



# SWARNANDHRA

## COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.D.T., Narsapur-534280, (Andhra Pradesh)

### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
20EC4TO1	ELECTRONIC CIRCUITS-II	IV	ECE	5	2023-2024	03-01-2024

#### COURSE OUTCOMES:

After completion of the course students are able to

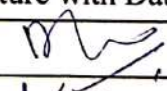
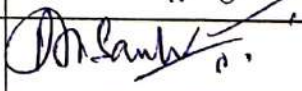
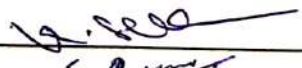
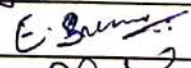

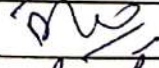
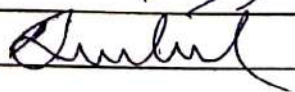
CO1	Estimate the frequency response of single stage amplifiers and multistage amplifier using BJTs and FETs in different configurations.(K3).
CO2	Construct Hybrid – $\pi$ common emitter transistor model(K3).
CO3	Compare and analyze the different types of feedback amplifiers and oscillator circuits(K4)
CO4	Evaluate the efficiency of different types of power amplifiers(K4).

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book /Reference	Contact Hour	Delivery Method	
I	CO1: Illustrate the frequency response of single stage amplifiers and multistage amplifiers using BJT's and FET's in different configurations (K3).	<b>UNIT-1: SMALL SIGNAL LOW FREQUENCY AMPLIFIER MODELS</b>					Chalk & Talk, Smart Board and PPT
		1.1	BJT: h-Parameters, Hybrid model for transistor (CE, CB & CC configuration)	T1, T3	2		
		1.2	Classification of voltage amplifiers	T1, T3	1		
		1.3	Derivations for voltage gain, current gain, input resistance & Output resistance of CE amplifiers.	T1, T3	1		
		1.4	Derivations for voltage gain, current gain, input resistance & Output resistance of CB & CC amplifiers.	T1, T3	1		
		1.5	FET: Small signal model, Study of CG, CS and CD amplifiers	T1, T3	2		
		1.6	FET: Small signal model, Study of CG, CS and CD amplifiers	T1, T3	1		
		1.7	Low frequency response of FET amplifier circuits. Comparison of FET amplifiers.	T1, T3	1		

		1.8	Problems	T1, T3	1		
			Class test		1		
<b>Total</b>					<b>11</b>		
<b>II</b>	CO2: Construct Hybrid- $\pi$ Common Emitter transistor model.[K3]	<b>UNIT-2: HIGH FREQUENCY AMPLIFIER MODELS</b>					
		2.1	BJT:Transistor at high frequencies, Hybrid- $\pi$ common emitter transistor model	T1, T3	2		
		2.2	Hybrid $\pi$ conductance's, Hybrid $\pi$ capacitances, validity of hybrid $\pi$ -model	T1, T3	2		
		2.3	determination of high-frequency parameters in terms of low- frequency parameters	T1, T3	1		
		2.4	determination of high-frequency parameters in terms of low- frequency parameters	T1, T3	1		
		2.5	CE Short circuit current gain		1		
		2.6	current gain with resistive load	T1, T3	1		
		2.7	Cut-off frequencies, frequency response.	T1, T3	1		
		2.8	Problems	T1, T3	1		
			Class Test		1		
<b>Total</b>					<b>11</b>	Chalk & Talk, Smart Board and PPT	
<b>III</b>	CO1: Illustrate the frequency response of single stage amplifiers and multistage amplifiers using BJT's and FET's in different configurations (K3).	<b>UNIT-3: MULTISTAGE AMPLIFIERS</b>					
		3.1	Classification of amplifiers,	T1, T2	2		
		3.2	cascaded transistor amplifier	T1, T2	1		
		3.3	Two stage Direct coupled amplifier	T1, T2	1		
		3.4	Two stage RC coupled amplifier	T1, T2	1		
		3.5	Two stage Transformer coupled amplifier(Quantative Theory)	T1, T2	1		
		3.6	Darlington pair amplifier,	T1, T2	1		
		3.7	Cascode amplifier		1		
		3.8	Boot-strap emitter follower	T1, T2	1		
		3.9	Problems	T1, T2	2		
	Class Test		1				
<b>Total</b>					<b>11</b>	Chalk & Talk, Smart Board and PPT	

		UNIT-4: FEEDBACK AMPLIFIERS AND OSCILLATORS				
IV	CO3: Compare and analyze the different types of feedback amplifiers and oscillator circuits. [K4]	4.1	Concepts of feedback– Classification of feedback amplifiers	T1, T3	1	Chalk & Talk, Smart Board and PPT
		4.2	General characteristics of negative feedback amplifiers	T1, T3	1	
		4.3	Effect of Feedback on amplifier characteristics	T1, T3	1	
		4.4	Voltage series, Voltage shunt Feedback configurations – problems	T1, T3	1	
		4.5	Current series and Current shunt Feedback configurations – problems.	T1, T3	1	
		4.6	Condition for oscillations	T1, T3	1	
		4.7	RC and LC type Oscillators	T1, T3	1	
		4.8	Frequency and amplitude stability of oscillators	T1, T3	1	
		4.9	Generalized analysis of LC oscillators	T1, T3	1	
		4.10	Quartz, Hartley, and Colpitts Oscillators	T1, T3	1	
		4.11	RC-phase shift and Wien-bridge oscillators.	T1, T3	2	
		Class Test		1		
				<b>Total</b>	<b>13</b>	
		UNIT-5: POWER AMPLIFIERS				
V	CO4: Evaluate the efficiency of different types of power amplifiers(K4).	5.1	Classification of power amplifier	T2, T3	1	Chalk & Talk, Smart Board and PPT
		5.1.1	Class-A Power Amplifier	T2, T3	1	
		5.1.2	Maximum Value of Efficiency of Class A Amplifier	T2, T3	1	
		5.2	Transformer Coupled Amplifier	T2, T3	2	
		5.3	Transformer Coupled Class B Push Pull Amplifier	T2, T3	1	
		5.4	Complimentary Symmetry Class B power amplifier	T2, T3	1	
		5.5	Class AB Power Amplifiers	T2, T3	1	
		5.6	Principle of operation of class-C Amplifier	T2, T3	1	
		5.7	Transistor Power Dissipation	T2, T3	1	
		5.8	Thermal Runaway, Thermal	T2, T3	1	

			Stability			
		5.9	Heat Sinks	T2, T3	1	
			Class test	T2, T3	1	
	Content Beyond Syllabus		Voltage Regulators, single Tuned, Double tuned Amplifiers			Video learning
<b>Total</b>					<b>13</b>	
<b>CUMULATIVE PROPOSED PERIODS</b>					<b>60</b>	
<b>Text Books:</b>						
<b>S.No.</b>	<b>AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION</b>					
1.	Robert. L. Boylestad and Louis Nasheresky, @Electronic Devices and Circuits Theory", 11 <sup>th</sup> Edition, Pearson Education, 2013 (UNIT-1, II, III, IV, V)					
2.	Jacob Milman, Christos C. Halkias, Satybrata Jit, "Electronic Devices Circuits", 4 <sup>th</sup> Edition, McGraw Hill Publication, 2015. (UNIT-1, II, III, IV, V)					
<b>Reference Books:</b>						
<b>S.No.</b>	<b>AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION</b>					
1.	Floyd, "Electronic Devices", Pearson Education, 9 <sup>th</sup> Edition, 2012.					
2.	S. Salivhanan, N. Suresh Kumar and A. Vallavaraj "Electronic Devices and Circuits" by (3rd Edition) · Publisher: McGraw Hill Education (2017)					
<b>Web Details</b>						
1.	<a href="https://www.electronicsforu.com/resources/electronic-devices-and-circuit-theory">https://www.electronicsforu.com/resources/electronic-devices-and-circuit-theory</a>					
2.	<a href="https://www.elprocus.com/types-of-clipper-and-clamper-circuits-and-applications/">https://www.elprocus.com/types-of-clipper-and-clamper-circuits-and-applications/</a>					

	Name	Signature with Date
i. Faculty I	Dr. D. NATARAJ	
ii. Faculty II (for common course)	Dr. HARI SANKARA SRIVASTAVA	
iii. Faculty III (for common course)	Mr. K. V.B CHANDRA SEKHAR RAO	
iv. Faculty IV (for common course)	Mrs. EDA SUMA	
v. Course Coordinator	Dr. D. Nataraj	
vi. Module Coordinator	Dr. D. Nataraj	
vii. Programme Coordinator	Dr. B.S. Rao	

  
Principal