MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: I**

Course Title: Network Analysis & Analog Electronics **Course Code: 20ETCCNA13**

No. of Hours: 60 **LTP: 400** **Credits: 3**

SYLLABUS

Objectives

- To explain the basic concepts and laws of electrical networks and solve them using mesh and nodal analysis techniques.
- To solve the given circuit using network theorems.
- To understand the operation of semiconductor devices.
- To apply the knowledge and skills acquired to build simple analog circuits.

Course Outcomes

CO1: Explain the basic concepts of electrical quantities and use circuit laws to simplify resistive circuits.

CO2: Apply reduction techniques using network theorems, nodal and mesh analysis.

CO3: Demonstrate the functioning of various solid-state devices.

CO4: Examine the principle and operation of rectifiers, feedback amplifiers and oscillators.

UNIT-I: Circuit Analysis **(10 Hrs.)**

Concept of voltage and current sources, calculation of resistance in series and parallel connections, Ohm's law, terminology and definitions of networks, Kirchhoff's Current Law, Kirchhoff's Voltage Law, mesh analysis, node analysis, star and delta networks-conversions, principle of duality, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum Power Transfer theorem.

UNIT-II: Junction Diode and its applications **(10 Hrs.)**

PN junction diode under forward and reverse bias conditions, V- I characteristics, diode equation (no derivation), idea of static and dynamic resistance, Zener diode, concept of transformer, regulated power supply: block diagram, working, rectifiers - half wave rectifier, full wave rectifiers (center tapped and bridge), circuit diagrams, working and waveforms, ripple factor and efficiency, filters - shunt capacitor fil ter, π filter, Zener diode as voltage regulator.

UNIT-III: Bipolar Junction Transistor **(9 Hrs.)**

Review of the characteristics of transistor in CE and CB configurations, regions of operation (active, cut off and saturation), current gains α and β, relation between α and β, dc load line and Q point, transistor biasing and stabilization circuits- fixed bias, voltage divider bias, transistor as an amplifier and switch.

UNIT-IV: Amplifiers and Oscillators **(10 Hrs.)**

Introduction to amplifiers, definitions of class A, B and C amplifiers, RC coupled amplifier and its frequency response, concept of feedback, negative and positive feedback, advantages of negative feedback (Qualitative only), Barkhausen criterion for sustained oscillations, phase shift oscillator, Colpitt's oscillator, Wien bridge oscillator.

UNIT-V: Unipolar Devices **(9 Hrs.)**

JFET- construction, working and I - V characteristics (output and transfer), JFET parameters, MOSFET (Depletion and Enhancement) construction, working and I - V characteristics, CMOS- construction, CMOS as inverter, UJT- construction, working and I - V characteristics, application of UJT as relaxation oscillator.

Hands on/skill using Multisim software **(12 Hrs.)**

1. Calculation of voltage and current using laws, verification of network theorems.
2. Construct simple circuits on applications of P - N junction diode.
3. Construct simple circuits on applications of transistors.
4. Construct simple circuits on applications of amplifiers and oscillators.
5. Construct simple circuits on applications of FETs.

Co-curricular Activities

- Assignments on problem solving
- Student presentations
- Online quizzes

Prescribed Text Books

1. Applied Electronics - R.S.Sedha, S.Chand and Company Ltd, 1st edition.
2. Principles of Electronics - V.K.Mehta, S.Chand and Company Ltd, 3rd edition.

Reference Text Books

1. Electronic Devices and Circuits, David A. Bell, 5th Edition 2015, Oxford University Press.
2. Electronic Devices and Circuit Theory-Robert.L.Boylestad, PHI, 9th edition.
3. Integrated Electronics, J. Millman and C. C. Halkias, Tata McGraw Hill (2001).

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: I**

Course Title: Analog Electronics-Practical

Course Code: 20ETP1AE12

No. of Hours: 30 **LTP: 002** **Credits: 2**

SYLLABUS

Objectives

- To identify the basic electronic components used in the laboratory.
- To get acquainted with the function of the components and apparatus.
- To measure different electrical quantities accurately using the apparatus.
- To apply the knowledge and skills acquired to build simple analog circuits.

Course Outcomes

CO1: Explain the role of basic electronic components.

CO2: Apply network theorems to find the various parameters for a given circuit.

CO3: Understand the voltage-current characteristics of different electronic devices.

List of Experiments

1. Familiarization of basic electronic components (R, C, L, diodes, transistors), digital multimeter, power supply, function generator and oscilloscope.
2. Verification of Thevenin's theorem
3. Verification of Norton's theorem.
4. Study of the I - V Characteristics of P- N junction Diode
5. Study of the I - V Characteristics of Zener diode.
6. Construct voltage regulator using Zener diode.
7. Measurement of amplitude, frequency & phase difference using Oscilloscope.
8. Study of Half wave rectifier.
9. Study of Full wave rectifier.
10. Study of the I - V Characteristics of UJT.
11. Study of the output and transfer I - V characteristics of common source JFET.
12. Study of R- C phase shift oscillator.
13. Study of Colpitt's oscillator.

NOTE: Any six experiments from the above are to be performed.

Reference Text Book

1. Basic Electronics: A Text-Lab Manual by Robert P. Malvino, Tata McGraw-Hill

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: II**

Course Title: Linear & Digital Integrated Circuits **Course Code: 20ETCCLD23**

No. of Hours: 60 **LTP: 400** **Credits: 3**

SYLLABUS

Objectives

- To understand the basic concepts, working principles and applications of linear integrated circuits.
- To get acquainted with the fundamentals of Boolean algebra, logic gates and Karnaugh maps.
- To strengthen the principles of logic design using combinational and sequential circuits.
- To apply the knowledge and skills acquired to build linear and digital circuits

Course Outcomes

CO1: Explain the fundamentals of integrated circuits and describe their applications.

CO2: Categorise number system and perform number conversions.

CO3: Examine the operation of basic logic gates and perform systematic reduction of Boolean expressions.

CO4: Construct and implement combinational and sequential logic circuits of medium complexity.

UNIT- I: Operational Amplifiers (10 Hrs.)

Characteristics of an ideal and practical operational amplifier (IC 741), open and closed loop configuration, concept of virtual ground, op- amp parameters, inverting and non-inverting amplifiers, summing and difference amplifier, differentiator, integrator, comparator, zero - crossing detector, block diagram of IC 555, astable and monostable multivibrator circuits.

UNIT- II: Number System and Logic Gates (10 Hrs.)

Decimal, binary, octal and hexadecimal number systems, base conversions, BCD code, gray code, binary addition and subtraction, 1's and 2's complement method subtraction, basic postulates and fundamental theorems of Boolean algebra, De Morgan's theorem, realization of basic gates, truth tables of OR, AND, NOT, NOR, NAND, XOR, XNOR, universal gates.

UNIT- III: Combinational Logic Design **(10 Hrs.)**

Standard representation of logic functions (SOP&POS), minimization techniques (Karnaugh map minimization up to 4 variables for SOP&POS), half and full adder, half and full subtractor, parallel binary adder, multiplexer, de- multiplexer, decoders, encoders,1 bit binary comparator.

UNIT- IV: Sequential Circuits **(10 Hrs.)**

S- R, D and J- K flip- flops- clocked (Level and Edge Triggered) flip - flops, preset and clear operations, race- around condition in J- K flip- flop, master- slave J- K fl ip- flop, serial-in- serial- out, parallel-in- parallel- out shift registers (only up to 4 bits), ring counter, synchronous counters, asynchronous counters (upto 4 bits), decade counter.

UNIT- V: D- A, A- D Conversion & Memories **(8 Hrs.)**

4 bit binary weighted DAC and R- 2R ladder type DAC, accuracy and resolution, successive approximation ADC, flash type ADC.
Memories: General memory operation, types of memories: ROM, RAM (Static and Dynamic), PROM, EPROM, EEPROM, EAPROM.

Skill / Hands on using Multisim **(12 Hrs.)**

1. Construct circuits on applications of Op- amps & IC- 555.
2. Construct circuits using IC logic gates.
3. Construct circuits on applications of combinational logic.
4. Construct circuits on applications of sequential logic.

Co-curricular Activities

- Assignments on problem solving
- Student presentations
- Online quizzes

Prescribed Text Books

1. Op- amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall.
2. Fundamentals of Digital Circuits, Anand Kumar, 2nd edition, 2009, PHI Learning Pvt. Ltd.
3. Digital Fundamentals, Thomas L. Floyd, 11th edition, 2015, Pearson Education.

Reference Text Books

1. Operational Amplifiers and Linear ICs, David A. Bell, 3rd edition, 2011, Oxford University Press.
2. Digital Principles and Applications, A.P. Malvino, D.P.Leach & Saha, 7th edition, 2011, Tata McGraw Hill.
3. Digital Circuits and Systems, Venugopal, 1st edition, 2011, Tata McGraw Hill.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: II**

Course Title: Digital Electronics – Practical

Course Code: 20ETP2DE22

No. of Hours: 30 **LTP: 002** **Credits: 2**

SYLLABUS

Objectives

- To get acquainted with the basic concepts of linear and digital integrated circuits.
- To understand the logic operation of logic gates.
- To construct various digital circuits using ICs.
- To apply the knowledge and skills acquired to build simple digital circuits.

Course Outcomes

CO1: Understand the function of linear and digital ICs to build circuits.

CO2: Apply the knowledge of linear ICs to construct basic circuits and their applications.

CO3: Implement various combinational and sequential digital circuits using various logic gates.

List of Experiments

1. Study of inverting and non- inverting amplifier using Op- amp (741)
2. Study op- amp as an integrator.
3. Study op- amp as a differentiator.
4. Verification of IC logic gates.
5. Verification of De Morgan's theorem.
6. Construct 1 bit binary comparator
7. Half adder and full adder.
8. Half subtractor and full subtractor.
9. Construct an astable multivibrator using IC 555 timer.
10. Construct a monostable multivibrator using IC 555 timer.
11. Build flip- flop (RS, Clocked RS, D- type and JK) circuits.
12. Build decade and hexadecimal counters using ICs.

NOTE: Any 6 experiments from the above are to be performed.

Reference Text Books

1. Digital Electronics: Principles and Practice by Avinashi Kapoor, L K Maheswari.
2. Experiments in Digital Principles by Donald P.Leach, 3rd edition, McGraw-Hill International.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: III**

Course Title: Communication Electronics **Course Code: 20ETCCCE33**

No. of Hours: 60 **LTP: 400** **Credits: 3**

SYLLABUS

Objectives

- To understand the fundamental elements of a communication system and their principles.
- Substantiate pulse modulation techniques.
- Introduce the concept of basic cellular technologies.
- To learn the different types of antennas used in communication systems.

Course Outcomes

CO1: Explain the fundamental concepts of analog communication systems.

CO2: Illustrate different modulation and demodulation techniques used in analog communication.

CO3: Summarize various digital modulation systems.

CO4: Demonstrate the concepts of mobile communication and cellular technologies.

UNIT-I: Electronic Communication & Analog Modulation (10 Hrs.)

Introduction, means and modes, need for modulation, block diagram of basic electronic communication system, concept of noise, signal- to-noise (S/N) ratio, amplitude modulation: expression for AM, modulation index, frequency spectrum, bandwidth and power relations of AM, generation of AM signals: transistor modulator, detection of AM signals: diode detector, frequency modulation: modulation index, expression for FM, frequency spectrum, generation of FM signals using VCO, detection of FM waves using slope detector, phase modulation (PM), equivalence between FM and PM, super heterodyne receiver.

UNIT-II: Analog Pulse Modulation **(10 Hrs.)**

Channel capacity, Sampling theorem, basic principles of pulse modulation: PAM, PWM, PPM, modulation and detection techniques for PAM, PWM & PPM, multiplexing-TDM, FDM, compare and contrast TDM & FDM.

UNIT-III: Digital Pulse Modulation **(10 Hrs.)**

Need for digital transmission, Pulse Code Modulation: generation and reconstruction, sampling, quantization and encoding, digital carrier modulation techniques: Amplitude Shift Keying (ASK)-modulator, coherent ASK detector, Frequency Shift Keying (FSK)-modulator, non-coherent FSK detector, Phase Shift Keying (PSK).

UNIT-IV: Mobile Telephony System **(10 Hrs.)**

Basic concept of mobile communication, frequency bands used in mobile communication, concept of cell sectoring and cell splitting, frequency reuse, SIM number, IMEI number, need for data encryption, architecture (block diagram) of mobile communication network, idea of GSM, CDMA, GPRS technologies, simplified block diagram of mobile phone handset.

UNIT-V: Antennas & Wireless Communication **(8 Hrs.)**

Introduction to antennas, antenna parameters, Yagi Uda antenna, parabolic antenna, folded dipole antenna, Wi-Fi, Bluetooth, NFC, Zigbee, RFID, 2G, 3G, 4G and 5G concepts, Wireless Personal Area Network (WPAN), LAN.

Hands on/skill using MATLAB software **(12 Hrs.)**

1. Generation of Gaussian, Rayleigh, Rician and uniform noise for communication system.
2. Generation of single side band spectrums for amplitude modulation.
3. Comparison of original, quantize and exponential signals.
4. Construct an FDM using user-specified pilot indices.
5. Generate sound for a range of frequencies.

Prescribed Text Books

1. Electronic Communication systems, G. Kennedy, 3rd Edition, 1999, Tata McGraw Hill.
2. Advanced Electronics Communication Systems- Tomasi, 6th edition, Prentice Hall.
3. Modern Digital and Analog Communication Systems, B.P. Lathi, 4th edition, 2011, Oxford University Press.
4. Antennas and Wave Propagation – G.S.N.Raju – PHI

Reference Text Books

1. Principles of Electronic communication systems – Frenzel, 3rd edition, McGraw Hill
2. Communication Systems, S. Haykin, 2006, Wiley India
3. Electronic Communication system, Blake, Cengage, 5th edition.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: III**

Course Title: Analog & Digital Communication-Practical **Course Code: 20ETP3AD32**

No. of Hours: 30 **LTP: 002** **Credits: 2**

SYLLABUS

Objectives

- To get acquainted with the basic fundamental components of communication system.
- To understand the various analog and digital communication techniques.
- To construct various communication circuits and study their output waveforms.
- To apply the knowledge and skills acquired to build simple applications.

Course Outcomes

CO1: Use the knowledge of analog communication techniques to construct modulation and demodulation circuits.

CO2: Construct pulse modulation circuits for generation and detection.

CO3: Apply the basics of digital modulation techniques and understand their generation and detection.

List of Experiments

1. Study of amplitude modulation.
2. Study of amplitude demodulation.
3. Study of frequency modulation.
4. Study of frequency demodulation.
5. Study of pulse amplitude modulation.
6. Study of pulse width modulation.
7. Study of pulse position modulation.
8. Study of FSK modulator.
9. Study of ASK modulator.
10. Study of time division multiplexing.

NOTE: Any six experiments from the above are to be performed.

Reference Text Book:

1. Communication Systems, S. Haykin, 2006, Wiley India

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: IV**

Course Title: Microprocessors **Course Code: 20ETCCMP43**

No. of Hours: 60 **LTP: 400** **Credits: 3**

SYLLABUS

Objectives

- To familiarize the basics of microprocessor-based systems.
- To study the internal operation of various microprocessors.
- To implement simple programs using assembly language.
- To understand the architecture and organization of ARM processor.

Course Outcomes

CO1: Explain the basics, internal architecture and operation of microprocessors.

CO2: Exhibit programming proficiency using various instructions.

CO3: Design and develop assembly language programs using microprocessors.

CO4: Examine the internal structure and organization of ARM processor.

UNIT-I: Introduction to 8085 microprocessor **(10 Hrs.)**

Introduction to microcomputer systems, microprocessor as CPU, evolution of microprocessors, address, data and control buses, features of 8085, architecture of 8085, pin configuration of 8085, addressing modes.

UNIT-II: Instruction set & programming of 8085 **(10 Hrs.)**

Introduction to instructions, instruction set: data transfer instructions, arithmetic instructions, logical instructions, branch related instructions, machine control instructions, instruction formats, assembly language programs: addition, subtraction, multiplication and division, largest and smallest number in an array.

UNIT -III: Architecture & instruction set of 8086 (10 Hrs.)

Features of 8086, architecture of 8086, instruction set: data transfer instructions, arithmetic instructions, branching and looping instructions, process control instructions, flag manipulation instructions, logical, shift and rotate instruction, byte and string manipulation instructions.

UNIT -IV: Modes of 8086 (8 Hrs.)

Addressing modes, instruction formats, pin configuration of 8086: minimum mode and maximum mode, assembler directives, interrupt structure.

UNIT -V: ARM processor (10 Hrs.)

Introduction to ARM processor, features of ARM processor, ARM architecture and organization, addressing modes, pipelining process, instruction set and mention of applications of ARM processors.

Hands on/skill using 8085 simulator (12 Hrs.)

1. To find 1's & 2's complement of a number.
2. BCD to binary, HEX conversion.
3. Separate even numbers from given numbers.
4. Search a byte in a given number.
5. Calculation of GCD of two numbers.

Prescribed Text Books

1. Microprocessor Architecture, Programming and Applications with the 8085 – Penram International Publishing, Mumbai - Ramesh S. Gaonakar, 4th edition.
2. Microcomputer Systems: The 8086/8088 Family – Yu-Cheng Liu and Glenn SA Gibson, PHI, 2nd edition.
3. Microprocessors and Interfacing- Douglas.V.Hall, Tata McGraw Hill, 2nd edition.

Reference Text Books

1. Advanced Microprocessors & Microcontrollers - B.P.Singh & Renu Singh – New Age
2. The Intel Microprocessors – Architecture, Programming and Interfacing – Bary B. Brey.
3. ARM Architecture reference manual – ARM Ltd.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: IV**

Course Title: Microprocessor Programming-Practical **Course Code: 20ETP4MP42**

No. of Hours: 30 **LTP: 002** **Credits: 2**

SYLLABUS

Objectives

- To get acquainted with MASM software.
- To be able understand the instruction set of 8086 microprocessor.
- To apply the knowledge and skill acquired to exhibit programming proficiency.

Course Outcomes

CO1: Understand the instruction set of 8086 microprocessor to write assembly language programs.

CO2: Apply the knowledge of the MASM to execute assembly language programs.

CO3: Develop programs to convert one form of number system to the other.

List of Experiments

Introduction to MASM

1. Addition and subtraction (8 bit and 16-bit).
2. Multiplication and division (8-bit).
3. Largest number in an array.
4. Smallest number in an array.
5. Find the square root of a given number.
6. Arrange numbers in ascending order.
7. Arrange numbers in descending order.
8. Convert BCD number to Hex number.
9. Convert Hex number to BCD number.

NOTE: Any six experiments from the above are to be performed.

Reference Text Book

1. Microcomputer Systems: The 8086/8088 Family – Yu-Cheng Liu and Glenn SA Gibson, PHI, 2nd edition.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: IV**

Course Title: Microcontroller & Interfacing **Course Code: 20ETCCMC43**

No. of Hours: 60 **LTP: 400** **Credits: 3**

SYLLABUS

Objectives

- To compare and contrast microprocessor and microcontroller.
- To understand the basics of 8051 architecture.
- To impart the knowledge of programming the 8051.
- Enable to interface the devices with 8051 using simple programs.

Course Outcomes

CO1: Explain the basics, internal architecture and operation of microcontroller.

CO2: Exhibit programming proficiency using various instructions.

CO3: Design and develop assembly language programs using 8051 microcontroller.

CO4: Summarize the interfacing of different peripheral devices to the microcontroller.

UNIT-I: Introduction to microcontroller **(8 Hrs.)**

Introduction to microcontroller, comparison of microprocessor and microcontroller, evolution of microcontrollers from 4 bit to 32 bit, development tools for microcontrollers, assembler-compiler-simulator/debugger.

UNIT -II: 8051 Architecture **(8 Hrs.)**

Overview and block diagram of 8051, features of 8051, architecture of 8051, program counter and memory organization, data types and directives, PSW register, register banks and stack, pin diagram of 8051, interrupts, timers and counters.

UNIT-III: Instruction set of 8051 **(10 Hrs.)**

Instruction set: data transfer instructions, arithmetic instructions, logic instructions and branch group instructions, assembly language programming of 8051, data types and directives, addressing modes and accessing memory using various addressing modes.

UNIT-IV: 8051 I/O port programming **(10 Hrs.)**

Introduction of I/O port programming, I/O port pins structure & their operation, I/O port programming in 8051 (using assembly language), I/O bit manipulation, programming of 8051 timers, counter programming, 8051 interrupts and serial communication interrupts, interrupt priority, time delay generation and calculation.

UNIT-V: Interfacing of peripherals to 8051 **(12 Hrs.)**

8051 interfacing with external memory, PPI - 8255, DAC 0804, interfacing stepper motor, displaying information on a LCD, seven segment display and keyboard interface.

Hands on/skill using EDSIM51 software **(12 Hrs.)**

1. Binary pattern on the port 1 LEDs.
2. Multiplexing the 7-segment display.
3. Rotate DC motor in clockwise/anticlockwise direction.
4. Display the number of revolutions on 7-segment display.
5. Display information on LCD.
6. Keyboard interface.

Prescribed Text Books

1. Microcontrollers Architecture, Programming, Interfacing and System Design – Raj Kamal, Pearson Education, 2005.
2. The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd Ed., 2007, Pearson Education India.
3. Microcontrollers (Theory & Applications) – A.V. Deshmukh, WTMH, 2005.

Reference Text Books

1. Microprocessor and Microcontrollers, N. Senthil Kumar, 2010, Oxford University Press
2. 8051 Microcontrollers, Satish Shah, 2010, Oxford University Press.
3. The 8051 Microcontroller Architecture, Programming and Application - Kenneth J. Ajala, West Publishing Company.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: IV**

Course Title: Microcontroller Programming-Practical **Course Code: 20ETP5MC42**

No. of Hours: 30 **LTP: 002** **Credits: 2**

SYLLABUS

Objectives

- To get acquainted with KIEL software.
- To be able understand the instruction set of 8051 microcontroller.
- To apply the knowledge and skill acquired to exhibit programming proficiency.

Course Outcomes

CO1: Understand the instruction set of 8051 microcontroller to write assembly language programs.

CO2: Apply the knowledge of the KIEL to execute assembly language programs.

CO3: Use the knowledge of interfacing and interface peripheral devices to 8051 microcontroller.

List of Experiments

Introduction to KEIL software.

1. Addition and subtraction of two 8-bit numbers.
2. Multiplication and division of two 8-bit numbers.
3. Find the given numbers is prime or not.
4. Find the factorial of a number.
5. Find smallest and largest of numbers in an array.
6. Arrange numbers in ascending order.
7. Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise direction.
8. Interface LED to 8051 microcontroller.
9. Interface seven segment to 8051 microcontroller.

NOTE: Any six experiments from the above are to be performed.

Reference Text Book

1. The 8051 Microcontroller Architecture, Programming and Application - Kenneth J. Ajala, West Publishing Company.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Industrial Electronics **Course Code: 20ETSEC11IE3**

No. of Hours: 45 **LTP: 300** **Credits: 3**

SYLLABUS

Objectives

- To understand and acquire knowledge about various types of voltage regulators.
- To learn the principles of operation in industrial electronics.
- To explain the industrial applications.

Course Outcomes

CO1: Explain the function of DC amplifiers and voltage regulators.

CO2: Demonstrate the basic operation and compare performance of various types of semiconductor devices.

CO3: Analyse the various applications and circuits based on thyristors.

CO4: Evaluate the operation of industrial timers, motors, generators and their controls.

UNIT-I: DC Amplifiers **(9 Hrs.)**

DC amplifier, need for DC amplifiers, DC amplifiers: drift, causes, Darlington, emitter follower, cascade amplifier, stabilization, differential amplifiers, chopper stabilization.

UNIT-II: Voltage Regulators **(9 Hrs.)**

Principle of voltage regulation, series and shunt type linear voltage regulators, protection techniques: short circuit, over voltage and thermal protection, switched mode and IC regulators, switched mode voltage regulator, comparison of linear and switched mode voltage regulators, fixed and adjustable IC voltage regulators, 3-terminal voltage regulators.

UNIT-III: SCR and Controlled Rectifiers **(9 Hrs.)**

Thyristor, SCR: principle of operation and characteristics of SCR, triggering of thyristors, commutation techniques of thyristors, ratings of SCR, SCR half wave rectifier: working with wave forms, mathematical analysis for resistive load, SCR full wave rectifier: working with wave forms, mathematical analysis for resistive load.

UNIT-IV: Applications of Thyristors **(9 Hrs.)**

Applications of SCR in power control static circuit breaker, protection of SCR, inverters, classification, single phase inverters, converters, single phase half wave and full wave, DIAC, TRIAC and thyristor applications, chopper circuits, principle, methods and configurations, TRIAC: triggering modes, firing circuits, commutation.

UNIT-V: Industrial Applications **(9 Hrs.)**

Industrial timers: classification, types, electronic timers: classification, RC and digital timers, time base generators, electronic D.C motor control, heat effects: resistance, inductance and dielectric heating, principle of operation, material properties and its applications, thermal losses and applications.

Co-Curricular Activities

- Assignments on applications of industrial applications
- Group discussions
- Student presentations and seminars
- Online quizzes

Prescribed Text Books

1. Industrial and Power Electronics – G. K. Mithal and Maneesha Gupta, Khanna Publishers, 19th Ed., 2003.
2. Industrial Electronics, S.B. Biswas, Dhanapur Rai & Sons.
3. Industrial Electronics, G.K. Mithal, Khanna Publishers.

Reference Text Books

1. Industrial Electronics, Terry. L. M. Bartell, Delmer Publishers, 1997.
2. Industrial Electronics, Thomas. E. Kissell, 2002.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Industrial Electronics -Practical **Course Code: 20ETP611IE2**

No. of Hours: 45 **LTP: 003** **Credits: 2**

SYLLABUS

Objectives

- To understand the characteristics of thyristors.
- To study the applications of thyristors.
- To apply the knowledge and skill acquired to construct various circuits.

Course Outcomes

CO1: Outline the different types of semiconductor devices and their characteristics.

CO2: Examine the operation of rectifiers and their performance parameters.

CO3: Understand the operation of chopper circuits.

List of Experiments **(30 Hrs.)**

1. Transistor as a series regulator.
2. Transistor as a shunt regulator.
3. Voltage regulator using IC-7805.
4. Determine the characteristics of SCR.
5. SCR as a half wave rectifier.
6. SCR as a full wave rectifier.
7. Determine the characteristics of DIAC.
8. Determine the characteristics of TRIAC.
9. Study of chopper circuits.

Note: Any 6 experiments to be performed and recorded.

Skill/Hands-on: Field work/Mini Project **(15 Hrs.)**

- Identification of different types of chopper circuits, operational techniques with safety and security.
- Visit an industrial electronics based industry and observe the processes.
- Study of used in various domestic and industrial applications.

Reference Text Books

1. Industrial Electronics: A Text-Lab manual by Paul B.Zbar, 3rd edition, Tata McGraw-Hill.
2. Thyristors and applications – M. Ramamurthy, East-West Press, 1977.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Electronic Instrumentation **Course Code: 20ETSEC12EI3**

No. of Hours: 45 **LTP: 300** **Credits: 3**

SYLLABUS

Objectives

- To provide fundamental knowledge of measurements and measuring instruments.
- To understand the construction, principle of operation and applications of measuring instruments.
- To develop an ability to use measuring instruments for various measurements.

Course Outcomes

CO1: Explain the fundamentals of measurements and instrumentation system.

CO2: Demonstrate the working principle of different measuring instruments.

CO3: Examine the basic design techniques of electronic equipment.

CO4: Assess electronic instruments more effectively for various measurements.

UNIT-I: Measurements **(9 Hrs.)**

Introduction to measurements, basic block diagram of measurement system, specifications of instruments, standards and their classification, static characteristics – accuracy, precision, resolution, sensitivity, linearity, dynamic characteristics, errors, types of errors – systematic, random and gross errors.

UNIT-II: Measurement Instruments **(9 Hrs.)**

DC measurement - ammeter, voltmeter, ohm meter, AC measurement, digital voltmeter systems (integrating and non-integrating), digital multimeter - block diagram, DC Bridge – measurement of resistance (Wheatstone's bridge), AC bridges - measurement of self-inductance (Anderson's bridge), measurement of capacitance (De-Sauty's bridge), measurement of frequency (Wien's bridge).

UNIT-III: Oscilloscope **(9 Hrs.)**

Block diagram of CRO, CRT, vertical and horizontal deflection, fluorescent screen, time base circuit, applications of CRO - measurement of voltage, frequency and phase, digital storage oscilloscope – block diagram, sampling oscilloscope- block diagram.

UNIT-IV: Transducers **(9 Hrs.)**

Classification of transducers, basic requirement/characteristics of transducers, active and passive transducers, inductive (LVDT), piezoelectric transducer, temperature transducers: resistance thermometers, thermistor, light transducers: photo resistors, photovoltaic cells, photodiodes, semiconductor IC sensor, digital transducer, smart sensor, fiber optic transducer.

UNIT-V: Biomedical Instruments **(9 Hrs.)**

Introduction and basics of biomedical instruments, Clinical thermometer, Stethoscope, Sphygmomanometer, ECG machine, Radiography, Ophthalmoscope, Ultrasound scanning, Pulse oximeter, Glucometer, basic idea of CT scan and MRI scan.

Co-Curricular Activities

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes

Prescribed Text Books

1. W.D. Cooper and A. D. Helfrick, Electronic Instrumentation and Measurement Techniques, Prentice Hall (2005).
2. Electronic Instrumentation: H.S.Kalsi
3. Electronic Measurements and Instrumentation: Dr.K.Lal Kishore
4. Introduction to Biomedical Instrumentation by Mandeep Singh, PHI Learning.

Reference Text Books

1. E.O. Doebelin, Measurement Systems: Application and Design, McGraw Hill Book – 5th Edition (2003).
2. Alan S. Morris, "Measurement and Instrumentation Principles", Elsevier (Butterworth Heinmann-2008).
3. S. Rangan, G. R. Sarma and V. S. Mani, Instrumentation Devices and Systems, Tata McGraw Hill (1998).
4. Biomedical Instrumentation and Measurements by Leslie Cromwell, Prentice Hall India.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Instrumentation-Practical **Course Code: 20ETP712IN2**

No. of Hours: 45 **LTP: 003** **Credits: 2**

SYLLABUS

Objectives

- To get acquainted with various types of measuring instruments.
- To construct ac and dc bridges and calculate the unknown quantities.
- To measure different parameters of various measuring instruments.

Course Outcomes

CO1: Apply the knowledge of ac and dc bridges to determine various measurements.

CO2: Construct different types of transducers and study their characteristics.

CO3: Analyze different parameters of various measuring instruments.

List of Experiments **(30 Hrs.)**

1. Measurement of unknown resistance using Wheatstone bridge.
2. Measurement of capacitance using De Sauty's bridge.
3. Measurement of inductance using Anderson's bridge.
4. Measurement of frequency using Wien's bridge.
5. Study of Lissajous figures using CRO.
6. Determine the characteristics of thermistor.
7. Determine the characteristics of RTD.
8. Determine the characteristics of photo resistor.

Note: Any 6 experiments to be performed and recorded.

Skill/Hands-on: Field work/Mini Project **(15 Hrs.)**

- Training students by industrial / technical experts.
- Identification of different measuring instruments, their handling, operational techniques with safety and security.
- Visit to Instrumentation Laboratories of local Universities or Industries or any nearby research organizations, private firms, etc.
- Visit a diagnostic centre and observe the ECG machine and the ECG pattern.
- Visit a diagnostic centre and observe the CT scan and MRI scan.

Reference Text Books

1. Basic Electronics: A Text-Lab Manual by Robert P. Malvino, Tata McGraw-Hill
2. Electronic Measurement and Instrumentation by J.P. Navani. S Chand & Co Ltd.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Embedded Systems **Course Code: 20ETSEC21ES3**

No. of Hours: 45 **LTP: 300** **Credits: 3**

SYLLABUS

Objectives

- To understand and acquire knowledge about various embedded system design.
- To learn the different types of architectures in microcontrollers.
- To introduce the concept of peripheral interfacing and real life applications.

Course Outcomes

CO1: Explain the concepts of embedded systems.

CO2: Understand hardware and software design requirements of embedded systems.

CO3: Design and develop assembly language programs.

CO4: Demonstrate the interfacing of different peripheral devices and real life applications of embedded systems.

UNIT-I: Introduction and architectures **(9 Hrs.)**

Introduction, features, requirements and applications, recent trend in the embedded system design, common architectures for the embedded system design, embedded software design issues, overview of Harvard architecture and Von Neumann architecture, RISC and CISC microcontrollers.

UNIT-II: RISC Microcontrollers **(9 Hrs.)**

Introduction, architecture overview, status register, general purpose register file, memories, instruction set: data transfer instructions, arithmetic and logic instructions, branch instructions, bit and bit-test instructions, MCU control instructions, structure of embedded program, infinite loop, compiling, linking and debugging, simple programs in assembly language / C language.

UNIT-III: Interrupts and Timers **(9 Hrs.)**

Introduction to system clock, reset sources, introduction to interrupts, external interrupts, IO ports, 8-bit and 16-bit timers, introduction to different modes, input capture and compare match.

UNIT-IV: Peripherals **(9 Hrs.)**

Analog comparator, analog-to-digital converter, Serial Peripheral Interface (SPI), RS-232 standard, Universal Synchronous and Asynchronous serial Receiver and Transmitter (USART), Two Wire Interface (TWI) / I^2C bus.

UNIT-V: RTOS design and applications **(9 Hrs.)**

Operating system basics, types of operating systems, real-time characteristics, selection process of an RTOS, real life examples of embedded systems – home security system, automatic washing machine, automated teller machine, heart pacemaker.

Co-Curricular Activities

- Assignments on programming
- Group discussions
- Student presentations and seminars
- Online quizzes

Prescribed Text Books

1. The 8051 Microcontroller and Embedded Systems: Muhammad Ali Mazidi, Pearson, 2nd Edition, 2011.
2. Embedded Systems: Rajkamal, Tata McGraw-Hill, 2nd Edition, 2003.
3. Programming Embedded Systems in C and C++: Michael Barr, O'Reilly, 1st Edition, 1999.
4. Introduction to embedded systems: Shibu K V, Tata McGraw-Hill, 1st Edition, 2012.

Reference Text Books

1. An Embedded Software Primer by David E Simon, Addison Wesley
2. Embedded system Design - Frank Vahid and Tony Givargis, John Wiley, 2002

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Embedded Programming -Practical **Course Code: 20ETP621EP2**

No. of Hours: 45 **LTP: 003** **Credits: 2**

SYLLABUS

Objectives

- To be able understand the instruction set.
- To get acquainted process of execution of the program.
- To interface various peripheral devices.

Course Outcomes

CO1: Understand the instruction set to write programs.

CO2: Apply the knowledge of programming to execute programs.

CO3: Use the knowledge of interfacing and interface peripheral devices.

List of Experiments **(30 Hrs.)**

1. Flash LED at an observable rate.
2. Controlling ON/OFF of an LED using switch.
3. Toggle the LED every second using timer interrupt.
4. Use the potentiometer to change the red LED intensity from 0 to maximum in 256 steps.
5. Develop a program to generate given time delay.
6. Connect the LCD I/O Board and print 'Hello World' on the LCD and scroll display from left to right.
7. Speed control of dc motor.
8. Speed control of stepper motor.

Note: Any 6 experiments to be performed and recorded.

Skill/Hands-on: Field work/Mini Project **(15 Hrs.)**

- Study of real time embedded systems such as microwave ovens, smart watches, GPS navigation devices, Point-of-Sale (POS) systems etc.
- Visit a medical centre and study the functioning of heart rate monitor and pacemaker.
- Visit a firm/industry/organization etc. and study the various types of embedded solutions used.

Reference Text Book

1. An Embedded Software Primer by David E Simon, Addison Wesley, Pearson Education, 1999.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Consumer Electronics **Course Code: 20ETSEC22CO3**

No. of Hours: 45 **LTP: 300** **Credits: 3**

SYLLABUS

Objectives

- To understand the basic features of various electronic appliances.
- To study the operation of the electronic appliances.
- To become aware of the digital devices and their applications.

Course Outcomes

CO1: Explain the basics of various electrical appliances.

CO2: Describe the operation of various types of electrical appliances.

CO3: Handle various electronic consumer appliances effectively.

CO4: Analyze the applications of digital devices.

UNIT-I: Microwave Ovens **(9 Hrs.)**

Microwaves (range used in microwave ovens), microwave oven block diagram, LCD timer with alarm, single-chip controllers, types of microwave oven, wiring and safety instructions, care and cleaning.

UNIT-II: Washing Machines **(9 Hrs.)**

Electronic controller for washing machines, washing machine-hardware and software, types of washing machines, fuzzy logic washing machines, features of washing machines.

UNIT-III: Air Conditioners and Refrigerators **(9 Hrs.)**

Air conditioning, components of air conditioning systems, all water air conditioning systems, all air conditioning systems, unitary and central air conditioning systems, split air conditioners.

UNIT-IV: Home/Office Digital Devices **(9 Hrs.)**

Home security system, CCTV, printer, xerographic copier, calculators, structure of a calculator, internal organization of a calculator, digital clocks, block diagram of a digital clock.

UNIT-V: Digital Access Devices **(9 Hrs.)**

Internet access, online ticket reservation, functions and networks, barcode scanner and decoder, electronic fund transfer, set-top boxes, DTH, digital cable TV, video on demand, ATM.

Co-Curricular Activities

- Group discussions
- Student presentations and seminars
- Online quizzes

Prescribed Text Books

1. S.P. Bali, Consumer Electronics - Pearson Education, New Delhi, 2005.
2. R. G. Gupta Audio and Video systems Tata McGraw Hill (2004)

Reference Text Book

1. Consumer Electronics for Engineers – Philip Hoff, The Press Syndicate of the University of Cambridge (1998).

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Consumer Electronics - Practical **Course Code: 20ETP722CO2**

No. of Hours: 45 **LTP: 003** **Credits: 2**

SYLLABUS

Objectives

- To understand the use of various electronic appliances.
- To study various audio and video systems and their installation.
- To conduct surveys of usage of various consumer electronic devices.

Course Outcomes

CO1: Examine the process of installation of various audio and video systems.

CO2: Apply the knowledge of the function of electrical appliances to conduct surveys on the usage of appliances.

CO3: Assembly and disassembly various digital devices.

List of activities **(30 Hrs.)**

1. Study of PA systems for various situations - Public gathering, closed theatre/auditorium, conference room, prepare bill of material (costing)
2. Installation of audio/video systems - site preparation, electrical requirements, cables and connectors.
3. Market survey of products (at least one from each module)
4. Identification of block and tracing the system. Assembly and disassembly of system using tool kit.
5. Assembly and disassembly of system & printer.

Note: Any 2 activities are to be performed and recorded. One activity is equivalent to 4 experiments.

Skill/Hands-on: Field work/Mini Project **(15 Hrs.)**

- Test the various features of washing machine.
- Test the various functions of air conditioners.
- Study the various features and functions of printers.
- Visit to retail shopping malls to study about the various consumer electronic appliances.

Reference Text Book

1. Consumer Electronics for Engineers – Philip Hoff, The Press Syndicate of the University of Cambridge (1998).

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: VLSI Design **Course Code: 20ETSEC31VD3**

No. of Hours: 45 **LTP: 300** **Credits: 3**

SYLLABUS

Objectives

- To study the fundamentals of CMOS circuits.
- To understand the design and realization of combinational logic circuits.
- To study the basics and programming of VHDL.

Course Outcomes

CO1: Explain the basics and classification of MOS circuits.

CO2: Understand various MOS inverters and logic structures.

CO3: Identify different types of VHDL operators and data types.

CO4: Exhibit programming proficiency.

UNIT-I: Metal Oxide Semiconductor (MOS) **(9 Hrs.)**

Integrated Circuit- definition, classification and advantages of ICs, MOS transistors: enhancement type, depletion type, modes of NMOS, CMOS, and fabrications: n-Well and p-Well.

UNIT-II: MOS Inverter **(9 Hrs.)**

NMOS inverter, CMOS inverter, VLSI design flow: design specifications, design entry, examples of (circuit diagrams only) NMOS, PMOS and CMOS.

UNIT-III: CMOS logic structures **(9 Hrs.)**

Basic logic gates in CMOS, complex logic gate: two and three inputs of CMOS NAND gate, combinational logic: two and three inputs of CMOS NOR gate, compound gates in CMOS.

UNIT-IV: Introduction to Verilog **(9 Hrs.)**

Brief history and structure of HDL module, comparison of VHDL and Verilog HDL, logical, relational, arithmetic, shift and rotate operators, data types, Verilog HDL: brief history, logical, relational, arithmetic,

shift and rotate operators, data types.

UNIT-V: HDL programming **(9 Hrs.)**

Data flow description and HDL programs: basic logic gates, universal gates, half-adder, multiplexer, magnitude comparator, binary adder.

Co-Curricular Activities

- Assignments on programming
- Group discussions
- Student presentations and seminars
- Online quizzes

Prescribed Text Books

1. VLSI Design by Vilas S.Baged
2. VHDL and Verilog programming by Nazeih M.Botros
3. VLSI Design by A.Albert Raj and T.Latha.

Reference Text Books

1. Basic VLSI Design: Douglas A Pucknell, Kamran Eshraghian, PHI, 3rd edition.
2. Principles of CMOS VLSI design, Weste and Eshraghian, Addison-Wesley, 2002.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: VHDL-Practical **Course Code: 20ETP631VH2**

No. of Hours: 45 **LTP: 003** **Credits: 2**

SYLLABUS

Objectives

- To understand fundamental steps in digital VLSI design.
- To study HDL based design approach.
- To learn various techniques of CMOS design.

Course Outcomes

CO1: Realize logic circuit with different design style.

CO2: Draw layout of a given logical circuit.

CO3: Design digital CMOS circuits for specified applications.

List of Experiments **(30 Hrs.)**

1. To verify and design AND, OR, NOT and XOR gates.
2. To verify and design universal gates.
3. Design half adder.
4. Design full adder.
5. Design a multiplexer.
6. Design a decoder.
7. Build an S-R latch.
8. Build a D-latch.
9. Magnitude comparator
10. Binary adder

NOTE: Any 6 experiments to be performed and recorded.

Skill/Hands-on: Field work/Mini Project **(15 Hrs.)**

- Study the different design styles to realize logic circuits.
- Visit to companies using VHDL programming to study the processes.
- Construct circuits using an appropriate design.

Reference Text Books

1. A Verilog HDL Primer – J. Bhaskar, BSP, 2003 II Edition.
2. Verilog HDL- A guide to digital design and synthesis-Samir Palnitkar, Pearson, 2nd edition.

,MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Data Communication & Networking **Course Code: 20ETSEC32DN3**

No. of Hours: 45 **LTP: 300** **Credits: 3**

SYLLABUS

Objectives

- To study the basics of data transmission and networking.
- To acquire the knowledge of various network topologies.
- To understand the design of transmission media and multiplexing techniques.

Course Outcomes

CO1: Interpret the basics, types and functions of various data transmission networks.

CO2: Demonstrate the functioning of various network topologies.

CO3: Apply relevant transmission media and data transmission techniques.

CO4: Demonstrate an understanding of data transmission and various multiplexing techniques.

UNIT-I: Introduction to Networking **(9 Hrs.)**

Data communication and its components, introduction of networks, types of networks: Personal Area Network, Wide Area Network, protocols and standards, network and protocol architecture.

UNIT-II: Network Topologies **(9 Hrs.)**

Point to point topology, Bus topology, star topology, ring topology, mesh topology, tree topology and hybrid topology.

UNIT-III: Types of Transmission Media **(9 Hrs.)**

Transmission media: guided media: twisted pair cable, coaxial cable, optical fiber cable, unguided media: radio waves, microwaves, infrared, transmission impairment, performance, wavelength and Shannon capacity.

UNIT-IV: Data Transmission **(9 Hrs.)**

Digital to Digital conversion (line coding only), Analog to Digital conversion (PCM only), Digital to Analog (ASK only), Analog to Analog transmission (AM only), transmission modes (parallel and serial).

UNIT-V: Multiplexing **(9 Hrs.)**

Many to one/one to many, Frequency Division Multiplexing, Time Division Multiplexing, Wave Division Multiplexing, Modems: traditional modems, cable modems.

Co-Curricular Activities

- Assignments on various types of networks
- Group discussions
- Student presentations and seminars
- Online quizzes

Prescribed Text Books

1. Data communication and Networking Tata McGraw-Hill, 4th Edition by Behrouz A. Forouzan.
2. Data and Computer Communication by Stallings Williams.
3. Computer Networks By Kurose James F

Reference Text Books

1. Computer Networks, S. Tannenbum, D. Wetherall, Prentice Hall, Pearson, 5th Edition.
2. Data Communication and Networks, Godbole Achyut, Tata McGraw Hill, New Delhi, 2006, ISBN: 007042971

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8

(Affiliated to Krishna University, Machilipatnam)

Subject: Electronics **Semester: V/VI**

Course Title: Data Communication & Networking-Practical **Course Code: 20ETP732DN2**

No. of Hours: 45 **LTP: 003** **Credits: 2**

SYLLABUS

Objectives

- To study the different types of transmission media.
- To understand various network topologies.
- To apply the knowledge and skill acquired to configure a modem.

Course Outcomes

CO1: Comprehend the different types of transmission media.

CO2: Construct various network topologies.

CO3: Examine the configuration of a modem.

List of Experiments **(30 Hrs.)**

1. Study the different types of transmission media
2. Study of LAN using star topology
3. Study of LAN using bus topology
4. Study of LAN using tree topology
5. Study to configure modem of computer
6. Study to configure hub/switch
7. Analog to Digital conversion
8. Digital to Analog conversion

NOTE: Any 6 experiments to be performed and recorded.

Skill/Hands-on: Field work/Mini Project **(15 Hrs.)**

- Identification of different types of networks used in banking sector.
- Design layout of a network for a computer laboratory choosing the type of network, number of components etc.

Reference Text Book

1. Computer Networks - T.M.Bansod, Dreamtech Press.