

ST. FRANCIS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION

COURSE OUTCOMES FOR SECOND YEAR (SEM IV)

R-2019 C SCHEME

Course Code	Course Name
ECC401	Engineering Mathematics-IV
ECC402	Microcontrollers
ECC403	Linear Integrated Circuits
ECC404	Signal and Systems
ECC405	Principles of Communication Engineering
ECL401	Microcontrollers Lab
ECL402	Linear Integrated Circuits Lab
ECL403	Principles of Communication Engineering Lab
ECL404	Skill Lab: Python Programming
ECM401	Mini Project 1B

Course Outcomes

ECC 401 Applied Mathematics IV

- CO1 Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals

- CO2 Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning and AI.

- CO3 Apply the concepts of probability and expectation for getting the spread of the data and distribution of probabilities.
- CO4 Apply the concept of vector spaces and orthogonalization process in Engineering Problems.
- CO5 Use the concept of Quadratic forms and Singular value decomposition which are very useful tools in various Engineering applications.
- CO6 Find the extremals of the functional using the concept of Calculus of variation.

ECC 402 Microcontrollers

- CO1 Understand microcomputer Systems & development tools of microcontroller based systems.
- CO2 Understand computer memory in detail
- CO3 Develop the basic knowledge and core expertise in 8051 microcontroller
- CO4 Write assembly language program to Interface various peripheral devices with 8051 microcontroller for different applications
- CO5 Develop the basic knowledge and core expertise in ARM7 microcontroller.
- CO6 Design an applications for various 8 bit Microcontrollers

ECC 403 Linear Integrated Circuits

- CO1 Outline, Identify and classify all types of integrated circuits.
- CO2 Understand and analyze the linear application of opamp.

- CO3 Understand and analyze the non-linear application of opamp
- CO4 Explain, analyze, and design different multivibrator using IC 555 and general purpose opamp.
- CO5 Classify and Comprehend the working principle of Linear and Switching Regulators converters.
- CO6 Illustrate the function of application specific ICs such as, Voltage Controlled Oscillator and Phase Lock loop and its application in communication.

ECC 404 Signal and Systems

- CO1 Classify and Analyze different types of signals and systems
- CO2 Analyze continuous and discrete time LTI systems in time domain
- CO3 Analyze continuous and discrete time signals and systems using Fourier transform
- CO4 Analyze continuous time LTI systems using Laplace transform
- CO5 Analyze discrete time LTI systems using z-transform
- CO6 Analyze FIR and IIR systems

ECC 405 Principles of Communication Engineering

- CO1 Understand various types of Amplitude modulation and demodulation techniques used in analogue communication.
- CO2 Understand Frequency and Phase modulation and demodulation techniques used in analogue communication.

- CO3 Identify and solve basic communication problems, analyse transmitter and receivers.
- CO4 Detect the errors that occurs due to noise during transmission
- CO5 Compare and contrast advantages and limitations of analogue and digital communication systems.
- CO6 Understand different pulse modulation methods and multiplexing techniques used in communication

ECL401-Microcontrollers Lab

- CO1 Acquire detail knowledge 8051 Keil development tool required to develop microcontroller based systems.
- CO2 Implement 8051 assembly language code for arithmetic and logical operations, code conversion& data transfer operations.
- CO3 Implement 8051 assembly language programs for general purpose I/O, Timers
- CO4 Interface and Implement 8051 programs for Input and Output Peripherals
- CO5 Design and develop an application for 8 bit microcontroller

ECL402-Linear Integrated Circuits Lab

- CO1 Understand and investigate the differences between theoretical, practical results in integrated circuits.
- CO2 Understand, analyze, find fault and trouble shoot the circuits using IC.
- CO3 Design, draft, manage and practically implement the solution for linear & non-linear applications using IC 741.

- CO4 Design and simulate the solution for linear & non-linear applications using modern EDA tools or software.
- CO5 Apply knowledge of op-amp and timer IC, to design and present simple applications
- CO6 Select the appropriate IC with the help of data sheet to understand, analyse, present and implement application like variable and fixed voltage regulators, PWM, PPM, VCO and FSK

ECL403-Principles of Communication Lab

- CO1 Analyse generation/detection of Amplitude modulation techniques by graphical representation.
- CO2 Analyse generation/detection of Frequency modulation techniques by graphical representation.
- CO3 Using simulation software to generate the graphical outcomes of AM and FM equations.
- CO4 Study AM Super heterodyne radio receiver and plot the sensitivity of the receiver
- CO5 Analyse different pulse modulation methods by using sampling process.
- CO6 Analyse different multiplexing techniques, TDM and FDM used in communication

ECL 404 Skill Lab: Python Programming

- CO1 Describe syntax and semantics in Python
- CO2 Illustrate different file handling operations
- CO3 Interpret object oriented programming in Python

- CO4 Design GUI Applications in Python
- CO5 Express proficiency in the handling Python libraries for data science
- CO6 Develop machine learning applications using Python

ECM401-Mini Project 1B

- CO1 Implement basic codes for the Arduino board using the IDE for utilizing the onboard resources.
- CO2 Apply the programming skills to interfacing devices & Apply the knowledge to the Arduino board to accomplish a given task.
- CO3 Design Arduino based projects for a given problem.
- CO4 Implement code using python language using IDE for utilizing the onboard resources.
- CO5 Apply the knowledge of interfacing different devices to the Raspberry Pi board to accomplish a given task.
- CO6 Design Raspberry Pi based projects for a given problem.