SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
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	Branch	Contact Period /Week	Academic Year	Semester commencement date
19EC5T01	Linear & Digital IC Applications (R19)	V	ECE	5	2021-22	04-10-2021

COURSE OUTCOMES

After completion of the course student are able to

1	Demonstrate different applications based on operational-amplifier.(K1,K2,K3)
2	Explain the applications of waveform generators based on operational-amplifier and IC 555 timer.(K1,K2,K4)
3	Sketch and implementation of Combinational circuits using digital ICs.(K3)
4	Sketch and implementation of Sequential circuits using digital ICs (K3)

Unit No	OutCome/ Bloom's Level		Topics/Activity	Reference Text book	Contact Periods	Delivery Method
1.	CO1:Demonstrate different applications based on operational-amplifier.(K1,K2,K3)	**1. INTEGRATED CIRCUITS**				Chalk & Talk, PPT, Active Learning & Tutorial
		1.1	Introduction,Integrated circuits-Types, Classification	T1,T2	1	
		1.2	Package Types and temperature ranges.	T1, T2	1	
		1.3	Differential Amplifier- DC and AC analysis of Dual input balanced output Configuration	T1,T2	1	
		1.4	Properties of other differential amplifier configuration (Dual Input Unbalanced Output, Single Ended Input – Balanced/ Unbalanced Output)	T1,T2	1	
		1.5	Properties of other differential amplifier configuration (Dual Input Single Ended Input)	T1,T2	1	
		1.6	Properties of other differential amplifier configuration (Balanced/ Unbalanced Output)	T1, T2	1	
		1.7	DC Coupling.	T1,T2	1	

		1.8	Cascade Differential Amplifier Stages,	T1, T2	1	
		1.9	Level translator	T1,T2	1	
		1.10	Problems	T1,T2	1	
				TOTAL	**10**	
2.	CO2: Explain the applications of waveform generators based on operational-amplifier and IC555timer.(K1 ,K2,K4)	**2. OPERATIONAL AMPLIFIER AND ITS APPLICATIONS**				Chalk & Talk, PPT, Active Learning & Tutorial
		2.1	Characteristics of OP-Amps, Op-amp Block Diagram	T1,T2	1	
		2.2	Ideal and practical Op-amp specifications. Op-Amp parameters,(DC characteristics)	T1,T2	1	
		2.3	Ideal and practical Op-amp specifications. Op-Amp parameters,(AC characteristics)	T1,T2	1	
		2.4	741 op-amp & its features	T1,T2	1	
		2.5	Linear Applications of Op-Amps: Inverting amplifier	T1,T2	1	
		2.6	Linear Applications of Op-Amps: Non-inverting amplifier	T1,T2	1	
		2.7	Integrator and differentiator	T1,T2	1	
		2.8	Summing and Difference amplifier	T1,T2	1	
		2.9	Non-Linear Applications of Op-Amps: Comparators	T1,T2	1	
		2.10	Triangular and Square wave generators	T1,T2	1	
		2.11	Sine wave generation: principle, Wein-bridge	T1,T2	1	
		2.12	Phase-shift oscillators. and Problems	T1,T2	1	
				TOTAL	**10**	
3.	CO2: Explain the applications of waveform generators based on operational-amplifier and IC555timer.(K1 ,K2,K4)	**3. ACTIVE FILTERS AND TIMERS**				Chalk & Talk, PPT, Active Learning & Case study
		3.1	Introduction, classification, Butter worth filters – 1st order LPF	T1,T2	1	
		3.2	Butter worth filters – 1st order HPF	T1,T2	1	
		3.3	Band pass, Band reject	T1,T2	1	
		3.4	All pass filters qualitative and quantitative analysis	T1,T2	1	
		3.5	Introduction to 555 timer	T1,T2	1	
		3.6	555 timer, functional diagram	T1,T2	1	
		3.7	Monostable operations and applications	T2,T2	1	

		3.8	Astable operations and applications	T1,T2	1	
		3.9	Schmitt Trigger,PLL(IC 565)	T1,T2	1	
		3.10	VCO(IC 566),Problems	T1,T2	1	
				TOTAL	**10**	
4.	CO3:Sketch and implementation of Combinational circuits using digital ICs.(K3)	**4. COMBINATIONAL LOGIC DESIGN**				Chalk & Talk,PPT, Active Learning & Project based learning
		4.1	Introduction, Design and Analysis procedures,	T3	1	
		4.2	Decoders ,Encoders,	T3	1	
		4.3	Multiplexers and de-multiplexers,	T3	1	
		4.4	Comparators	T3	1	
		4.5	Ripple Adder	T3	1	
		4.6	Binary Parallel Adder	T3	1	
		4.7	Binary Adder-Subtractor	T3	1	
		4.8	Combinational multipliers	T3	1	
		4.9	Design considerations of the above combinational circuits with relevant Digital ICs	T3	1	
		4.10	Combinational circuits with relevant Digital ICs	T3	1	
				TOTAL	**10**	
5.	CO4:Sketch and implementation of Sequential circuits using digital ICs (K3)	**5. SEQUENTIAL LOGIC DESIGN**				Chalk & Talk, PPT, Active Learning & Tutorial
		5.1	Introduction to SSI latches	T3	1	
		5.2	Flip-Flops: SR,JK	T3	1	
		5.3	D flipflop, T Flipflop	T3	1	
		5.4	Design of Counters using Digital ICs,	T3	1	
		5.5	Counter applications	T3	1	
		5.6	Synchronous design methodology	T3	1	
		5.7	Universal Shift Registers	T3	1	
		5.8	Ring Counter	T3	1	
		5.9	Johnson Counter	T3	1	
		5.10	Design considerations sequential logic circuits with relevant Digital ICs	T3	1	
	Additional topics		Log and Antilog amplifiers, Instrumentation amplifier and A to D coverters			
				TOTAL	**10**	
TOTAL NO. OF CLASSES PROPOSED PER PERIOD'S					**60**	

ext Books:

.No.	AUTHORS/BOOK TITLE/EDITION(latest)/PUBLISHER/YEAR OF PUBLICATION
	D. Roy Chowdary, "Linear Integrated Circuits", 2nd Edition, New Age International (p) Ltd,2003.**Unit-I, II, III.**
	F. Wakerly, "Digital Design Principles & Practices", 3rd Edition, PHI/ Pearson Education Asia, 2005.**Unit-IV, V**

eference Books:

.No.	AUTHORS/BOOK TITLE/EDITION(latest)/PUBLISHER/YEAR OF PUBLICATION
	Sergio Franco, "Design with Operational Amplifiers & Analog Integrated Circuits", 1st Edition , **McGraw** Hill, 1988. **Unit-I, II, III.**
	M. Morris Mano ,"Digital Logic and Computer Design" ,1st Edition Pearson Education,2016, **Unit-IV, V**

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		Name	Signature with Date
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Principal