	Students should be able learn basic sounds and learn to identify those with stress linguistic devices
4	Applied	To explore creative and imaginative ideas in a form of a Letter writing-types, E-mail, Writing CV's. To understand social or transactional dialogues spoken by native speakers of English in situations like 'Complaining and

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		Apologizing.'

Detailed Text

Contents/Activities – Lesson 3

1	Factual	Reading Prescribed Text to understand Life and works of **Stephen Hawking**
2	Conceptual	Video Lectures related to the text Grammar- Language Game & Vocabulary.
3	Procedural	LSRW activities Quiz Discussion Board
4	Applied	Listening and Speaking activities Reading and Writing activities

Schedule and Sequence: Detailed Text: Infotech - Lesson 3

Day Plan for Lesson 3 - **Stephen Hawking- Positivity 'Benchmark'**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	**Topic**	**Objectives**	**Before Class - Videos, e-Books, Case studies**	**In-Class – Activities, Quiz (Micro teaching)**	**Post Class - Assignment, Discussion Forum**
Day-1	Introduction to Non-Detailed Text	To present the story of will power and strength before the readers.	**Text –** https://www.forbes.com/sites/annapowers/2018/03/14/the-theory-of-everything-remembering-stephen-hawkings-greatest-contribution/#1ea165e023ed **Source**: Internet	Explaining the text 40 min Elicitation / Brainstorming 20 min Activity – Envelope activity	**Post on Discussion Forum**
Day-2		To present writers notions	PPT presentation of the text	20 min Jot down the insights	Take away tips from the text

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	Explanation about the Text	through the text.	Stephen Hawkings .pptx	20 mins Elicitation / Brainstorming 20 min Writing response from the learners	
Day-3	Grammar	To appreciate Vocabulary and expressions of Language	Presenting grammar through PPT preposition .pptx Articles.pptx	30 min Practice through quiz 30 min Worksheets	Framing a few sentence using articles and prepositions. Dialogues related activity
Day-4	LSRW Skills	To give students an exposure of basic skills	**Listening:** Listening, Speaking, Reading, writing for global comprehension and grasping the implied meaning. (Activity) before the class	30 min Sharing experience about the activity Reading once again in the light of explanation	Writing task in a form of an assignment.
Revision					

Non -Detailed – Lesson 3
Shakespeare's Sister by Virginia Woolf

Lesson Objectives:

1	Factual	Presenting the text '**Shakespeare's Sister by Virginia Woolf** 'to identify the feministic issues.
2	Conceptual	To understand the concept of '**Gender Discrimination, 'Implication of Women Education'**

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3	Procedural	To analyse gender issues conditioning through ages especially during **Elizabethan's age.**
4	Applied	To develop an appreciation for feministic approach theory.

Non-Detailed Text

Contents/Activities – Lesson 3

1	Factual	Reading the Text Identifying the Language expressions
2	Conceptual	Understanding the themes – Feminism, Women liberation, Women Empowerment.
3	Procedural	To analysis various symbols and languages devices present in the text.
4	Applied	To develop an appreciation for language and literature through creative expressions and insights.

Schedule and Sequence: Non-Detailed Text: The Individual Society', Lesson 3

Day Plan for Lesson 3 - **Shakespeare's Sister by Virginia Woolf**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	Topic	Objectives	Before Class - Videos, e-Books, Case studies	In-Class – Activities, Quiz (Micro teaching)	Post Class - Assignment, Discussion Forum
Day-1	Introduction to Non-Detailed Text	To present feministic issues to the readers.	**Text –** https://www.d.umn.edu/~tbacig/cst1010/chs/woolfe.html **Source**: Internet	Reading the text aloud 30 min Information about the text 20 mins Elicitation / Brainstorming	**Post on Discussion Forum**

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				10 min Activity – Qualities of Women	
Day-2	Explanation about the Text	Summary of the Text	PPT / Video ON Shakespeare's Sister https://www.youtube.com/watch?v=RXJ_pnMitPM **Source**: Internet	20 min Note down the insights 20 mins Elicitation / Brainstorming 20 min Language Game on Vocabulary	**Post on Discussion Forum**
Day-3	Characters in the text	To present the gender issues conditioning through ages especially during **Elizabethan's age.**	Videos: on Judith Shakespeare https://www.youtube.com/watch?v=pzB02Vw47gk **Source**: Internet	30 min explanation on each character 30 min Writing about the characters	**Post on Discussion Forum**
Day-4	Applied	Critical Appreciation of Themes and Ideas	Reading the text in the light if critical appreciation.	30 min Discussion 30 min Task	**Post on Discussion Forum** Assignment on the given theme
Revision					

Detailed – Lesson 4
Liking a Tree, Unbowed: Wangari Maathai-biography

Lesson Objectives:

1	Factual	The learners will develop an appreciation for language and the significance letter writing. They will be able to explore the qualities of a leader and learn to acquire them.

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2	Conceptual	The learners will understand Lexical and Cloze Encounters Quantifying expressions - adjectives and adverbs; comparing and contrasting; degrees of comparison; use of antonyms
3	Procedural	Students should be able learn basic sounds and learn to identify those with various Contrastive Stress patterns
4	Applied	To explore environment related insights. To explore Functional English like: Permissions, Requesting, Inviting.'

Non-Detailed Text

Contents/Activities – Lesson 4

1	Factual	Reading Prescribed Text Basic Vocabulary & GRE Vocabulary, Grammar LSRW Skills
2	Conceptual	Video Lectures related to the text Grammar- Language Games
3	Procedural	LSRW activities Quiz Discussion Board
4	Applied	Listening and Speaking activities Reading and Writing activities

Schedule and Sequence: Detailed Text: Infotech - Lesson 4

Day Plan for Lesson 4 **- Liking a Tree, Unbowed: Wangari Maathai-biography**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	Topic	Objectives	Before Class - Videos, e-Books, Case studies	In-Class – Activities, Quiz (Micro teaching)	Post Class - Assignment, Discussion Forum

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Day-1	Introduction to Non-Detailed Text	To present **Wangari Maathai's biography to the learners.**	**Text –**  Wangari Mattai - .pptx	Reading the text aloud 30 min Information about the text 20 mins Elicitation / 10 min Questions	**Post on Discussion Forum**
Day-2	Explanation about the Text	To present Green belt movement, Chipko movement etc	Video of Green belt Movement https://www.youtube.com/watch?v=GRkhi2SPwms **Source**: Internet	20 min Practice 20 mins Repleted quiz 20 min Worksheets	**Post on Discussion Forum**
Day-3	Grammar	To discuss Lexical and Cloze Encounters Quantifying expressions - adjectives and adverbs; comparing and contrasting; degrees of comparison; etc	Presenting degrees of comparison and Adverbs to the learners.  Degrees of Comparison - .ppt  Adverbs .pptx	30 min Degrees of Comparison 30 min Adverbs	**Post on Discussion Forum** **Grammar Assignments**
Day-4	Applied	To make students listen, speak, read and write through activities	Activity Video related to the text		**Post on Discussion Forum** **Topics on Environment**
Revision					

Non-Detailed – Lesson 4
Telephone Conversation-Wole Soyinka
Lesson Objectives:

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1	Factual	Presenting the Poem '**Telephone Conversation-Wole Soyinka'** to discover the themes and motifs in the Poem
2	Conceptual	To understand the concept of '**Racial Discrimination and the plight of Blacks in America'**
3	Procedural	To analyse the consequences of Racism and resistance of blacks towards it.
4	Applied	To develop an appreciation for language and literature through creative expressions.

Non-Detailed Text

Contents/Activities – Lesson 4

1	Factual	Reciting the Poem Identifying the Language expressions
2	Conceptual	Understanding the themes of **Oppression& Racial Discrimination**
3	Procedural	To analysis various symbols, figures of speech present in the Poem
4	Applied	To develop an appreciation for language and literature through creative expressions.

Schedule and Sequence: Non-Detailed Text: The Individual Society', Lesson 3
Day Plan for Lesson 4 - **Telephone Conversation-Wole Soyinka**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	Topic	Objectives	Before Class - Videos, e-Books, Case studies	In-Class – Activities, Quiz (Micro teaching)	Post Class - Assignment, Discussion Forum

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Day-1	Introduction to Non-Detailed Text	To present the poem to the readers in the context of the poetess works.	**Text –** **https://www.k-state.edu/english/westmank/spring_00/SOYINKA.html** **Source**: Internet	Reading the poetry to the students 30 min Summary of the poem 20 mins Elicitation / Brainstorming 10 min Activity –	**Post on Discussion Forum**
Day-2	Explanation about the poem	Present Gender related issues	Videos on the summary of the Poem https://www.youtube.com/watch?v=liU1-XNMSaU **Source**: Internet	20 min Jot down the insights from the video 20 mins Brainstorming 20 min Language Game on Vocabulary from the poem	**Post on Discussion Forum** **Appreciating the poem**
Day-3	Grammar	To explore various discriminative issues	PPT on various social related issues Social Issues .pptx	30 min Presentation 30 min Discussion	**Post on Discussion Forum**
Day-4	Applied	Critical Appreciation/ Themes/ Symbols/	Presenting critical material & Videos	50 min Writing Summary 10 Mins Questions	**Post on Discussion Forum**
Revision					

Detailed – Lesson 5
Stay Hungry-Stay foolish

Lesson Objectives:

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1	Factual	Through this detailed Lesson '**Stay Hungry-Stay foolish**' students will able to understand the inspirational life of Steve Jobs
2	Conceptual	To understand the key concepts of Grammar and Vocabulary especially Editing short texts – identifying and correcting common errors in grammar and usage (tenses, subject verb agreement)
3	Procedural	Students should be able learn basic sounds and learn to identify those in their speech.
4	Applied	To explore creative and imaginative ideas in a form of a project or any piece of formal writing to enhance scope for creative ideas.

Detailed Text

Contents/Activities – Lesson 5

1	Factual	Reading Prescribed Text Basic Vocabulary & GRE Vocabulary
2	Conceptual	Video Lectures related to the text Grammar- Language Game
3	Procedural	LSRW activities Quiz Discussion Board
4	Applied	Listening and Speaking activities Reading and Writing activities

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Schedule and Sequence: Detailed Text: Infotech - Lesson 5

Day Plan for Lesson 5 - **Stay Hungry-Stay foolish**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	Topic	Objectives	Before Class - Videos, e-Books, Case studies	In-Class – Activities, Quiz (Micro teaching)	Post Class - Assignment, Discussion Forum
Day-1	Introduction to Non-Detailed Text	To develop passion for language and literature – through (Appreciating the text.)	**Text –** https://news.stanford.edu/2005/06/14/jobs-061505/ **Source**: Internet	Reading the text aloud 30 min Information about the text 20 mins Elicitation / Brainstorming 10 min Activity – Envelope activity	**Post on Discussion Forum**
Day-2	Explanation about the Text		Stay Hungry Stay Foolish - .pptx	20 min PPT 20 mins Discussion 20 min Questions from the text	**Post on Discussion Forum**
Day-3	Grammar	To explain subject and verb agreement.	Tenses .pptx Videos on Subject and verb agreement	30 min PPT 30 min Task	**Post on Discussion Forum**
Day-4	Applied	To present creative insights of the writer through the text	Provide critical material related to the text. Steve Jobs	Revise previous class (20 min) Presenting Textual Ideas (20 min) . (20 min) Task related activity	**Post on Discussion Forum** **Assignment**
Revision					

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Non -Detailed – Lesson 5
Still I Rise by Maya Angelou

Lesson Objectives:

1	Factual	Presenting the Poem **'Telephone Conversation-Wole Soyinka'** to discover the themes and motifs in the Poem
2	Conceptual	To understand the concept of '**Racial Discrimination.**
3	Procedural	To analyse the consequences of Racism and resistance of blacks towards it.
4	Applied	To develop an appreciation for language and literature through creative expressions

Non-Detailed Text

Contents/Activities – Lesson 5

1	Factual	Reciting the Poem Identifying the Language expressions
2	Conceptual	Understanding the themes of **Oppression& Racial Discrimination,**
3	Procedural	To analysis various implied meaning of the poem
4	Applied	To develop an appreciation for language and literature through creative expressions.

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Schedule and Sequence: Non-Detailed Text: The Individual Society', Lesson 5
Day Plan for Lesson 5 **- Still I Rise by Maya Angelou**

Total Classes 4

Session/week/ Module -1 Total Classes - 4	Topic	Objectives	Before Class - Videos, e-Books, Case studies	In-Class – Activities, Quiz (Micro teaching)	Post Class - Assignment, Discussion Forum
Day-1	Introduction to Non-Detailed Text	To present the intention of the poet to the readers	**Text – Critical note** https://www.poetryfoundation.org/poems/46446/still-i-rise **Source**: Internet	Reading the poem aloud 30 min Summary about the poem 20 mins Elicitation / 10 min Discussion	**Post on Discussion Forum**
Day-2	Explanation about the Text	To explore themes in the poem	Videos on the summary of the Poem https://kottke.org/16/11/still-i-rise-by-maya-angelou **Source**: Internet	20 min Jot down the insights 20 mins Elicitation / Brainstorming 20 min Language Game on Vocabulary	**Post on Discussion Forum**
Day-3	Critical note of the poem	To explore various qualities represented by the poetess about racism	To provide various critical texts to the student about the same theme.	40 min Discussion 20 min Summary	**Post on Discussion Forum**
Day-4	Applied	To write a few expressions of the poet	To present various ideas of Maya Angelou.	40 min Write summary 20 min Questions	**Post on Discussion Forum Assignment**
Revision					

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Teacher/Instructor: Dr. Sr. Candy D'Cunha
Department of Science &Humanities
Associate Professor of English

Lesson Plan for a Day
Term/Semester/Year: Sem- I - Syllabus 2019 -20

MICRO LESSON PLAN

(ACCORDING TO BLOOMS DIGITAL TAXONOMY)

Programme	B Tech – R 2019-20
Semester	I Year - I Semester
Subject Title	ENGLISH
Subject Code	(HS1101)
Class Hours	5 hours per week
Total Hours	60
Credits	3
Max Marks	100
Unit & Title	Unit 1 - A Drawer full of Happiness – Introduction to the text
Teaching and Learning Tools	Blended Learning, Google classrooms, Smart Board, Pedagogy , E-material , Video clips for **Post Task**

Detailed – Lesson 1 **A Drawer Full of Happiness** **Lesson Objectives:**	
Factual	Through this detailed Lesson '**A Drawer Full of Happiness'** students will develop an appreciation for language and literature. They will be able to explore creative insights through the text.
Conceptual	To understand the key concepts of Grammar and Vocabulary especially Naming Words and use them appropriately.
Procedural	Students should be able learn basic sounds and learn to identify those with various lexical.
Applied	To explore creative and imaginative ideas in a form of a project or any piece of formal writing. To understand social or transactional dialogues spoken by native speakers of English

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Prerequisite Knowledge: Imaginative ideas on creative writing

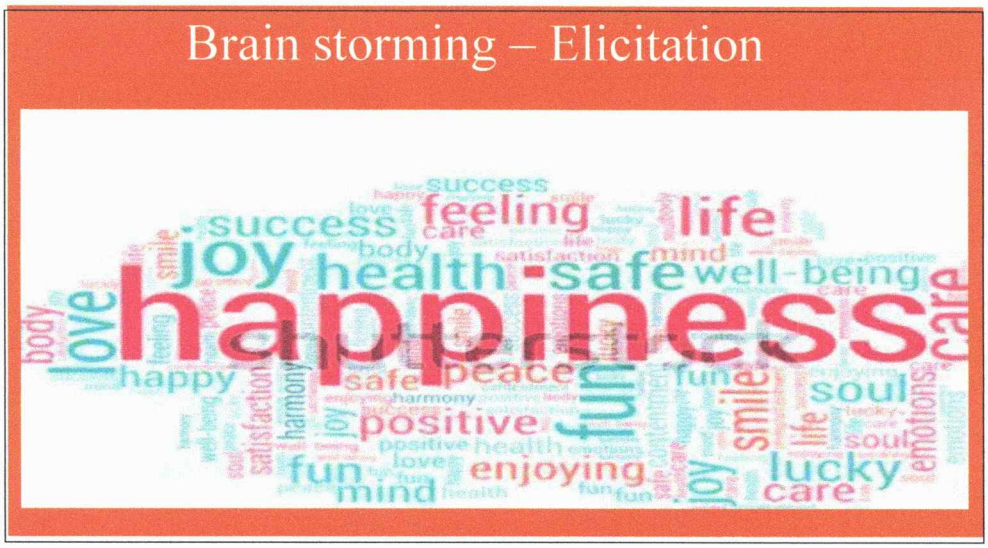
Micro Lesson Plan: Day -1. INTRODUCTION

1. **Pre-task Activity- Introducing the Text**

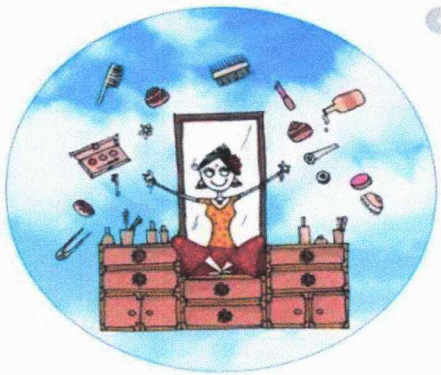
Text:

https://www.thehindu.com/opinion/open-page/a-drawer-full-of-happiness/article23343546.ece

2. **In-class Activity: Introduction to "Drawer full of Happiness"**



Language Game: Quiz poll questions based on the image



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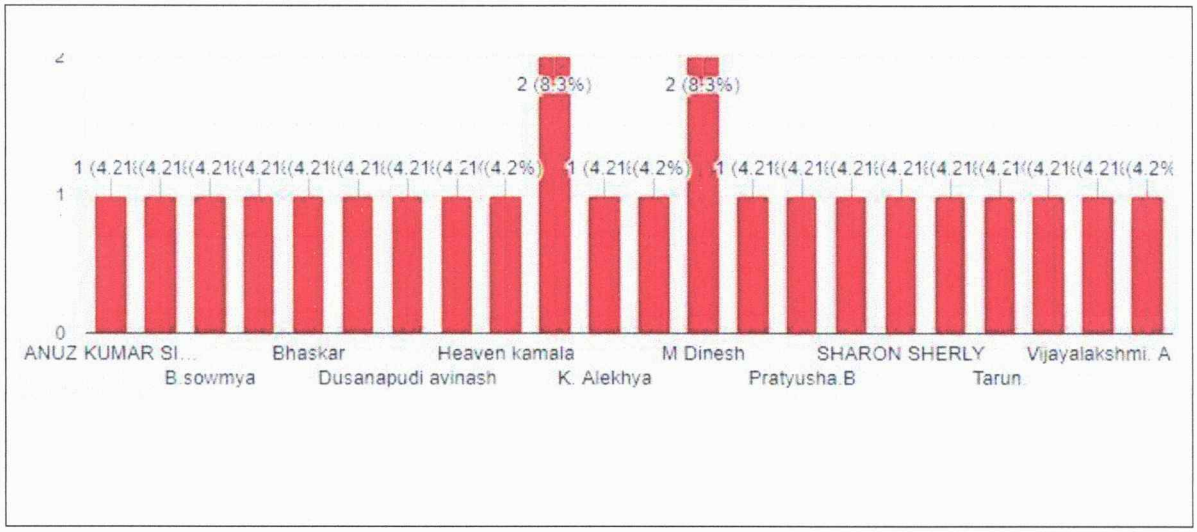
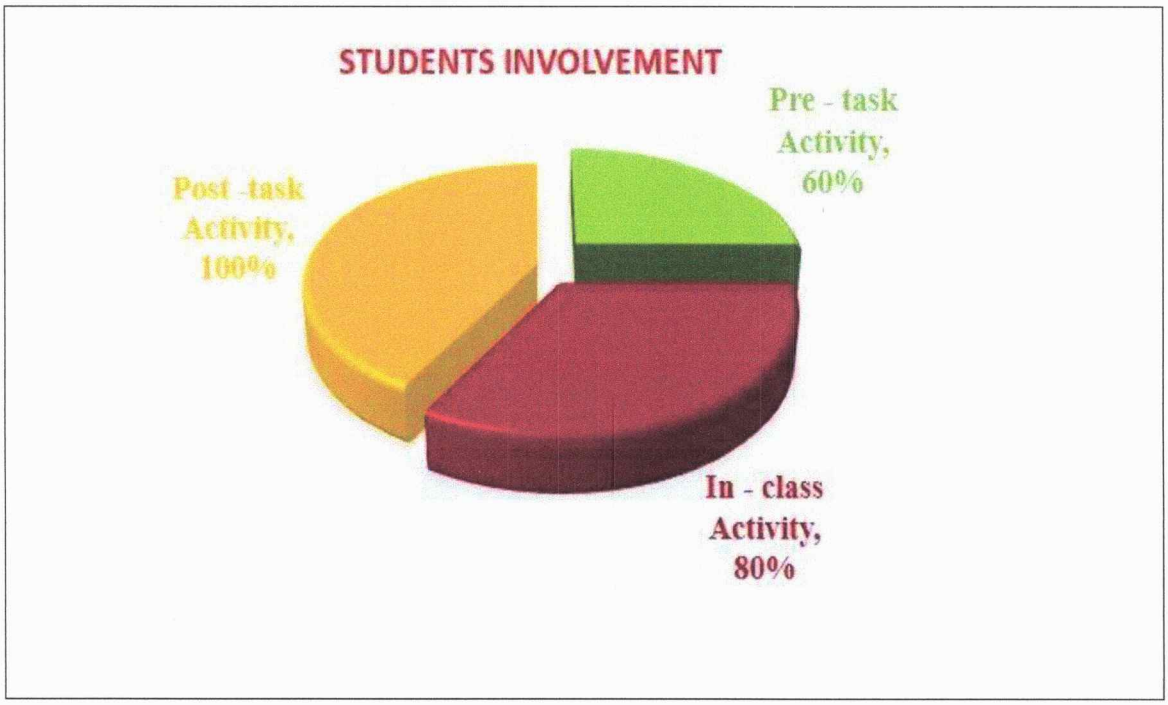
3. Post – task Activity:

Graphical Representation of the creative response from the students of Civil – (19-20) batch - Google classroom.



4. Students Involvement



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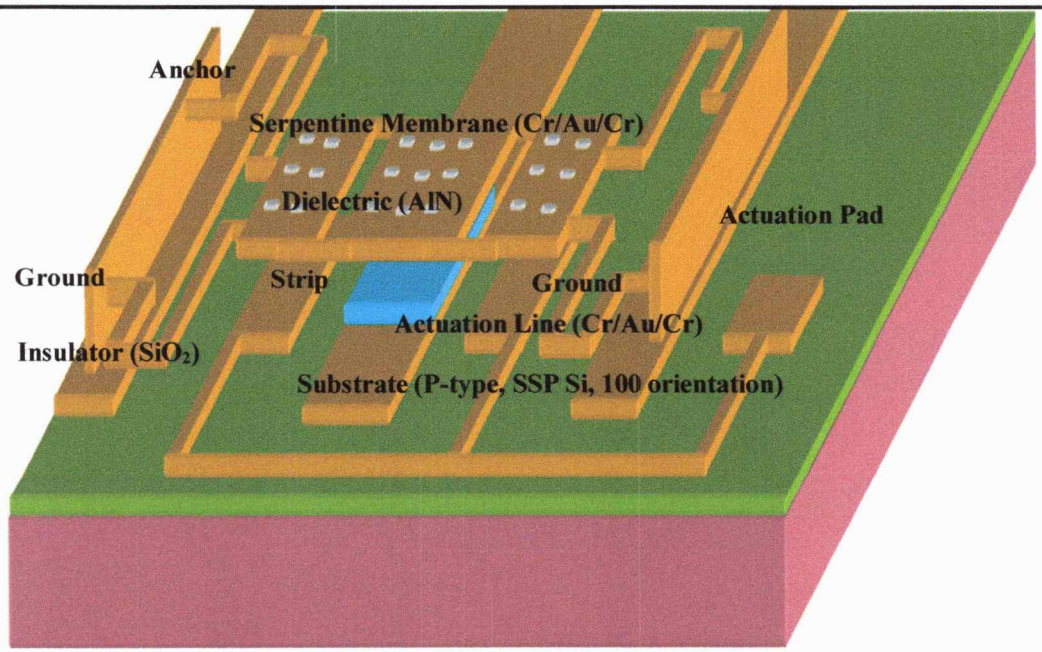
• Projects:

1) Micro/Nano level Devices Fabrication and characterization:

The department of ECE, fabricated micro/nano level devices in association with CeNSE, IISc, Bangalore. Two of the department faculty (**Dr. Lakshmi Narayana Thalluri and Mr. K Rama Rao**) are the INUP user's, with this they can access the fabrication and characterization facilities in CeNSE, IISc, Bangalore. The department faculty has fabricated and characterized two radio frequency (RF) micro electro mechanical systems (MEMS) switches (1. Serpentine structure, 2. clamped-clamped structure) which are essentially required in future high frequency communication applications. The design and fabrication models of RF MEMS switches are shown in below figure.



(a)

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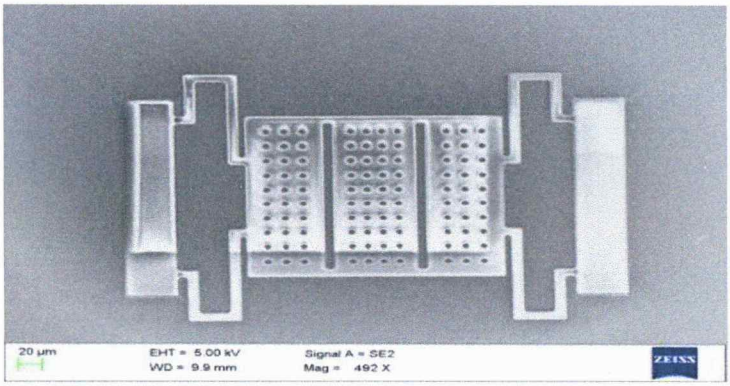
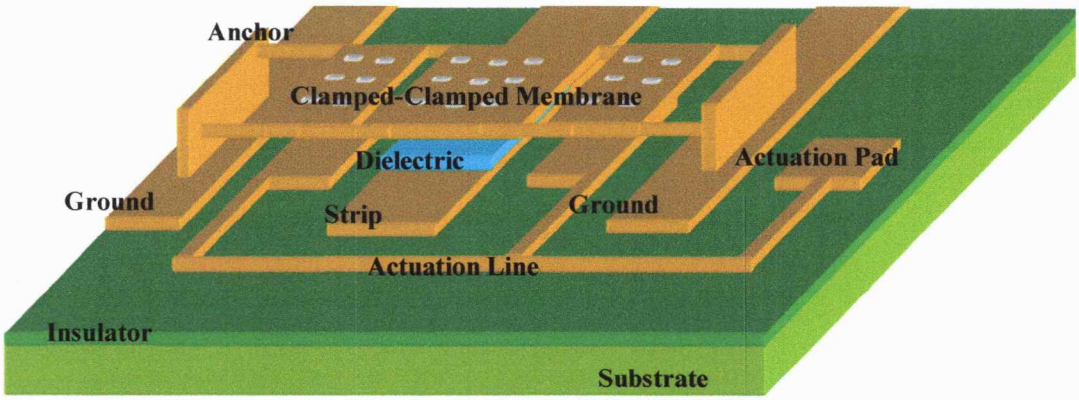
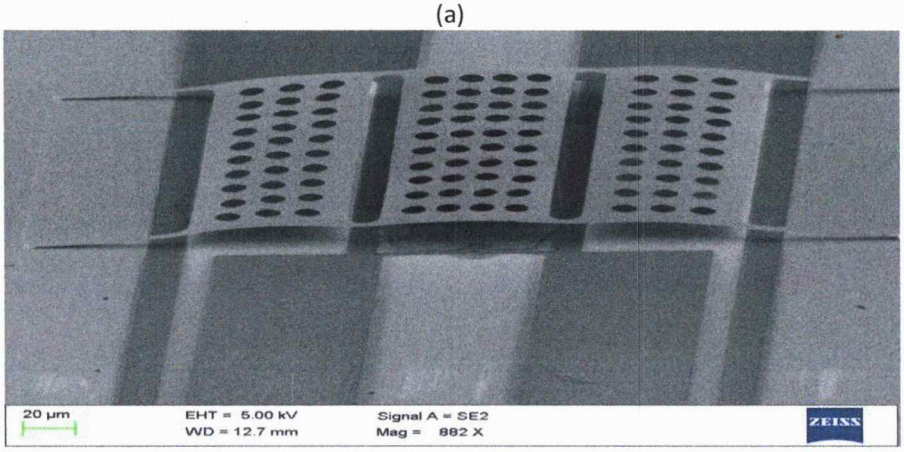


(b)

Figure. Serpentine membrane shunt capacitive RF MEMS switch, (a) model structure, (b) SEM image after fabrication.



(a)



(b)

Figure. Clamped –Clamped membrane-based shunt capacitive RF MEMS switch, a) model structure, b) SEM image after fabrication.

These innovative ideas of the faculty members were incorporated in to teaching and learning for the following subjects:

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A PCB & Microstrip antenna fabrication unit is established in the department of ECE which helps the students to design and fabricate different Printed circuit boards and Microstrip Patch antennas. With this there is scope to the students for better understanding the subject. Overall the fabrication process requires glossary papers, printer, substrate materials, ferric chloride acid, DI water and acetone.

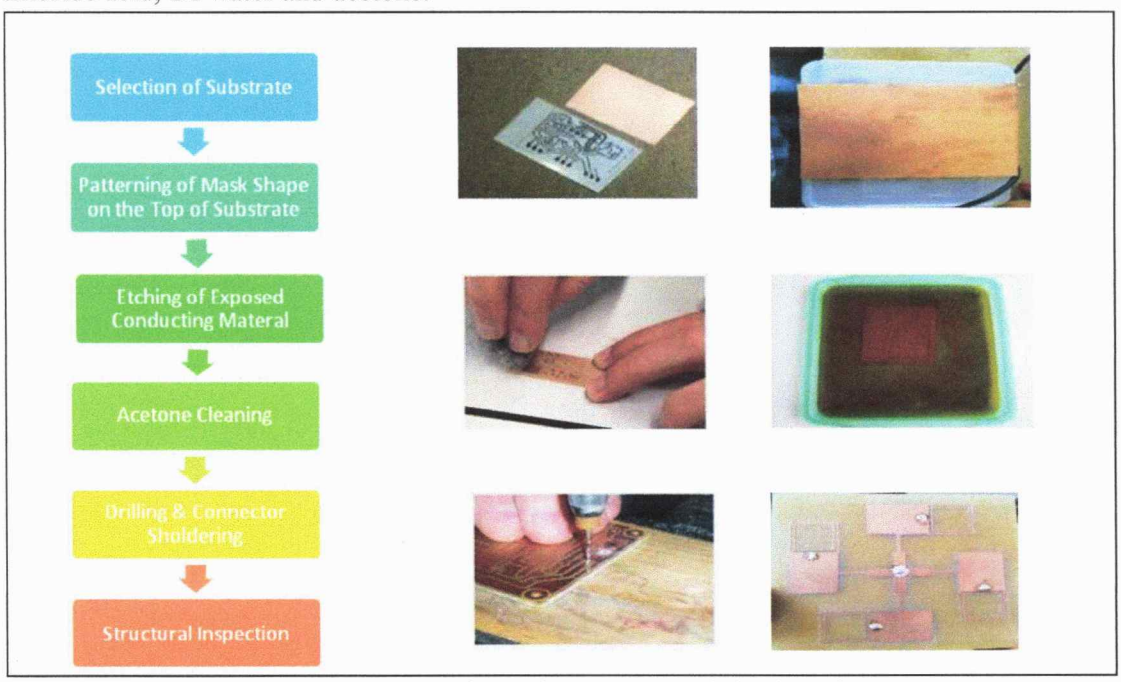

Figure : PCB & Microstrip Antenna Fabrication Flow

Faculty & Students' contribution to the innovation	
Faculty	**Student**
Mr. N Bujji Babu, Assistant Professor, Department of ECE, ALIET.	G Rajesh [16HP5A0430], Y Siva Kumar [15HP1A04B0], B Raja Dinesh Reddy [15HP1A04A4].

These innovative ideas of the faculty members were incorporated in to teaching and learning for the following subjects:

Subjects related to this innovation:

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1. Antenna and Wave Propagation (AWP)
2. Electronic Devices and Circuits (EDC)

5) Design of Digital Signal Processing Applications:

Human Face Recognition

A facial recognition system is a technology capable of identifying or verifying a person from a digital image or a video frame from a video source.

There are multiple methods in which facial recognition systems work, but in general, theywork by comparing selected facial features from given image with faces within a database. It is also described as a Biometric Artificial Intelligence based application that can uniquely identify a person by analysing patterns based on the person's facial textures and shape. Face recognition leverages computer vision to extract discriminative information from facial images, and pattern recognition or machine learning techniques to model the appearance of faces and to classify them.

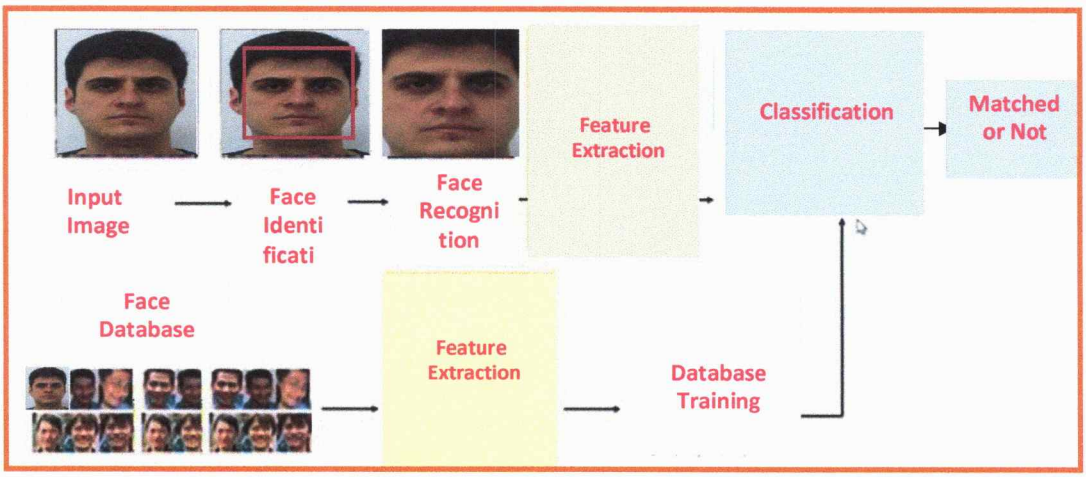

Figure: Human Face Recognition Flow

You can use computer vision techniques to perform feature extraction to encode the discriminative information required for face recognition as a compact feature vector using techniques and algorithms such as:

- Dense local feature extraction with SURF, BRISK, or FREAK descriptors
- Histogram of oriented gradients
- Distance between detected facial landmarks such as eyes, noses, and lips
- Machine Learning techniques that can be applied to the extracted features to perform face recognition or classification using:
- Supervised Learning Techniques such as support vector machines (SVM) and decision trees
- Ensemble learning methods
- Deep Neural Networks.

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Figure: Face Recognition

Faculty & Students' contribution to the innovation	
Faculty	**Student**
Mr. Md. Baig, Assistant Professor, Department of ECE, ALIET.	V NARENDR [15HP1A0442], M VEERA BRAHMAM [15HP1A0454], K ARAVIND [15HP1A0430]

These innovative ideas of the faculty members were incorporated in to teaching and learning for the following subjects:

Subjects related to this innovation:

1. Signals and System (SS)
2. Digital Signal Processing (DSP)
3. Digital Image Processing (DIP)

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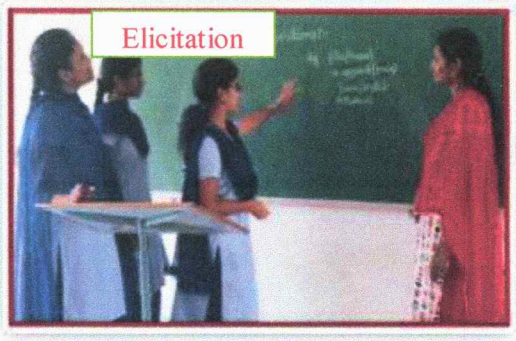
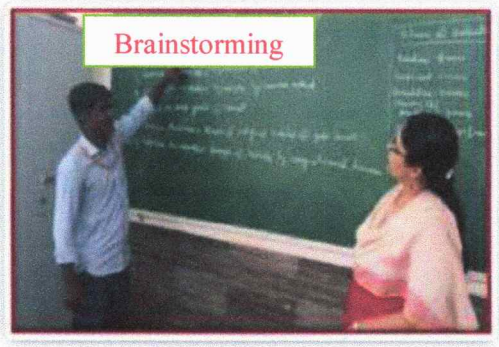
- **Pedagogical methods for effective curriculum delivery are through innovation and creativity:**

Technique such as **elicitation** stimulate their learning, and it provides them with a platform to get a partial response or individual words from the learners themselves about the topic. This is

Elicitation

done mainly by eliciting or brainstorming, the outcome of which is placed on a poster or on the board.





Role plays

Role plays allow students to explore their knowledge of realistic situations by interacting with their colleagues and enhancing their confidence level.

Trios

Trios are great alternatives to group work, as it focuses on speaking activity since each of the students can watch and listen while the others speak.

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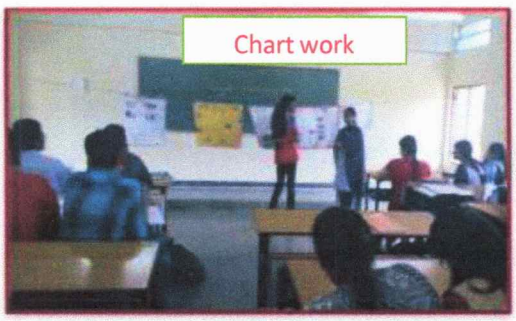
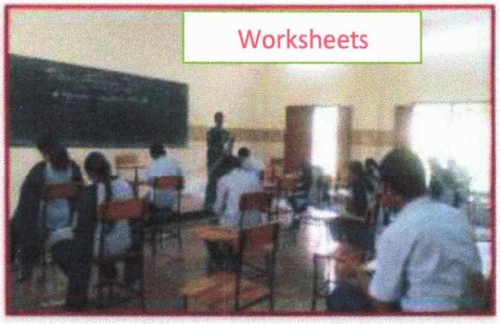
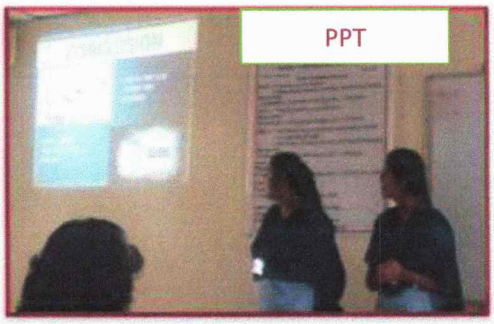


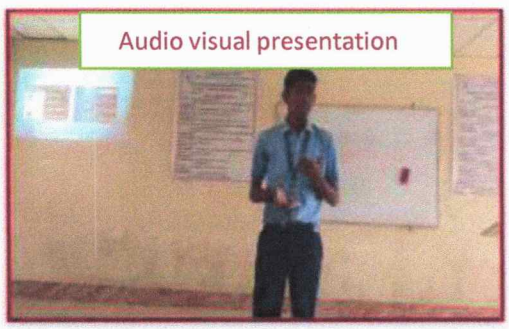


Audio Visual aids and PPTs

Audio Visual aids are effectively used based on particular needs. Audio aids improve their listening skills and Visuals widens their imagination and perception.

Power Point Templates preparations on complex topics by faculty and students open news avenuesforcreativityandgainadditionallatestknowledgefrom**OER**.Studentschoosetopics of their choice and present them to the class. This in fact increases the cognitive learning capabilities oflearners.





Objects, Models and Realia

Objects, Models and Realia are human inventions used as a teaching aid to effectively and symbolically present the concepts to the learners.

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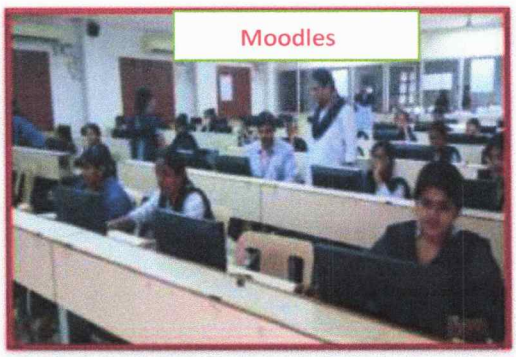
MOOCs /Swayam - NPTEL/TESOL

Moodle Learning Management System (LMS), **NPTEL** programs and **TESOL** online videos for Language enhancing are effectively used by the faculty to stimulate the learning capability of students.



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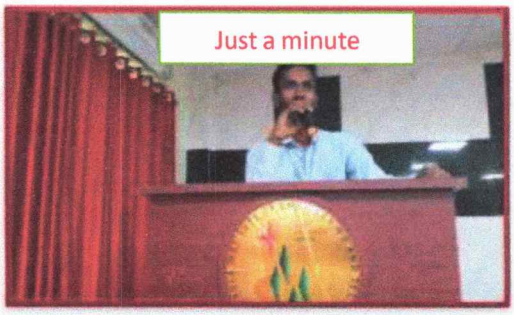
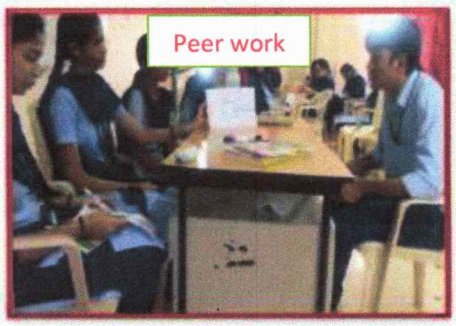
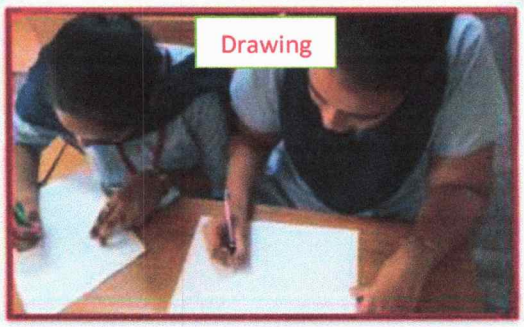


Pair work and peer work

Pairworkisanimportantinteractiveactivity.Itencouragesrapportandcollaborativelearning and contributes towards building up effective team work. It also adds variety to the lesson.

Peer work is often the best way for large classes of heterogeneous group. It is done by bunching4-5studentsand making them sit close to one another. Some of the task actions for the group work involve group dialogues, drawing or labeling pictures, writing a story, making lists and mind maps





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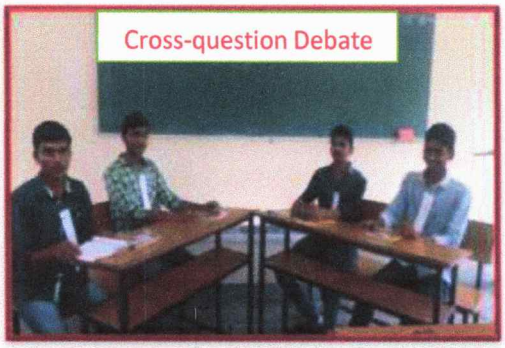
Debate

Debate enhances critical thinking and public speaking skills. It focuses on drawing out thoughts and ideas on various topics and arriving at the desired outcome that is pre-planned by the teacher.



Field trips or Educational Tours

Fieldtrips or Educational Tours are well organized as part of experiential learning which improves observation and inquiry-based learning to have a real-world experience.

Manuals, Handouts, Worksheets & Chart work

Manuals, Handouts and Worksheets are all great sources of information for the learner. Based on the graded level ability of the learner, worksheets are distributed. At times, this is done also through vertical grouping.

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