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.DT., 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
23EC4T02	ELECTRONIC CIRCUIT ANALYSIS	IV	ECE	5	2025-2026	10-12-2025

COURSE OUTCOMES:

After completion of the course students are able to

CO1	Differentiate hybrid-π parameters at high frequency with low frequency parameters.[K4]
CO2	Demonstrate the cascading of single stage amplifiers, feedback amplifiers and derive the overall voltage gain.[K3]
CO3	Illustrate the basic principle of oscillator circuits and perform the analysis of different oscillator circuits. [K3]
CO4	Compare and analyze different power amplifier like class A, Class B ,Class C, Class AB. and other types of amplifier[K4]

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO1:Differentiate hybrid- π parameters at high frequency with low frequency parameters.[K4]	**UNIT-1: SMALL SIGNAL HIGH FREQUENCY TRANSISTOR AMPLIFIER MODELS**				
		1.1	BJT: Transistor at high frequencies, Hybrid- π common emitter transistor model	T1, T3	1	Chalk & Talk, Smart Board and PPT
		1.2	BJT: Transistor at high frequencies, Hybrid- π common emitter transistor model	T1, T3	1	
		1.3	Hybrid π conductance's, Hybrid π capacitances, validity of hybrid π model	T1, T3	1	
		1.4	Determination of high-frequency parameters in terms of low- frequency parameters .	T1, T3	1	
		1.5	Determination of high-frequency parameters in terms of low- frequency parameters	T1, T3	1	
		1.6	CE Short circuit current gain	T1, T3	1	
		1.7	current gain with resistive	T1, T3	1	

			load			
		1.8	Cut-off frequencies, frequency response and gain bandwidth product.	T1, T3	1	
		1.9	FET: Analysis of common source at high frequencies	T1, T3	1	
		1.10	FET: Analysis of common drain at high frequencies	T1, T3	1	
		1.11	FET: Analysis of common drain at high frequencies	T1, T3	1	
		1.12	Problems	T1, T3	1	
		1.13	Problems	T1, T3	1	
				Total	**13**	
II	CO2: Demonstrate the cascading of single stage amplifiers, feedback amplifiers and derive the overall voltage gain.[K3]	**UNIT-2: MULTISTAGE AMPLIFIERS**				
		2.1	Classification of amplifiers,	T1, T3	1	
		2.2	Methods of coupling	T1, T3	1	
		2.3	Cascaded transistor amplifier and its analysis	T1, T3	1	
		2.4	Cascaded transistor amplifier and its analysis	T1, T3	1	
		2.5	Analysis of Two stage RC coupled amplifier	T1, T3	1	
		2.6	High input resistance transistor amplifier circuits and their analysis	T1, T3	1	
		2.7	High input resistance transistor amplifier circuits and their analysis	T1, T3	1	
		2.8	Darlington pair amplifier	T1, T3	1	
		2.9	Cascode amplifier	T1, T3	1	
		2.10	Boot-strap emitter follower		1	
		2.11	Differential amplifier using BJT		1	
		2.12	Problems	T1, T3	1	
				Total	**12**	
III	CO2: Demonstrate the cascading of single stage amplifiers, feedback amplifiers and derive the overall voltage gain.[K3]	**UNIT-3: FEEDBACK AMPLIFIERS**				
		3.1	feedback principle and concept	T1, T2	1	Chalk & Talk, Smart Board and PPT
		3.2	Types of feedback ,Classification of amplifiers	T1, T2	1	
		3.3	Feedback topology, Characteristics of negative feedback amplifiers.	T1, T3	1	
		3.4	Generalized analysis of feedback amplifier	T1, T2	1	
		3.5	Performance comparison of feedback amplifier.	T1, T2	1	
		3.6	Method of analysis of feedback amplifiers.	T1, T2	1	
		3.7	Problems	T1, T2	1	
		3.8	Problems	T1, T2	1	

				Total	**8**	
IV	CO3: Illustrate the basic principle of oscillator circuits and perform the analysis of different oscillator circuits. [K3]	**UNIT-4: OSCILLATORS**				Chalk & Talk, Smart Board and PPT
		4.1	Oscillator principle	T1, T3	1	
		4.2	Condition for oscillations	T1, T3	1	
		4.3	Types of oscillators: RC-phase shift oscillator with BJT	T1, T3	1	
		4.4	Types of oscillators: Analysis of RC-phase shift oscillator with FET	T1, T3	1	
		4.5	Types of oscillators: Analysis of Wien-bridge oscillators with BJT	T1, T3	1	
		4.6	Types of oscillators: Analysis of Wien-bridge oscillators with BJT	T1, T3	1	
		4.7	Types of oscillators: Analysis of Wien-bridge oscillators with FET	T1, T3	1	
		4.8	Generalized analysis of LC oscillator	T1, T3	1	
		4.9	Hartley oscillator using BJT	T1, T3	1	
		4.10	Colpitts oscillators using BJT	T1, T3	1	
		4.11	Frequency and amplitude stability of oscillators	T1, T3	1	
		4.12	Problems	T1, T3	1	
		4.13	Problems	T1, T3	1	
				Total	**13**	
V	CO4: Compare and analyze different power amplifier like class A, Class B ,Class C,Class AB.and other types of amplifier[K4]	**UNIT-5: POWER AMPLIFIERS**				Chalk & Talk, Smart Board and PPT
		5.1	Classification of power amplifier	T2, T3	1	
		5.2	Class A Power Amplifier	T2, T3	1	
		5.3	Class B Push Pull Amplifier	T2, T3	1	
		5.4	Class AB Power Amplifiers	T2, T3	1	
		5.5	Class C Power Amplifier	T2, T3	1	
		5.6	Principle of operation of class-C Amplifier	T2, T3	1	
		5.7	Thermal Stability	T2, T3	1	
		5.8	Heat Sinks	T2, T3	1	
		Tuned amplifier				
		5.9	Introduction to Tuned amplifier	T2, T3	1	
		5.10	Q-Factor	T2, T3	1	
		5.11	Small signal tuned amplifier	T2, T3	1	
		5.12	Capacitance single tuned amplifier	T2, T3	1	
		5.13	Double tuned amplifiers	T2, T3	1	
		5.14	Staggered tuned amplifiers	T2, T3	1	
				Total	**14**	
				CUMULATIVE PROPOSED PERIODS	**60**	
Content beyond the syllabus		Class D Power Amplifier			1	

Text Books:	
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	J. Millman and C.C .Halkias , Integrated Electronics. Tata McGraw-Hill,2017
2.	Robert L. Boylestad and Louis Nashelsky ,Electronic devices and Circuit Theory ,tenth edition,Pearson /PrenticeHall,TenthEdition,2009
3.	B.P.Singh,Rekha, Electronic Devices and Integrated Circuits, Pearson Publications,2006
Reference Books:	
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	Donald A.Neaman ,Electronic Circuit Analysis and Design,McGraw Hill,2010
2.	Sedha A.S and K.C.Smith , Micro electronic Circuits,oxford University press,Sixth Edition, 2009
3.	B.V.Rao, K.R.Rajeswari, P.C.R.Pantulu, K.B.R.Murthy Electronic Circuit Analysis, Pearson publications,2014
Web Details	
1.	https://www.electronicsforu.com/resources/electronic-devices-and-circuit-theory
2.	https://www.elprocus.com/types-of-clipper-and-clamper-circuits-and-applications/

		Name	Signature with Date
i.	Faculty I	Dr.D.Nataraj	
ii.	Faculty II	Dr.B.V.Ramana	
iii.	Faculty III	Mr.V.Satya Kishore	
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