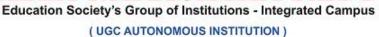


**CO5** 

**Design** and analyze the small size FET Amplifiers

## NALLA NARASIMHA REDDY





## Department of Electronics & Communication Engineering Academic Year: 2021-22

YEAR: II SEMESTER: I REGULATION: R18

Course	Name: Electronic Devices and Circuits Course Code: EC301PC
CO1	Understand and know the characteristics of various components and their applications.
CO2	Analyze the Bipolar Junction Transistor characteristics and the biasing techniques
CO3	Analyze the Field Effect Transistor characteristics and its application
CO4	<b>Design</b> and analyze the small signal BJT Amplifiers

Course	e Name: Network Analysis & Transmission Lines Course Code: EC302PC
CO1	Recall basic electrical, magnetic circuit concept, Resonance and define various electrical parameters.
CO2	Simplify voltage-current relationships with locus diagrams, basic-cut set, tie-set matrices.
CO3	Analyze the steady state and the transient states in the electrical circuits by using time domain method.
CO4	<b>Determine</b> the various parameters such as Z, Y, ABCD & amp; h parameters of the two port network and design different types of attenuators.
CO5	Discuss & Derive the parameters of Transmission lines.
CO6	<b>Design</b> of impedance matching of Transmission lines using different methods.

Cours	Course Name: Digital System Design Course Code: EC303PC	
CO1	Classify different number systems and realize Boolean function using Logic gates.	
CO2	Minimize the Boolean function using postulates of Boolean Algebra.	
CO3	<b>Design</b> and Analyze Combinational circuits and verify the functionality.	
CO4	Design and Analyze Sequential circuits and Finite State Machines.	
CO5	Construct the logic gates using diodes and transistors.	

Course	Name: Signals & Systems Course Code: EC304PC
CO1	Interpret any signal in terms of complete sets of orthogonal functions and understands the principles of basic signals.
CO2	Sketch Fourier spectrum by using Fourier series and Fourier transforms.
CO3	<b>Describe</b> sampling theorem to reconstruct signal from its samples.
CO4	<b>Design</b> a distortion less LTI system and derive filter characteristics of a system.
CO5	<b>Test</b> Parsevals theorem and explain the concepts convolution, correlation in time domain and frequency domain.
CO6	Analyze Laplace Transforms, Fourier Transforms and Z-Transforms.

**Course Name: Probability Theory and Stochastic Processes Course Code: EC305ES** 

CO1	Explain simple probabilities using an appropriate sample space
CO2	Express simple probabilities and expectations from probability density functions
СОЗ	Determine the temporal characteristics of random signals
CO4	<b>Determine</b> the concepts of spectral characteristics of a random process
C05	Understand the concepts of noise in communication systems

Course Name: Constitution of India		Course Code: MC309
CO1	Understand the concept of Indian Constitution.	
CO2	Outline the fundamental rights and Fundamental Duties	
CO3	Analyze the Directive Principles of State Policy	
CO4	Analyze the distribution of powers between of Union and States	
CO5	Able to know the Emergency Provision of Indian Constitution.	

Course Name: Electronic Devices & Circuits Lab Course Code: EC306PC

Course	Trumer Electronic Devices & Circuits Lub
CO1	<b>Identify &amp;</b> utilize various electronic components and devices with their specifications to implement and verify the outputs of hardware circuits.
CO2	Construct and Analyze the characteristics of PN junction diode, Zener diode and Silicon.
CO3	<b>Implement</b> the rectifier circuits with and without filter and voltage regulator.
CO4	Analyze the characteristics and calculate the parameters of transistors like BJT, FET and UJT.
CO5	<b>Design</b> the various Amplifiers like Common Emitter, Common Base, Common Source and Implement them using hardware and also observe their frequency response.

**Course Name: Basic Simulation Lab Course Code: EC308ES** 

CO1	Generate and perform operations on various types of signals (impulse, step, squareetc).
CO2	<b>Perform</b> convolution and correlation between signals.
CO3	Analyze time and frequency response for a given LTI system.
CO4	Verify the sampling theorem and stability of a system.
CO5	Analyze signal characteristics in frequency domain by Fourier transform method.

**Course Name: Digital System Design Lab Course Code: EC307PC** 

CO1	Realize and implementation of Boolean functions using digital logic IC's
CO2	Implementation of different combination logic circuits using IC's
CO3	Realize and implementation of Asynchronous & Synchronous counters using flip-flop IC's
CO4	Design a finite state machine of Sequence detector.



## NALLA NARASIMHA REDDY

Education Society's Group of Institutions - Integrated Campus





#### Department of Electronics & Communication Engineering Academic Year: 2021-22

YEAR: III SEMESTER: I REGULATION: R18

Course Name: Microprocessors and Microcontrollers

Course Code: EC501PC

CO1	Understand the internal architecture and organization of 8086
CO2	<b>Develop</b> assembly language programming to design mp/mc controller based systems
CO3	Convey the knowledge of 8051 microcontroller applications and its real time control
CO4	Understand the interfacing of ARM and architecture and organization of ARM
CO5	Understand the CORTEX & advanced OAMP processor architectures and its functionalities

Course Name: Data Communications & Networks

Course Code: EC502PC

CO1	<b>Discuss</b> the basics of Internet and compare ISO-OSI & CP/IP reference models.
CO2	Apply knowledge of Computer Network Concepts to solve problems in Error Control & Access control mechanism
CO3	Analyze different Routing Techniques.
CO4	Explain different UDP and TCP protocols.
CO5	<b>Know</b> the Functioning of various Application layer Protocols.

Course Name: Control Systems Course Code: EC503PC

CO1	Illustrate types, modeling and feedback characteristics of control system.
CO2	<b>Evaluate</b> the representation of control system through transfer function, block diagram and signal flow graph techniques.
CO3	Explain time response analysis of different ordered systems.
CO4	<b>Define</b> the concept of stability and Construct the Bode Plot, Nyquist Plot and Polar Plot for stability of the system.
CO5	Modeling of linear time invariant systems using state space representations

Course Name: Business Economics & Financial Analysis Course Code: SM504MS

CO1	Understand the various Forms of Business
CO2	Learn the concept of Economics and Understand the importance of Economics in Business.
CO3	Understand The Demand, Supply, Production, Cost, Market Structure, Pricing concepts.
CO4	Understand the process of Accounting and learn to prepare the Accounting Statements
CO5	Analyze the firm's financial position by comparing the Financial Statements of a Company.

Course Name: Electronic Measurement & Instrumentation Course Code: EC513PE

CO1	<b>Define</b> the fundamental concepts of measurement & principles of instrumentation.
CO2	Analyze the various signal generators to measure electrical parameters.
CO3	Understand the internal structure and operation of different types of oscilloscope.
CO4	Analyze the various types of transducers to measure physical parameters.
C05	Understand the working principle of various bridges & measuring instruments.

Course Name: Microprocessors and Microcontrollers Lab Course Code: EC505PC

CO1	Classify and Analyze the instruction set of 8086
CO2	<b>Develop</b> the assembly programs in 8086. It helps to design a complete microprocessor based systems
CO3	<b>Develop</b> the interfacing of microprocessor with I/O devices
CO4	Classify and Analyze the instruction set in 8051.
CO5	<b>Develop</b> the assembly programs in 8051. It helps to design a complete microcontroller based systems

Course Name: Data Communications & Networks Lab

Course Code: EC506PC

CO1	Understand & Explain the concept of Data Communication & Networks, layered architecture and applications.
CO2	Analyze and Setup protocol designing issues for communication networks
CO3	Evaluate data communication link considering elementary concepts of data link layer protocols for error detection and correction
CO4	Apply various network layer techniques for designing subnets & super nets & analyze packet flow on basis of routing protocols
CO5	Understand and design application layer protocols & internet applications such as network security, email & DNS.

Course Name: Advanced Communication Skills Lab

Course Code: EN508HS

CO1	<b>Develops</b> confidence to use relevant vocabulary, using apt kinesics or body language in communication.
CO2	<b>Infer</b> the meaning of the text easily through comprehension techniques like, skimming, scanning and effective reading through proper vocabulary
CO3	Analyze the writing skills through letters, reports and resume writing from the text and use for all professional settings.
CO4	Gather ideas, information and organize them relevantly in making presentations.
CO5	<b>Self assured</b> to organize and deliver discussions, presentations and strategies to face the interviews effectively.



# VALLA NARASIMHA REDDY

Education Society's Group of Institutions - Integrated Campus





#### Department of Electronics & Communication Engineering Academic Year: 2021-22

YEAR: IV SEMESTER: I REGULATION: R18

Course Name: Microwave and Optical Communications

Course Code: EC701PC

CO1	<b>Discuss</b> the various microwave tubes and their performance characteristics.
CO2	<b>Describe</b> and understand the principles of solid-state devices.
CO3	<b>Distinguish</b> between the different types of waveguide and ferrite components.
CO4	Understand the utility of S-Parameters in microwave component design and learn the measurement procedure of various microwave parameters.
CO5	Analyze the mechanism of light propagation through optical fibers.

Course Name: Digital Image Processing Course Code: EC713PE

CO1	Understand the working of various medical instruments and critical care equipment
CO2	<b>Know</b> the imaging techniques including CT,PET, SPECT and MRI used in diagnosis of various medical
CO3	Understand the working of various medical instruments and critical care equipment
CO4	Know the imaging techniques including CT,PET, SPECT and MRI used in diagnosis of various medical
CO5	Understand the working of various medical instruments and critical care equipment

#### Course Name: Biomedical Instrumentation Course Code: EC721PE

CO1	Understand bio systems and medical systems from an engineering perspective
CO2	<b>Identify</b> the techniques to acquire record and primarily understand physiological activity of the human body through cell potential, ECG, EEG, BP and blood flow measurement and EMG
CO3	Understand the working of various medical instruments and critical care equipment
CO4	<b>Know</b> the imaging techniques including CT,PET, SPECT and MRI used in diagnosis of various medical conditions.
CO5	Understand big systems and medical systems from an engineering perspective

Course Name: Python Program Course Code: CS702OE

CO1	Learn Syntax and Semantics and create Functions in Python.
CO2	Handle Strings and Files in Python.
CO3	Understand Lists, Dictionaries and Regular expressions in Python.
CO4	Implement Object Oriented Programming concepts in Python.
CO5	<b>Build</b> Web Services and introduction to Network and Database Programming in Python.

Course Name: Professional Practice, Law & Ethics Course Code: SM702MS

CO1	Understanding basic purpose of profession, professional ethics and various moral and social issues.	Ī
CO2	<b>Awareness</b> of professional rights and responsibilities of a Engineer, safety and risk benefit analysis of a Engineer	
CO3	Acquiring knowledge of various roles of Engineer In applying ethical principles at various professional levels	
CO4	Professional Ethical values and contemporary issues	
CO5	Excelling in competitive and challenging environment to contribute to industrial growth.	

Course Name: Microwave and Optical Communications Lab

Course Code: EC703PC

CO1	
COI	<b>Discuss</b> the various microwave generators and their performance characteristics.
CO2	Measure scattering parameters of various microwave components using microwave bench.
CO3	<b>Determine</b> electrical parameters of various microwave components using microwave bench.
CO4	<b>Demonstrate</b> the different types of optical light sources.
CO5	Analyze the various losses of optical fibers.

Course Name: Industrial Oriented Mini Project/ Summer Internship Course Code: EC704PC

CO1	<b>Design</b> identifies basic requirements for an application and proposes a effective solution
CO2	<b>Build</b> knowledge through practical assignments and learn the various design methods for solving problem
CO3	<b>Develop</b> skill to build design techniques for various problem analysis
CO4	Summarize the fundamental concepts and techniques used in mini project
CO5	Make up project enables the students to understand the business process

Course Name: Seminar Course Code: EC705PC

CO1	Spell for basic concepts of science and technology
CO2	Contrast the understanding perspective of techniques applicable to their domain
CO3	Construct the solutions upon their own knowledge
CO4	Improve their presentation and communication skills
CO5	Make up them to pursue their placements and higher studies

Course Name: Project Stage - I Course Code: EC706PC

CO1	Analyze new problems, identify and define the appropriate requirements for its solutions.
CO2	Understand the impact of engineering students.
CO3	Understand team work to complete a common goal.



## NALLA NARASIMHA REDDY

Education Society's Group of Institutions - Integrated Campus



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## Department of Electronics & Communication Engineering Academic Year: 2021-22

YEAR: II SEMESTER: II REGULATION:R18

Course Name: Laplace Transforms, Numerical Methods & Complex Variables Course Code: MA401BS

CO1	Apply the Laplace transforms techniques for solving ODE's
CO2	<b>Evaluate</b> the real roots of algebraic and transcendental equations by different numerical methods and Estimate the value for the given data using interpolation methods
CO3	
COS	<b>Find</b> the numerical solutions for a given ODE's and use suitable method to find the numerical integration
CO4	Analyze complex functions with reference to their analyticity using Cauchy's Riemann equations
CO5	<b>Find</b> the Taylor's and Laurent's series expansion of complex functions and integrating using Cauchy's integral and residue theorems

Course Name: Electromagnetic Fields and Waves Course Code: EC402PC

CO1	<b>Discuss</b> the generation of electric and magnetic fields.
CO2	<b>Distinguish</b> between static and time-varying fields, establish the corresponding sets of Maxwell's
	Equations and Boundary Conditions.
СОЗ	Analyze the Wave Equations for good conductors, good dielectrics and evaluate the Uniform Plane Wave Characteristics for several practical media of interest.
CO4	<b>Describe</b> the mode characteristics of rectangular waveguides.

Course Name: Analog and Digital Communications

Course Code: EC403PC

CO1	
COI	Analyze system requirements of analog and digital communication systems.
CO2	Understand the generation, detection of various analog and digital modulation techniques.
CO3	Acquire knowledge of each block in AM, FM transmitters and receivers.
CO4	Understand the concepts of Pulse Code modulation techniques.
CO5	<b>Understand</b> the concepts of digital modulation techniques and baseband transmission.

Course Name: Linear IC Applications Course Code: EC404PC

CO1	Understand the basic Concepts of Integrated Circuits and Operational Amplifier.
CO2	<b>Design</b> OP-AMP Circuits for different Applications.
CO3	<b>Design</b> and analyze the filters and oscillators using OP-AMP.
CO4	<b>Discuss</b> Various Applications of Special Functions of IC's such as 555, Voltage Regulator and PLL Operations
CO5	Analyze Various types of ADC and DCA.

**Course Name: Electronic Circuit Analysis** 

CO1	Extract the equivalent models for BJT & JFET at low & high frequencies so as to analyze any electronic circuit
CO2	<b>Differentiate</b> between the positive & negative feedback concepts as applied to various electronic circuits.
CO3	<b>Design</b> , construct & amp; analyze oscillator circuits to generate audio & radio frequency sinusoidal signals.
CO4	<b>Realize</b> different types of power amplifiers for practical applications as per the specifications.
C05	Analyze various non-sinusoidal signals using different multivibrators for various electronic applications . Apply time base generator circuits which is used in applications like CRO & TV

**Course Code: EC405PC** 

Course Code: EC406PC

**Course Code: EC408PC** 

Course Name: Analog and Digital Communications Lab

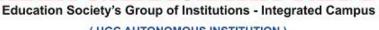
COMID	or tunior rimary and Digital Communications 245	Course Court EC 1001 C
CO1	<b>Analyze</b> the different types of continuous modulation and demodulation techniques (Amp DSB, SSB and Frequency)	plitude,
CO2	Verify Frequency Division Multiplexing with De-multiplexing Technique.	
CO3	Evaluate the characteristics of PAM, PWM and PPM.	
CO4	Analyze how a continuous signal is converted to digital signal.	
CO5	<b>Demonstrate</b> various digital modulation schemes (FSK, BPSK, DPSK and QPSK).	

Course	Course Name: IC Applications Lab  Course Code: EC407PC	
CO1	<b>Design</b> different applications using IC741.	
CO2	Analyze different three terminal voltage Regulators and Design voltage regulator using IC 723.	
CO3	Design Multi-vibrators using IC 555.	
CO4	Design PLL circuits using IC565.	
C05	<b>Design</b> different applications using IC741.	

Course Name: Electronic Circuit Analysis Lab

CO1	Comprehend the fundamentals of multistage amplifiers, feedback amplifiers and oscillatory circuits
CO2	Analyze the circuit design process and simulate the common emitter amplifier, common collector amplifier and common source amplifier
соз	Discriminate the design and simulate various oscillator circuits
CO4	Create the design and simulate the cascade, class A power amplifier circuits and single tuned voltage amplifiers
CO5	To know the working of transistorized multivibrator circuits.







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### **Department of Electronics & Communication Engineering** Academic Year: 2021-22

YEAR: III **SEMESTER: II REGULATION: R18** 

**Course Name: Antennas and Propagation Course Code: EC601PC** 

Course	1 tumes intermed and 1 topugation
CO1	To recall different parameters of an antenna.
CO2	To explain the broadside and end fire antenna arrays.
CO3	To illustrate the design considerations of UHF,VHF and Microwave Antenna
CO4	To compare characteristics of radio wave propagation.

**Course Name: Digital Signal Processing Course Code: EC602PC** 

CO1	<b>Distinguish</b> between Continuous and Discrete time signals and systems
CO2	Evaluate the Z-Transforms for discrete time signals and system functions
CO3	Apply mathematical tool such as DTFT, DFT, FFT algorithms in processing of digital signals
CO4	<b>Design</b> and <b>Construct</b> IIR,FIR filters to meet specific magnitude and phase requirements
CO5	Compare the tradeoffs between normal and multi rate DSP techniques and can explore the finite length word effects.

Course Name: VLSI Design **Course Code: EC603PC** 

CO1	<b>Acquire</b> qualitative knowledge about the fabrication steps involved in the design of integrated circuits with different fabrication approaches.
CO2	<b>Draw</b> the transistor layout of any logic circuits which helps to understand and estimate parasitic of logic circuits.
СОЗ	<b>Design</b> the sub-system blocks required to build the complex data-path systems and also analyze the approaches for design of various PLDs.
CO4	Understand concept of fault models and testing to improve the testability of system.

**Course Name: Object Oriented Programming through Java Course Code: EC611PE** 

CO1	<b>Understand</b> the concept of OOP as well as the purpose and usage principles ofinheritance, polymorphism, encapsulation and method overloading.
CO2	<b>Identify</b> classes, objects, members of a class and the relationships among themneeded for a specific problem.
CO3	Create Java application programs using sound OOP practices and proper program structuring.
CO4	<b>Develop</b> programs using the Java Collection API as well as the Java standardclass library.
CO5	<b>Develop</b> the skills to apply java programming in problem solving

Course	ourse Name: Environmental Science Course Code: MC609	
CO1	Importance of ecological balance for sustainable development.	
CO2	Impacts of developmental activities and mitigation measures	
CO3	Understanding the environmental policies and regulations	
CO4	<b>Develop</b> technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development	

**Course Name: Digital Signal Processing Lab** 

CO1	Use simulation tool for signal processing applications
CO2	<b>Design</b> IIR filters on signals
СОЗ	Apply DTFT/ DFT/ FFT on signals
CO4	<b>Design</b> FIR filters on signals

**Course Code: EC604PC** 

Course	Course Name: e – CAD Lab Course Code: EC605P	
CO1	Understand the concepts of Verilog HDL for the realization of logic gates.	
CO2	<b>Design</b> of various combinational and sequential logic circuits using Verilog HDL.	
CO3	<b>Draw</b> the layout, physical verification of digital logic circuits.	
CO4	Understand and estimate the timing, parasitic of logic circuits.	

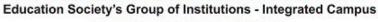
Course Name: Scripting Languages Lab

Course Code: EC606PC

CO1	Understand the application of Ruby scripting language.
CO2	Choose the scripting language to develop files & Choose the scripting language to deve
CO3	Use Ruby & Drograms Use Ruby & Drograms
CO4	Apply the concept of arrays and strings while developing the programs.
CO5	Make use of Perl language to implement simple programs, manipulating functions & Description (Control of the Control of the Co



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#### Department of Electronics & Communication Engineering Academic Year: 2021-22

YEAR: IV SEMESTER: II REGULATION: R18

Course Name: Wireless & Sensor Networks Course Code: EC813PE

CO1	Analyze various architectures of wireless sensor networks
CO2	Understand design issues and challenges in wireless sensor networks
CO3	Compare the performance of various routing and MAC protocols
	Classify various data gathering and data dissemination methods
	Explain gateway concepts and communication between wireless sensor networks and internet

Course Name: Low Power VLSI Design Course Code: EC823PE

CO1	Understand the knowledge about the need of low power circuit design methods.
CO2	Acquire the knowledge of different architectural approaches to achieve low power designs.
CO3	Analyze and design the low voltage low power sub-system blocks required to build the data-path systems.
CO4	Understand the methods for the design of low voltage low power memories.

Course Name: Database Management Systems Course Code: EC722PE

CO1	Understand the basic fundamentals of DBMS, database designs & mp; normal forms.
CO2	Apply the basics of Structured Query Language (SQL) for constructing queries.
CO3	<b>Discuss</b> the different database designs and relational models for processing.
CO4	Acquire knowledge on database storage structures and database access techniques.

Course Name: Project Stage-II Course Code: EC801PC

CO1	Analyze new problems, identify and define the appropriate requirements for its solutions.
CO2	Understand the impact of engineering students.
СОЗ	Understand team work to complete a common goal.