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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

(Established by Govt. of A.P., Act. No. 30 of 2008)

ANANTHAPURAMU – 515 002 (A.P.) INDIA.

Course Structure for B.Tech-R15 Regulations

ELECTRONICS & INSTRUMENTATION ENGINEERING

B.Tech III-I Semester (EIE)

S. No.	Course Code	Subject	L	T	P	C
1.	15A52301	Managerial Economics and Financial Analysis	3	1	-	3
2.	15A04503	Linear Integrated Circuits and Applications	3	1	-	3
3.	15A10501	Digital IC Applications	3	1	-	3
4.	15A10502	Virtual Instrumentation	3	1	-	3
5.	15A10503	Electronic Measurements and Instrumentation	3	1	-	3
6.	15A05402 15A12401	**MOOCS-I** a. Computer Organization b. Operating Systems	3	1	-	3
7.	15A10504	Linear and Digital IC Applications Laboratory	-	-	4	2
8.	15A10505	Virtual Instrumentation Laboratory	-	-	4	2
9.	15A99501	Audit course -Social Values & Ethics	2	0	2	0
		Total:	**20**	**06**	**10**	**22**

*Either by MOOCS manner or Conventional manner

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B. Tech III-I Sem. (EIE)

L	T	P	C
3	1	0	3

15A52301 MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course Objectives: The objective of this course is to equip the student with the basic inputs of Managerial Economics and Economic Environment of business and to impart analytical skills in helping them take sound financial decisions for achieving higher organizational productivity.

Unit I:
INTRODUCTION TO MANAGERIAL ECONOMICS
Managerial Economics – Definition- Nature- Scope - Contemporary importance of Managerial Economics - Relationship of Managerial Economics with Financial Accounting and Management. **Demand Analysis**: Concept of Demand-Demand Function - Law of Demand - Elasticity of Demand- Significance - Types of Elasticity - Measurement of elasticity of demand - Demand Forecasting- factors governing demand forecasting- methods of demand forecasting.

UNIT II:
THEORY OF PRODUCTION AND COST ANALYSIS
Production Function- Least cost combination- Short-run and Long- run production function- Isoquants and Isocosts, MRTS - Cobb-Douglas production function - Laws of returns - Internal and External economies of scale - **Cost Analysis**: Cost concepts and cost behavior- Break-Even Analysis (BEA) -Determination of Break Even Point (Simple Problems)-Managerial significance and limitations of Break- Even Point.

UNIT III:
INTRODUCTION TO MARKETS AND NEW ECONOMIC ENVIRONMENT
Market structures: Types of Markets - Perfect and Imperfect Competition - Features of Perfect Competition- Monopoly-Monopolistic Competition-Oligopoly-Price-Output Determination - Pricing Methods and Strategies-Forms of Business Organizations- Sole Proprietorship- Partnership – Joint Stock Companies - Public Sector Enterprises – New Economic Environment- Economic Liberalization – Privatization - Globalization.

UNIT IV:
INTRODUCTION TO FINANCIAL ACCOUNTING AND ANALYSIS
Financial Accounting – Concept - Emerging need and Importance - Double-Entry Book Keeping- Journal - Ledger – Trial Balance - Financial Statements - Trading Account – Profit & Loss Account – Balance Sheet (with simple adjustments). Financial Analysis – Ratios – Liquidity, Leverage, Profitability, and Activity Ratios (simple problems)

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UNIT V:

CAPITAL AND CAPITAL BUDGETING

Concept of Capital - Over and Undercapitalization – Remedial Measures - Sources of Shot term and Long term Capital - Estimating Working Capital Requirements – Capital Budgeting – Features of Capital Budgeting Proposals – Methods and Evaluation of Capital Budgeting Projects – Pay Back Method – Accounting Rate of Return (ARR) – Net Present Value (NPV) – Internal Rate Return (IRR) Method (simple problems)

Course Outcome: After completion of this course, the student will able to understand various aspects of Managerial Economics and analysis of financial statements and inputs therein will help them to make sound and effective decisions under different economic environment and market situations.

TEXT BOOKS:

1. Managerial Economics 3/e, Ahuja H.L, S.Chand, 2013.
2. Financial Management, I.M.Pandey, Vikas Publications, 2013.

REFERENCES

1. Managerial Economics and Financial Analysis, 1/e, Aryasri, TMH, 2013.
2. Managerial Economics and Financial Analysis, S.A. Siddiqui and A.S. Siddiqui, New Age International, 2013.
3. Accounting and Financial Management, T.S.Reddy & Y. Hariprasad Reddy, Margham Publishers.

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15A04503 LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

Course Objectives:

- Design of OPAMPS, Classification of OPAMPs.
- To study and design various linear applications of OPAMPs.
- To study and design various non linear applications of OPAMPs

Course Outcomes:

- Understand the basic building blocks of linear integrated circuits and its characteristics.
- Analyze the linear, non-linear and specialized applications of operational amplifiers.
- Understand the theory of ADC and DAC.
- Realize the importance of Operational Amplifier.

UNIT – I

Differential Amplifiers: Differential amplifier configurations, Balanced and unbalanced output differential amplifiers, current mirror, level Translator.

Operational amplifiers: Introduction, Block diagram, Ideal op-amp, Equivalent Circuit, Voltage Transfer curve, open loop op-amp configurations. Introduction to dual OP-AMP TL082 as a general purpose JFET-input Operational Amplifier.

UNIT-II

Introduction, feedback configurations, voltage series feedback, voltage shunt feedback and differential amplifiers, properties of Practical op-amp.

Frequency response: Introduction, compensating networks, frequency response of internally compensated op-amps and non compensated op-amps, High frequency op-amp equivalent circuit, open loop gain Vs frequency, closed loop frequency response, circuit stability, slew rate.

UNIT-III

DC and AC amplifiers, peaking amplifier, summing, scaling and averaging amplifiers, instrumentation amplifier, voltage to current converter, current to voltage converter, integrator, differentiator, active filters, First, Second and Third order Butterworth filter and its frequency response, Tow-Thomas biquad filter.

UNIT-IV

Oscillators, Phase shift and wein bridge oscillators, Square, triangular and sawtooth wave generators, Comparators, zero crossing detector, Schmitt trigger, characteristics and limitations.

Specialized applications: 555 timer IC (monostable&astable operation) & its applications, PLL, operating principles, Monolithic PLL, applications, analog multiplier and phase detection, Wide bandwidth precision analog multiplier MPY634 and its applications.

UNIT V

Analog and Digital Data Conversions, D/A converter – specifications – weighted resistor type, R-2R Ladder type, Voltage Mode and Current-Mode R - 2R Ladder types - switches for D/A converters, high speed sample-and-hold circuits, A/D Converters – specifications – Flash type – Successive Approximation type – Single Slope type – Dual Slope type – A/D Converter using Voltage-to-Time Conversion – Over-sampling A/D Converters,

TEXT BOOKS:

1. D. Roy Chowdhury, "Linear Integrated Circuits", New Age International (p) Ltd, 2nd Edition, 2003.
2. K.LalKishore,"Operational Amplifiers and Linear Integrated Circuits", Pearson Education,2007.

REFERENCES:

1. Ramakanth A. Gayakwad, "Op-Amps & Linear ICs", PHI, 4th edition, 1987.
2. R.F.Coughlin& Fredrick Driscoll, "Operational Amplifiers & Linear Integrated Circuits", 6th Edition, PHI.
3. David A. Bell, "Operational Amplifiers & Linear ICs", Oxford University Press, 2nd edition, 2010.

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15A10501 DIGITAL IC APPLICATIONS

UNIT I

CMOS LOGIC& BIPOLAR LOGIC AND INTERFACING: Introduction to logic families, CMOS logic, CMOS steady state electrical behavior, CMOS dynamic electrical behavior, CMOS logic families. Bipolar logic, Transistor logic, TTL families, CMOS/TTL interfacing, low voltage CMOS logic and interfacing, Emitter coupled logic, Comparison of logic families, Familiarity with standard 74XX and CMOS 40XX series-ICs – Specifications.

UNIT II

THE VHDL HARDWARE DESCRIPTION LANGUAGE: Design flow, program structure, types and constants, functions and procedures, libraries and packages.

THE VHDL DESIGN ELEMENTS: Structural design elements, data flow design elements, behavioral design elements, Time dimension and simulation synthesis.

UNIT III

COMBINATIONAL LOGIC DESIGN: Decoders, encoders, three state devices, multiplexers and demultiplexers, Code Converters, EX-OR gates and parity circuits, comparators, adders & subtractors, ALUs, Combinational multipliers, VHDL modes for the above ICs.Design examples (using VHDL) - Barrel shifter, comparators, floating-point encoder, dual parity encoder.

UNIT IV

SEQUENTIAL LOGIC DESIGN: Latches and flip-flops, PLDs, counters, shift register, and their VHDL models, synchronous design methodology, impediments to synchronous design.

UNIT V:

Memory Design using VHDL

ROMs: Internal structure, 2D-decoding commercial types, timing and applications.
Static RAM: Internal structure, SRAM timing, standard SRAMS, synchronous SRAMS.
Dynamic RAM: Internal structure, timing, synchronous DRAMs, Familiarity with Component Data Sheets – Cypress CY6116, CY7C1006, Specifications.

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TEXT BOOKS:

1. Digital Design Principles & Practices – John F. Wakerly, PHI/ Pearson Education Asia, 3rd Ed., 2005.
2. A VHDL Primer – J. Bhasker, Pearson Education/ PHI, 3rd Edition.

REFERENCES:

1. Digital System Design Using VHDL – Charles H. Roth Jr., PWS Publications, 2nd edition, 2008.
2. Fundamentals of Digital Logic with VHDL Design – Stephen Borwn and Zvonko Vramesic, McGraw Hill, 2nd Edition., 2005.

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B. Tech III-I Sem. (EIE)

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15A10502 VIRTUAL INSTRUMENTATION

Course Objective:

1. To understand what is Virtual instrumentation and to realize the architecture of VI.
2. To familiarize with the VI software and learn programming in VI.
3. To study various Instrument Interfacing and data acquisition methods.
4. To understand various analysis tools and develop programs for Process control applications.

Course Outcome:

Enable students to understand basics, programming techniques, data acquisition and interfacing techniques of virtual instrumentation and to use VI for different applications.

UNIT I

REVIEW OF VIRTUAL INSTRUMENTATION Historical perspective – Need of VI – Advantages of VI – Define VI – Block diagram & Architecture of VI – Data flow techniques – Graphical programming in data flow – Comparison with conventional programming.

UNIT II

PROGRAMMING TECHNIQUES: VI's and sub-VI's – Loops and charts – Arrays – Clusters – Graphs – Case & sequence structures – Formula nodes – Local and global variable – String & file input.

UNIT III

DATA ACQUISITION BASICS : DIO -Counters and timers – PC Hardware structure – Timing – Interrupts – DMA – Software and Hardware Installation – GPIB/IEEE 488 concepts – Embedded system buses – PCI – EISA – CPCI.

UNIT IV

COMMON INSTRUMENT INTERFACES : Current loop – RS 232C/RS 485 – Interface basics: USB – PCMCIA – VXI – SCXI – PXI – networking basics for office and industrial application VISA and IVI – Image acquisition and processing – Motion Control – DMM – Waveform generator.

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UNIT V

USE OF ANALYSIS TOOLS AND APPLICATION OF VI: Fourier transforms – Power spectrum – Correlation methods – Windowing and flittering – Pressure control system – Flow control system – Level control system– Temperature data acquisition system – Motion control employing stepper motor – PID controller tool box.

TEXT BOOKS

1. Dr. Sumathi. S and Prof. Surekha. P, "LabVIEW Based Advanced nstrumentation Systems", 2nd edition, 2007.
2. Gary Johnson, "LabVIEW Graphical Programming", McGraw Hill, 2006.

REFERENCES

1. Lisa .K, Wells and Jeffrey Travis, "LABVIEW for Everyone", Prentice Hall, 2009.
2. Skolkoff, "Basic concepts of LABVIEW 4", PHI, 1998.
3. Gupta. S, Gupta. J.P, "PC Interfacing for Data Acquisition and Process Control", ISA, 1994. 4. Amy. L.T, "Automation System for Control and Data Acquisition", ISA, 1992.

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B. Tech III-I Sem. (EIE)

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15A10503 ELECTRONIC MEASUREMENTS & INSTRUMENTATION

Course Objective: *To provide the knowledge required to understand and analyze the Instruments used for measurement of various electrical parameters*

Course Outcome:
The student is expected to apply the knowledge that they acquired during their course in EDC, ECA and PDC to study and design electronic instruments.

UNIT 1
SINE-WAVE, SQUARE-WAVE AND PULSE TESTING OF LINEAR SYSTEMS
Mathematical Background, Gain or Loss Measurement, The Measurement of Phase, Automatic Network Analyzers, Measurement of Delay Distortion, The Measurement of Loop Gain, The Measurement of Nonlinearity, Precautions in Sine-wave Testing.Tools and Techniques, Relations between Transient and Sinusoidal Responses, Response to Generalized Inputs, Effect of Low-end Cutoffs on Square-wave Response, Time-domain Reflectometry.

UNIT II
DIRECT-CURRENT INSTRUMENT AMPLIFIERS
Direct-current Amplifier Considerations, Direct-current Amplifier with Automatic Reset, Differential Amplifiers, Chopper Amplifiers.

UNIT III
VOLTAGE AND CURRENT MEASUREMENTS
Introduction to DVMs, Non-integrating Types of DVMs, Digital Voltmeters with Counting Circuitry, Normal-mode Rejection, Common-mode Rejection, Principles of AC Voltage Measurements, Average-responding Detectors, Peak-responding Detectors, Peak-to-peak Detection, Root-mean-square— responding Detectors, Other Detection Methods, Sampling Voltmeters, Synchronous Detection, Direct-current Probes, Alternating-current Probe

UNIT IV
IMPEDANCE MEASUREMENT
Definitions and Formulas, Components and Standards –Resistors, Capacitors, Inductors, Meter Methods to Measure Impedance -Direct—current meter, Capacitance and Inductance Meters, Complex Impedance Meters, Resistance and Impedance Comparators, Direct-current Bridges-The Wheatstone Bridge, Measurement of Low-valued Resistors, Measurement of High-valued Resistance

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UNIT V

BRIDGES, TRANSMITTERS AND RECEIVERS

Low-frequency Bridges- General, Classification of Four-arm Bridges, Bridges with Inductively Coupled Ratio Arms, Special-purpose Bridges, Automatic and Semiautomatic Bridges, Radio-frequency Impedance Measurements, Problems at Radio Frequency, Radio-frequency Bridges, T Networks, Resonance Methods, The RF Meter Methods, Precision Measurements- Standardization of Impedance Unit, Methods of Precision Measurements.

General-performance Characteristics, Basic Measurements, Special System Measurements, Measurements on Receiving Systems, Sensitivity, Modulation-acceptance Bandwidth, Correlation of Sensitivity with Noise Figure, Automatic-gain-control Characteristics, Measurements on Transmitting Systems, Radio Equipment Specifications, Microwave Transistor Oscillators, Solid-state Microwave Amplifiers, Other Solid-state Microwave Sources.

Text Books:

1. Electronic Measurement and Instrumentation –Oliver and Cage –TMH.
2. Electronic Instrumentation and Measurements - David A. Bell—Oxford- 2nd Edition.

Reference Books:

1. Principles of measurement systems, John P. Bentley: 3rd edition, Addison Wesley Longman, 2000.
2. Measuring Systems, Application and Design by E.O. Doebelin, McGraw Hill.
3. Electrical and Electronic Measurements by Shawney, Khanna Publ.
4. Electronic Instrumentation and measurements by David A. Bell, 2nd Edition, PHI, 2003.
5. Electronic instruments and instrumentation Technology by M.M.S. Anand: Prentice-Hall of India,2004.

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B. Tech III-I Sem. (EIE)

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15A05402 COMPUTER ORGANIZATION
(MOOCS-I)

Course Objectives:

- To learn the fundamentals of computer organization and its relevance to classical and modern problems of computer design
- To make the students understand the structure and behavior of various functional modules of a computer.
- To understand the techniques that computers use to communicate with I/O devices
- To study the concepts of pipelining and the way it can speed up processing.
- To understand the basic characteristics of multiprocessors

Course Outcomes:

- Ability to use memory and I/O devices effectively
- Able to explore the hardware requirements for cache memory and virtual memory
- Ability to design algorithms to exploit pipelining and multiprocessors

Unit I:

Basic Structure of Computer: Computer Types, Functional Units, Basic operational Concepts, Bus Structure, Software, Performance, Multiprocessors and Multicomputer.
Machine Instructions and Programs: Numbers, Arithmetic Operations and Programs, Instructions and Instruction Sequencing, Addressing Modes, Basic Input/output Operations, Stacks and Queues, Subroutines, Additional Instructions.

Unit II:

Arithmetic: Addition and Subtraction of Signed Numbers, Design and Fast Adders, Multiplication of Positive Numbers, Signed-operand Multiplication, Fast Multiplication, Integer Division, Floating-Point Numbers and Operations.
Basic Processing Unit: Fundamental Concepts, Execution of a Complete Instruction, Multiple-Bus Organization, Hardwired Control, Multiprogrammed Control.

Unit III:

The Memory System: Basic Concepts, Semiconductor RAM Memories, Read-Only Memories, Speed, Size and Cost, Cache Memories, Performance Considerations, Virtual Memories, Memory Management Requirements, Secondary Storage.

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Unit IV:

Input/output Organization: Accessing I/O Devices, Interrupts, Processor Examples, Direct Memory Access, Buses, Interface Circuits, Standard I/O Interfaces.

Unit V:

Pipelining: Basic Concepts, Data Hazards, Instruction Hazards, Influence on Instruction Sets.

Large Computer Systems: Forms of Parallel Processing, Array Processors, The Structure of General-Purpose, Interconnection Networks.

Textbook:

1) "Computer Organization", Carl Hamacher, Zvonko Vranesic, Safwat Zaky, McGraw Hill Education, 5th Edition, 2013**.**

Reference Textbooks:

1. Computer System Architecture, M.Morris Mano, Pearson Education, 3rd Edition.
2. Computer Organization and Architecture, Themes and Variations, Alan Clements, CENGAGE Learning.
3. Computer Organization and Architecture, Smruti Ranjan Sarangi, McGraw Hill Education.
4. Computer Architecture and Organization, John P.Hayes, McGraw Hill Education.

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B. Tech III-I Sem. (EIE)

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15A12401 OPERATING SYSTEMS
(MOOCS-I)

Course Objective:

- To make the students understand the basic operating system concepts such as processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection.
- To get acquaintance with the class of abstractions afford by general purpose operating systems that aid the development of user applications.

Course Outcome:

- Able to use operating systems effectively.
- Write System and application programs to exploit operating system functionality.
- Add functionality to the exiting operating systems
- Design new operating systems

UNIT I

Operating Systems Overview: Operating system functions, Operating system structure, operating systems Operations, protection and security, Computing Environments, Open- Source Operating Systems

System Structures: Operating System Services, User and Operating-System Interface, systems calls, Types of System Calls, system programs, operating system structure, operating system debugging, System Boot.

Processes: Process concept, process Scheduling, Operations on processes, Inter process Communication, Examples of IPC systems.

UNIT II

Threads: overview, Multicore Programming, Multithreading Models, Thread Libraries, Implicit Threading, Threading Issues.

Process Synchronization: The critical-section problem, Peterson‘s Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic problems of synchronization, Monitors, Synchronization examples, Alternative approaches.

CPU Scheduling: Scheduling-Criteria, Scheduling Algorithms, Thread Scheduling, Multiple-Processor Scheduling, Real-Time CPU Scheduling, Algorithm Evaluation.

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UNIT III

Memory Management: Swapping, contiguous memory allocation, segmentation, paging, structure of the page table.

Virtual memory: demand paging, page-replacement, Allocation of frames, Thrashing, Memory-Mapped Files, Allocating Kernel Memory

Deadlocks: System Model, deadlock characterization, Methods of handling Deadlocks, Deadlock prevention, Detection and Avoidance, Recovery from deadlock.

UNIT IV

Mass-storage structure: Overview of Mass-storage structure, Disk structure, Disk attachment, Disk scheduling, Swap-space management, RAID structure, Stable-storage implementation.

File system Interface: The concept of a file, Access Methods, Directory and Disk structure, File system mounting, File sharing, Protection.

File system Implementation: File-system structure, File-system Implementation, Directory Implementation, Allocation Methods, Free-Space management.

UNIT V

I/O systems: I/O Hardware, Application I/O interface, Kernel I/O subsystem, Transforming I/O requests to Hardware operations.

Protection: Goals of Protection, Principles of Protection, Domain of protection, Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection

Security: The Security problem, Program threats, System and Network threats, Cryptography as a security tool, User authentication, Implementing security defenses, Firewalling to protect systems and networks, Computer–security classifications.

Text Books:

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Wiley , Eight Edition, 2014.

Reference Books:

1. Operating systems by A K Sharma, Universities Press,
2. Operating Systems, S.Haldar, A.A.Aravind, Pearson Education.
3. Modern Operating Systems, Andrew S Tanenbaum, Second Edition, PHI.
4. Operating Systems, A.S.Godbole, Second Edition, TMH.
5. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
6. Operating Systems, G.Nutt, N.Chaki and S.Neogy, Third Edition, Pearson Education.
7. Operating Systems, R.Elmasri, A,G.Carrick and D.Levine, Mc Graw Hill.
8. Principles of Operating Systems, B.L.Stuart, Cengage learning, India Edition.
9. Operating System Desgin, Douglas Comer, CRC Press, 2nd Edition.

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B. Tech III-I Sem. (EIE)

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15A10504 LINEAR AND DIGITAL IC APPLICATIONS LABORATORY

Course Objective:
To provide exposure to the student about use of Linear and Digital Integrated Circuits

Course Outcome:
The student will be able to use Linear and Digital Integrated Circuits for different practical applications

Minimum Twelve Experiments to be conducted:

Part A (IC Application Lab):

1. OP AMP Applications – Adder, Subtractor, Comparator Circuits.
2. Active Filter Applications – LPF, HPF (first order).
3. Function Generator using OP AMPs.
4. IC 555 Timer – Monostable and Astable Operation Circuit.
5. IC 566 – VCO Applications.
6. Voltage Regulator using IC 723.
7. 4 bit DAC using OP AMP.

Part B (ECAD Lab):

Simulate the internal structure of the following Digital ICs using VHDL / VERILOG and verify the operations of the Digital ICs (Hardware) in the Laboratory

1. Logic Gates- 74XX.
2. Half Adder, Half Subtractor, Full Adder, Full Subtractor & Ripple Carry Adder.
3. 3-8 Decoder -74138 & 8-3 Encoder- 74X148
4. 8 x 1 Multiplexer -74X151 and 2x4 Demultiplexer-74X155.
5. 4 bit Comparator-74X85.
6. D Flip-Flop 74X74.
7. JK Flip-Flop 74X109.
8. Decade counter-74X90.
9. Universal shift register -74X194.

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Equipment required for Laboratories:

1. RPS
2. CRO
3. Function Generator
4. Multi Meters
5. IC Trainer Kits (Optional)
6. Bread Boards
7. Components: - IC741, IC555, IC566, 7805, 7809, 7912 and other essential components.
8. Analog IC Tester

For Software Simulation

1. Computer Systems
2. LAN Connections (Optional)
3. Operating Systems
4. VHDL/ VERILOG
5. FPGAS/CPLDS (Download Tools)

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15A10505 VIRTUAL INSTRUMENTATION LABORATORY

Course Objective:

1. To familiarize with the VI software and learn programming in VI.
2. To experiment various functions available in LabVIEW.
3. To practice various Instrument Interfacing and data acquisition methods.

Course Outcome:

To get practical knowledge in programming techniques, data acquisition and interfacing techniques of virtual instrumentation and to use VI for different applications.

Experiments are to be performed using LAB VIEW Software
(Minimum TEN experiments should be performed)
LIST OF EXPERIMENTS

1. Verification of Arithmetic Operations.
2. Verification of Half Adder and Full adder.
3. Program to find Addition of First n natural numbers using for and while loop.
4. Implementation of Array functions.
5. Program for implementing Seven segment display.
6. Program to perform Traffic light control.
7. Calculation of BMI using cluster.
8. Program to control Temperature by using RTD and DAQ .
9. Program to control Temperature by using Thermocouple and DAQ
10. Program to control Temperature by using Thermister and DAQ
11. Program for controlling the Flow of water using DAQ.
12. Program for controlling the Level of water using DAQ.
13. Program for Pressure control using DAQ.
14. Program for controlling the speed of a DC motor using PID tool box

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15A99501 SOCIAL VALUES & ETHICS (AUDIT COURSE)

(Common to all Branches)

UNIT - I

Introduction and Basic Concepts of Society: Family and Society: Concept of family, community, PRIs and other community based organizations and society, growing up in the family – dynamics and impact, Human values, Gender Justice.

Channels of Youth Moments for National Building: NSS & NCC: History, philosophy, aims & objectives; Emblems, flags, mottos, songs, badge etc.; Organizational structure, roles and responsibilities of various NSS functionaries. **Nehru Yuva Kendra (NYK):** Activities – Socio Cultural and Sports.

UNIT – II

Activities of NSS, NCC, NYK:

Citizenship: Basic Features Constitution of India, Fundamental Rights and Fundamental Duties, Human Rights, Consumer awareness and the legal rights of the consumer, RTI.

Youth and Crime: Sociological and psychological Factors influencing youth crime, Peer Mentoring in preventing crimes, Awareness about Anti-Ragging, Cyber Crime and its prevention, Juvenile Justice

Social Harmony and National Integration: Indian history and culture, Role of youth in peace-building and conflict resolution, Role of youth in Nation building.

UNIT – III

Environment Issues: Environment conservation, enrichment and Sustainability, Climate change, Waste management, Natural resource management (Rain water harvesting, energy conservation, waste land development, soil conservations and afforestation).

Health, Hygiene & Sanitation: Definition, needs and scope of health education, Food and Nutrition, Safe drinking water, Sanitation, Swachh Bharat Abhiyan.

Disaster Management: Introduction to Disaster Management, classification of disasters, Role of youth in Disaster Management. Home Nursing, First Aid.

Civil/ Self Defense: Civil defense services, aims and objectives of civil defense, Need for self defense training – Teakwondo, Judo, karate etc.,

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UNIT – IV

Gender Sensitization: Understanding Gender – Gender inequality – Role of Family, Society and State; Challenges – Declining Sex Ratio – Sexual Harassment – Domestic Violence; Gender Equality – Initiatives of Government – Schemes, Law; Initiates of NGOs – Awareness, Movements;

UNIT - V

Physical Education : Games & Sports: Health and Recreation – Biolagical basis of Physical activity – benefiets of exercise – Physical, Psychological, Social; Physiology of Musucular Activity, Respiration, Blood Circulation**.**

Yoga: Basics of Yoga – Yoga Protocol, Postures, Asanas, Pranayama: Introduction of Kriyas, Bandhas and Mudras.

TEXT BOOKS:

1. NSS MANUAL
2. SOCIETY AND ENVIRONMENT: A.S.Chauha, Jain Brothers Publications, 6th Edition, 2006
3. INDIAN SOCIAL PROBLEM: G.R.Madan, Asian Publisher House
4. INDIAN SOCIAL PROBLEM: Ram Ahuja, Rawat Publications
5. HUMAN SOCIETY: Kingsley Davis, Macmillan
6. SOCIETY: Mac Iver D Page, Macmillan
7. SOCIOLOGY – THEMES AND PERSPECTIVES: Michael Honalambos, Oxford University Press
8. CONSTITUTION OF INDIA: D.D.Basu, Lexis Nexis Butterworth Publishers
9. National Youth Policy 2014 (available on www.yas.nic.in)
10. TOWARS A WORLD OF EQUALS: A.Suneetha, Uma Bhrugudanda, Duggirala Vasantha, Rama Melkote, Vasudha Nagraj, Asma Rasheed, Gogu Shyamala, Deepa Streenivas and Susie Tharu
11. LIGHT ON YOGA : B.K.S.Iyengar, Penguin Random House Publishers

www.un.org
www.india.gov.in
www.yas.nic.in
http://www.who.int/countries/ind/en/
http://www.ndma.gov.in
http://ayush.gov.in/event/common-yoga-protocol-2016-0