



## Department Of Electronics and Communication Department

### 21 Scheme (3<sup>rd</sup> and 4<sup>th</sup> semester)

#### 3<sup>rd</sup> Semester

##### 21EC31

To solve ordinary differential equations using Laplace transform.
Demonstrate the Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory
To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations
To solve mathematical models represented by initial or boundary value problems involving partial differential equations
Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

##### 21EC32

Simplify Boolean functions using K-map and Quine-McCluskey minimization technique
Analyze and design for combinational logic circuits.
Analyze the concepts of Flip Flops (SR, D, T and JK) and to design the synchronous sequential circuits using Flip Flops
Analyze the concepts of Flip Flops (SR, D, T and JK) and to design the synchronous sequential circuits using Flip Flops.
Model Combinational circuits (adders, subtractors, multiplexers) and sequential circuits using Verilog descriptions

##### 21EC33

Understand the basics of Linear Algebra
Analyse different types of signals and systems
Analyse the properties of discrete-time signals & systems
Analyse discrete time signals & systems using Z transforms

##### 21EC34

Understand the characteristics of BJTs and FETs
Design and Analyze BJT and FET amplifier circuits
Analyze feedback topologies

Describe the functioning of Linear Ics
Analyze the characteristics of power electronic device components

21EC381

Demonstrate the truth table of various expressions and combinational circuits using logic gates.
Design various combinational circuits such as adders, subtractors, comparators, multiplexers and code converters.
Construct flips-flops, counters and shift registers
Design and implement synchronous counters.

21ECL35

Design and analyze the BJT/FET amplifier and oscillator circuits.
Design and test Opamp circuits to realize the mathematical computations, DAC and precision rectifiers
Design and test the combinational logic circuits for the given specifications
Test the sequential logic circuits for the given functionality
Demonstrate the basic electronic circuit experiments using SCR and 555 timer.

## 4<sup>th</sup> Semester

21EC41

Recall the basic laws and definitions (with mathematical representations) in Electric and Magnetic fields.
Apply the basic laws of Electric and Magnetic fields to arrive at Divergence Theorem, Current continuity Equation, Curl, Stokes' theorem.
Apply Electric and Magnetic field concepts to arrive at Maxwell's equations, Electromagnetic wave equations and Poynting's theorem
Recall the definitions related to Random variables and Random Processes
Model the Random events in the Communication set-up and determine useful statistical parameters

21EC42

Determine the spectrum of finite duration sequence using DFT techniques
Compute DFT of real and complex discrete time signals by using FFT algorithms
Design FIR Filters using Windowing Techniques
Design of IIR filter using Bilinear Transformation method

Understand DSP architecture and design digital filters using DSP processors
---

21EC43

Analyze the network by using Network theorems and network reduction techniques
--

Understand two port network parameters and Analyze Network response for different inputs using Laplace Transforms
---

Learn the types of control systems and Apply reduction techniques to determine the transfer function of a Control system
--

Analyze time domain behavior of 1st and 2nd order systems and Analyze the stability of the system using different techniques in time domain
---

Analyze the stability of a system using frequency domain techniques and Analyze the electrical system using state variable technique
--

21EC44

"Understand the amplitude and frequency modulation techniques and perform time and frequency domain transformations."
---

"Identify the schemes for amplitude and frequency modulation and demodulation of analog signals and compare the performance
---

Characterize the influence of channel noise on analog modulated signals.
--

Demonstrate the characteristics of pulse amplitude modulation, pulse position modulation and pulse code modulation systems
--

Illustration of digital formatting representations used for Multiplexers
--

21EC481

Write C programs in 8051 for solving simple problems that manipulate input data using different instructions of 8051 C.
---

Develop testing and experimental procedures on 8051 Microcontroller, analyze their operation under different cases
--

Develop programs for 8051 Microcontroller to implement real world problems.
---

Design and Develop Mini projects
----------------------------------

21EC45

Understand the basic biological concepts via relevant industrial applications and case studies.
---

Evaluate the principles of design and development, for exploring novel bioengineering projects
--

Verify the concepts of biometrics for specific requirements.
Think critically towards exploring innovative bio based solutions for socially relevant problems

21ECL46

Model an analog communication system signal transmission and reception.
Realize the electronic circuits to perform analog and pulse modulations and demodulations
Verify the sampling theorem and relate the signal and its spectrum before and after sampling
Understand the process of PCM and delta modulations
Understand the PLL operation



# SRI KRISHNA INSTITUTE OF TECHNOLOGY

(Accredited by NAAC, Approved by A.I.C.T.E. New Delhi, Recognised by Govt. of Karnataka & Affiliated to V.T U., Belagavi),  
#57 Chimney Hills, Hesaraghatta Main Road, Chikkabanavara Post, Bengaluru- 560090

## Department of Electronics and Communication Engineering

### 2021 Scheme CO's

#### 5<sup>th</sup> Semester Co's

##### 21EC51

1. Analyze different digital modulation techniques and choose the appropriate modulation technique for the given specifications.
2. Test and validate symbol processing and performance parameters at the receiver under ideal and corrupted band limited channels.
3. Differentiate various spread spectrum schemes and compute the performance parameters of communication system.
4. Apply the fundamentals of information theory and perform source coding for given message
5. Apply different encoding and decoding techniques with error Detection and Correction

##### 21 EC52

1. Understand the principles of analog communication systems and noise modeling.
2. Identify the schemes for analog modulation and demodulation and compare their performance.
3. Design of PCM systems through the processes sampling, quantization and encoding.
4. Describe the ideal condition, practical considerations of the signal representation for baseband transmission of digital signals.
5. Identify and associate the random variables and random process in Communication system design

##### 21EC53

1. Understand the concepts of networking thoroughly.
2. Identify the protocols and services of different layers.
3. Distinguish the basic network configurations and standards associated with each network.
4. Discuss and analyze the various applications that can be implemented on networks



# SRI KRISHNA INSTITUTE OF TECHNOLOGY

(Accredited by NAAC, Approved by A.I.C.T.E. New Delhi, Recognised by Govt. of Karnataka & Affiliated to V.T.U., Belagavi),  
#57 Chimney Hills, Hesaraghatta Main Road, Chikkabanavara Post, Bengaluru- 560090

## 21EC54

1. Describe the use and advantages of microwave transmission
2. Analyze various parameters related to transmission lines.
3. Identify microwave devices for several applications.
4. Analyze various antenna parameters and their significance in building the RF system.
5. Identify various antenna configurations for suitable applications.

## 21ECL55

1. Design and test the digital modulation circuits and display the waveforms.
2. To Implement the source coding algorithm using C/C++/ MATLAB code.
3. To Implement the Error Control coding algorithms using C/C++/ MATLAB code.
4. Illustrate the operations of networking concepts and protocols using C programming and network simulators

## 21EC581

1. Understand internet of Things and its hardware and software components
2. Interface I/O devices, sensors & communication modules
3. Remotely monitor data and control devices
4. Develop real life IoT based projects

## 6<sup>th</sup> Semester Co's

### 21EC61

1. Understand the fundamental concepts of Management and its functions.
2. Understand the different functions to be performed by managers/Entrepreneur
3. . 3. Understand the social responsibilities of a Business.
4. Understand the Concepts of Entrepreneurship and to identify Business opportunities.
5. Understand the components in developing a business plan and awareness about various sources of funding and Institutions supporting Entrepreneur.

### 21EC62

1. Explain the basic organization of a computer system.
2. Demonstrate functioning of different sub systems, such as processor, Input/output, and memory.
3. Describe the architectural features and instructions of 32-bit microcontroller ARM Cortex M3.



# SRI KRISHNA INSTITUTE OF TECHNOLOGY

(Accredited by NAAC, Approved by A.I.C.T.E. New Delhi, Recognised by Govt. of Karnataka & Affiliated to V.T.U., Belagavi),  
#57 Chimney Hills, Hesaraghatta Main Road, Chikkabanavara Post, Bengaluru- 560090

- |  |
|--|
| 4. Apply the knowledge gained for Programming ARM Cortex M3 for different applications |
|--|

## 21EC63

1. Demonstrate understanding of MOS transistor theory, CMOS fabrication flow and technology scaling.
2. Draw the basic gates using the stick and layout diagram with the knowledge of physical design aspects.
3. Interpret memory elements along with timing considerations.
4. Interpret testing and testability issues in combinational logic design.
5. Interpret testing and testability issues in combinational logic design

## 21EC643

1. Acquire programming skills in Python
2. Demonstrate data structure representation using Python
3. Develop the skill of pattern matching and files in Python
4. Acquire Object Oriented Skills in Python
5. Develop the ability to write database applications in Python.

## 21ECL66

1. Design and simulate combinational and sequential digital circuits using Verilog HDL.
2. Understand the synthesis process of digital circuits using EDA tool.
3. Perform ASIC design flow and understand the process of synthesis, synthesis constraints and evaluating the synthesis reports to obtain optimum gate level net list.
4. Design and simulate basic CMOS circuits like inverter, common source amplifier, differential amplifier, SRAM.
5. Perform RTL_GDSII flow and understand the stages in ASIC design.

## 21ME652 (open elective)

1. Describe the various forms of non-conventional energy resources.
2. Apply the fundamental knowledge of mechanical engineering to design various renewable energy systems
3. Analyze the implications of renewable energy forms for selecting an appropriate system for a specific application
4. Discuss on the environmental aspects and impact of non-conventional energy resources, in comparison with various conventional energy systems, their prospects and limitations