

Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN							
Department of Electrical and Electronics Engineering							
Name of the Subject	ELECTRON DEVICES AND CIRCUITS	Name of the handling Faculty	Mrs.R.SUGUNA DEVI				
Subject Code	EC 3301	Year / Sem	II/III				
Acad Year	2022-2023	Batch	2021-2025				
Course Objective							
Understand the structure of basic electronic devices.							
Be exposed to active and passive circuit elements							
Familiarize the operation and applications of transistor like BJT and FET.							
Explore the characteristics of amplifier gain and frequency response.							
Learn the required functionality of positive and negative feedback systems.							
Course Outcome							
Explain the structure and working operation of basic electronic devices.							
Identify and differentiate both active and passive elements							
Illustrate the characteristics of different electronic devices such as diodes and transistors							
Choose and adapt the required components to construct an amplifier circuit.							
Employ the acquired knowledge in design and analysis of oscillators							
Lesson Plan							
Sl. No.	Topic(s)	T / R* Book	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc	Blooms Level L6)	CO	PO
UNIT I		PN JUNCTION DEVICES					
1	PN junction diode-Introduction	T1	1	BB	L2	CO1,CO2	PO1
2	PN junction diode –structure, operation	T1	1	BB	L2	CO1,CO2	PO1
3	V-I characteristics, diffusion and transition	T1	1	BB	L2	CO1,CO2	PO1
4	Clipping and Clamping Circuits	T1	1	BB	L2	CO1,CO2	PO1
5	Rectifiers – Half Wave	T1	1	BB	L2	CO3	PO1
6	Full Wave Rectifier	T1	1	NPTEL	L2	CO3	PO1
7	Display devices- LED and Laser diodes	T1	1	BB	L2	CO3	PO1
8	Zener diode characteristics- Zener Reverse	T1	1	BB	L2	CO3	PO1
9	Zener as regulator	T1	1	BB	L2	CO3	PO1
Suggested Activity: Charts							
Evaluation method :Charts on Diode Applications							
UNIT II -TRANSISTORS AND THYRISTORS							
10	Introduction to transistors	R1	1	BB	L2	CO2,CO3	PO1
11	BJT Structure, operation, characteristics	R2	2	BB	L2	CO2,CO3	PO3
12	JFET - structure, operation, characteristics	R3	2	BB	L2	CO2,CO3	PO3
13	MOSFET- structure, operation,	R1	1	NPTEL	L2	CO2,CO3	PO3
14	Biasing UJT- operation, characteristics	T1	1	BB	L2	CO2,CO3	PO3
15	Thyristors-, operation, characteristics	R1	1	BB	L2	CO2,CO3	PO3
16	IGBT –Structure and characteristics	R1	1	BB	L2	CO2,CO3	PO12
Suggested Activity: MCQs							
Evaluation method :MCQs on Thyristors Applications							
UNIT III-AMPLIFIERS							
17	BJT small signal model	T1	1	BB	L2	CO4	PO2
18	Analysis of CE amplifiers- Gain and frequency response	T1	2	BB	L4	CO4	PO2
19	Analysis of CB amplifiers- Gain and frequency response	T1	1	BB	L4	CO4	PO2
20	Analysis of CC amplifiers- Gain and frequency response	T1	1	BB	L4	CO4	PO2
21	MOSFET small signal model	T1	1	BB	L3	CO4	PO2
22	Analysis of CS- Gain and frequency response	T1	1	BB	L4	CO4	PO2
23	Source follower – Gain and frequency	T1	1	BB	L3	CO4	PO2
24	High frequency analysis.	T1	1	BB	L3	CO4	PO2
Suggested Activity: Quiz							
Evaluation method :Quiz on types of amplifiers							
UNIT IV- MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER							
25	BIMOS cascade amplifier	T1	1	BB	L2	CO4	PO3
26	Differential amplifier – Common mode and Difference mode analysis	T1	1	PPT	L2	CO4	PO3
27	FET input stages	R2,T1	2	BB	L2	CO4	PO3
28	Single tuned amplifiers – Gain and frequency	R2	1	BB	L3	CO4	PO3
29	Neutralization methods	R2	1	BB	L2	CO4	PO3
30	Power amplifiers –Class A Amplifiers-Class B Amplifiers	R2	1	NPTEL	L2	CO4	PO3
31	Class AB Amplifiers-Crossover Distortion	R2	1	BB	L3	CO4	PO3
32	Class C and Class D amplifiers	R2	1	BB	L3	CO4	PO3
Suggested Activity: Assignment							
Evaluation method : Assignment on Power amplifiers applications							

UNIT V-FEEDBACK AMPLIFIERS AND OSCILLATORS

33	Introduction to feedback-Advantages of negative feedback	T1,R1	1	BB	L2	CO5	PO1
34	Voltage /Current, Series , Shunt feedback	T1,R1	1	BB	L2	CO5	PO1
35	Positive feedback & Condition for	T1	1	BB	L2	CO5	PO1
36	Oscillators-Definition and Types	R1	1	BB	L2	CO5	PO1
37	RC-Oscillators – RC Phase shift – Wien bridge, Hartley, Colpitts and Crystal	R1	1	PPT	L2	CO5	PO3
38	RC-Oscillators – Wien bridge	R1	1	PPT	L4	CO5	PO3
39	LC Oscillator- Hartley	R1	1	PPT	L4	CO5	PO3
40	LC Oscillator - Colpitts	R1	1	PPT	L3	CO5	PO3
41	LC Oscillator - Crystal oscillators.	R1	1		L2	CO5	PO3

Suggested Activity: Tutorials

Evaluation method :Tutorials on Oscillators

Content Beyond the Syllabus Planned

1	Problems on Oscillators
---	-------------------------

Text Books	
------------	--

1	David A. Bell, "Electronic devices and circuits", Oxford University higher education, 5th edition 2008
2	Sedra and smith, "Microelectronic circuits", 7th Ed., Oxford University Press

Reference Books	
-----------------	--

1	Balbir Kumar, Shail.B.Jain, "Electronic devices and circuits" PHI learning private limited, 2nd edition 2014
2	Thomas L.Floyd, "Electronic devices" Conventional current version, Pearson prentice hall, 10th Edition, 2017.
3	Donald A Neamen, "Electronic Circuit Analysis and Design" Tata McGraw Hill, 3rd Edition , 2003.
4	Robert L.Boylestad, "Electronic devices and circuit theory", 2002.
5	Robert B. Northrop, "Analysis and Application of Analog Electronic Circuits to Biomedical

Website / URL References	
--------------------------	--

1	https://www.youtube.com/watch?v=3h2edx6O6Vc
2	https://nptel.ac.in/courses/108/108/108108122/
3	https://nptel.ac.in/courses/108/108/108108122/

	Blooms Level
1. Explain the importance of the business plan in the success of a business.	1
2. Identify the key components of a business plan.	2
3. Analyze the market research data and identify the target market.	3
4. Evaluate the financial projections and determine the feasibility of the business.	4
5. Synthesize the information and develop a comprehensive business plan.	5
6. Create a marketing strategy and plan.	6
7. Develop a financial model and budget.	7
8. Implement the business plan and monitor progress.	8
9. Evaluate the business performance and make adjustments.	9
10. Communicate the business plan to stakeholders.	10

Level 1 (L1) : Remembering	Lower Order Thinkin	Fixed Hour Exams	Level 4 (L4) : Analysing	Higher Order Thinking	Projects / Mini Projects
Level 2 (L2) : Understanding			Level 5 (L5) : Evaluating		
Level 3 (L3) : Applying			Level 6 (L6) : Creating		

Mapping syllabus with Bloom's Taxonomy LOT and HOT						
--	--	--	--	--	--	--

Unit No	Unit Name	L1	L2	L3	L4	L5	L6	LOT	HOT	Total
Unit 1	PN JUNCTION DEVICES	0	9	0	0	0	0	9	0	9
Unit 2	TRANSISTORS AND THYRISTORS	0	7	0	0	0	0	7	0	7
Unit 3	AMPLIFIERS	0	1	3	4	2	0	4	6	10
Unit 4	MULTISTAGE AMPLIFIERS AND D	0	5	3	0	0	0	8	0	8
Unit 5	FEEDBACK AMPLIFIERS AND OSC	0	6	1	0	0	0	7	0	7
Total		0	28	7	4	2	0	35	6	41
Total Percentage		0	68.29268293	17.07317073	9.756097561	4.87804878	0	85.36585366	14.63414634	100

CO PO Mapping	
---------------	--

[illegible][illegible]

CO1	There is a scope for experimental design and verification		
CO2	There is a scope for experimental design and verification		
CO3	There is a scope for experimental design and verification		
CO4	There is a scope for experimental design and verification		
CO5	There is a no scope for experimental design and verification		
3	High level	2	Moderate level
			1
			Low level

Name & Sign of Faculty Incharge :Mrs.R.Suguna Devi

Name & Sign of Subject Expert : Dr. J. Jaha

Head of the Department :Dr.J.Jeha

Format No :231