Sona College of Technology, Salem  
(An Autonomous Institution)  
Courses of study for ME III Semester under Regulations 2010R  
Electronics and Communication Engineering  
Branch: M.E. Communication Systems

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**Total Credits** 17

Approved by

Chairperson, Electronics and Communication Engineering BOS  
Dr. K.R.Kashwan  
Member Secretary, Academic Council  
Prof.G.Prakash  
Chairperson, Academic Council & Principal  
Dr. V.Jayaprakash

Copy to:-  
HOD/ECE (PG), Third Semester ME COS Students and Staff, COE
COURSE OBJECTIVES

To enable students to

2. Explaining the concept of lan switching technology and its analysis
3. Overview of ATM switching architectures and its analysis
4. Discussing the concept of queue process in ATM switches

Unit I High Speed Network

LAN and WAN network evolution through ISDN to BISDN - Transfer mode and control of BISDN - SDH multiplexing structure - ATM standard; ATM adaptation layers.

Unit II LAN Switching Technology

Switching concepts; Switch forwarding techniques; switch path control - LAN switching; cut through forwarding; store and forward - virtual LANs.

Unit III ATM Switching Architecture


Unit IV Queues in ATM Switches


Unit V IP Switching

Addressing mode - IP switching types-flow driven and topology driven solutions - IP Over ATM address and next hop resolution – multicasting - IPv6 over ATM.

Total: 45 hours

TEXT BOOK:


REFERENCES:

COURSE OBJECTIVES

To enable students to

1. Describe Symmetric Ciphers techniques and Standards and design principles.
2. Describe advanced Encryption standards
3. Describe public key encryption, Functions, algorithms, Standards.
4. Describe Authentication application, web security.
5. Describe malicious software and firewall design

Unit I Symmetric Ciphers


Unit II Advanced Encryption Standard and Stream Ciphers

Evaluation Criteria for AES, AES Cipher; Contemporary Symmetric Ciphers- Triple DES, Blowfish, RC5- Characteristics of Advanced Symmetric Block Ciphers, Stream ciphers based on LFSRs,RC4 Stream Cipher; Random Number Generation. Traffic Confidentiality, Key Distribution.

Unit III Public-Key Encryption and Hash Functions

Public Key Cryptography and Key Management- RSA Algorithm and other public key cryptosystems- Diffie-Hellman Key Exchange, Elliptic Curve arithmetic, Elliptic Curve Cryptography; Message Authentication and Hash Functions- Authentication Requirements, - MD5 Message Digest Algorithm; Secure Hash Algorithm, RIPEMD 160, HMAC; Digital Signatures and Authentication Protocols- Digital Signature Standards.

Unit IV Network Security Practice


Unit V System Security

Intruders- Intruder Detection, Password Management; Malicious Software- Virus and Related Threats, Virus Counter Measures; Firewalls- Firewall Design Principles, Trusted Systems.

Total: 45 hours

TEXT BOOK:


REFERENCES:

COURSE OBJECTIVES

To enable students to,

1. Discuss the various packet switched networks.
2. Provide Overview of ISDN & ISDN architecture.
3. Describe the concepts of ATM and frame relay.
4. Analyse the concepts of advanced network architecture.
5. Explain the protocol stack of blue tooth and its services.

Unit I  Packet Switched Networks  9

OSI models, IP models, Ethernet (IEEE 802.3): Physical layer, MAC, LLC, Token ring (IEEE 802.5), Wireless LAN (IEEE 802.11), Fiber Distributed Data Interface, Distributed Queue Dual Bus, Switched multi megabit Data Service: Internetworking with SMDS.

Unit II  Isdn and Broadband Isdn  9

ISDN: Overview, ISDN standards, interfaces and functions, ISDN Layers: physical, data link, network layer, services, Signaling System 7 (SS7), Broadband ISDN architecture, B-ISDN Protocols.

Unit III  ATM and Frame Relay  9

ATM: Main features-addressing, signaling and routing, ATM header structure, adaptation layer, Management and control, ATM switching. Frame Relay: Protocols and services, Congestion control, Internetworking with ATM, Frame relay via ATM.

Unit IV  Advanced Network Architecture  9

IP forwarding architectures overlay model, peer to peer models, Multi Protocol Label Switching (MPLS), integrated services in the Internet, Resource Reservation Protocol (RSVP), Diferentiated services.

Unit V  Blue Tooth Technology  9


Total: 45 hours

TEXT BOOKS:


REFERENCES:

PROJECT GUIDELINE

For carrying out the project work in the final semester, the following guidelines may be referred for quality research and development:

1. The PG students may be allowed to do their project work only in reputed organizations / related government organizations or within the department.

2. The project work must include Hardware Design as a compulsory component.

3. There may be continuous evaluation and periodic reviews during both the phases I & II.
   
   There will be a maximum of 600 marks and 20 credits for the project phase I and II
   
   I. Phase-I may have 3 Reviews. There will be 8 credits and 240 marks out of total 600 marks for Phase I.
   
   II. Phase-II may have 3 Reviews and one Model Viva. There will be 12 credits and 360 marks out of total 600 marks for phase II.

4. The following Topics may be encouraged:-
   
   - Nanoelectronics.
   - MEMS
   - SOC
   - Wireless Networks
   - Image processing / Signal Processing
   - Recent Areas

5. The students should publish their project work either in one or two quality International or National Conference which is mandatory, and if possible the entire project may be published in any international journal.

6. Report Submission:-

The format for report submission may be followed as per 2010 autonomous Regulation of Sona College of Technology (Autonomous).
Courses of study for ME III Semester under Regulations 2010R

Computer Science Engineering

Branch: M.E. Computer Science and Engineering

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Approved by

Chairperson, Computer Science and Engineering BOS  Member Secretary, Academic Council  Chairperson, Academic Council & Principal
Dr.B.Sathiyabhamma  Prof.G.Prakash  Dr.V.Jayaprakash

Copy to:-
HOD/CSE, Third Semester ME CSE Students and Staff, COE
Aim:
The subject aims to cover knowledge discovery process and to design and populate a business data warehouse.

Objectives:
To make familiar with the various concepts of data warehousing like meta data, data mart, summary table, fact data and dimension data. To sail along with the various approaches in data mining. To familiarize with the various data warehousing and data mining tools.

UNIT - I      INTRODUCTION
(9)
Relation to Statistics, Databases- Data Mining Functionalities-Steps In Data Mining Process-Architecture Of A Typical Data Mining Systems- Classification Of Data Mining Systems - Overview Of Data Mining Techniques.

UNIT - II      DATA PREPROCESSING AND ASSOCIATION RULES
(9)
Data Preprocessing-Data Cleaning, Integration, Transformation, Reduction, Discretization Concept Hierarchies-Concept Description: Data Generalization and Summarization Based Characterization- Mining Association Rules In Large Databases.

UNIT - III      PREDICTIVE MODELING
(9)
Classification And Prediction: Issues Regarding Classification And Prediction- Classification By Decision Tree Induction-Bayesian Classification-Other Classification Methods-Prediction-Clusters Analysis: Types Of Data In Cluster Analysis- Categorization Of Major Clustering Methods: Partitioning Methods –Hierarchical Methods

UNIT - IV      DATA WAREHOUSING
(9)
Data Warehousing Components -Multi Dimensional Data Model- Data Warehouse Architecture-Data Warehouse Implementation- -Mapping the Data Warehouse to Multiprocessor Architecture- OLAP.-Need- Categorization of OLAP Tools.

UNIT - V      APPLICATIONS
(9)
Applications of Data Mining-Social Impacts Of Data Mining-Tools-An Introduction To DB Miner-Case Studies-Mining WWW-Mining Text Database-Mining Spatial Databases.

Total: 45

Reference Books:
1. Jiawei Han, Micheline Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Publishers, 2002.
MOBILE COMPUTING

Aim:
To learn the various technologies behind a mobile environment

Objectives:
- To understand the principles of wireless transmission techniques and networks
- To understand the protocols of a mobile environment.
- To study the generations of mobile networks

Unit I Introduction - Wireless Transmission


Unit II Wireless LAN


Unit III Mobile Network Layer

Goals, Assumptions and requirements - IP packet Delivery - Tunneling – Ad Hoc Networks - Mobile Ad Hoc Routing: Unicast , Broadcast and Multicast protocols for MANET - AODV- ODMRP

UNIT IV Mobile Transport Layer

Mobile transport layer - Traditional TCP - Indirect TCP - Snooping TCP - Mobile TCP - Fast retransmit/ fast recovery - Transmission/ timeout freezing - Selective retransmission - Transaction oriented TCP

UNIT V Application layer & latest trends

Wireless application protocol: WAP1.x & WAP2.0- File systems - World Wide Web CASE STUDY: 3G networks – 4G networks

Total: 45

Reference books:
Aim:
To learn about sensing system and its techniques.

Objectives:

- Students will be able to understand the various sensing systems, infrastructures, database and tools associated with wireless sensor networks.

UNIT I

INTRODUCTION

(9)


UNIT II

NETWORKING SENSORS

(9)

Key assumption - Medium access control – S-MAC protocol – IEEE 802.15.4 standard and ZigBee - General Issues - Geographic, Energy – Aware Routing - Attribute based routing.

UNIT III

INFRASTRUCTURE ESTABLISHMENT

(9)


UNIT IV

SENSOR NETWORK DATABASE

(9)

Sensor Database Challenges – Querying the physical environment – Interfaces – In-network aggregation – Data centric storage – Data indices and range queries – Distributed Hierarchical aggregation – Temporal data.

UNIT V

SENSOR NETWORK PLATFORMS AND TOOLS

(9)


Total: 45

Reference Books:

1. Feng Zhao, Leonidas Guibas, “Wireless sensor networks an information processing approach”, Mogan kanufmann publishers, 2004
Aim:
The art of the semantic web, and programming skills to use this technology in specific applications. The semantic web aspires to use the "meaning" of information and services to satisfy the requests of people and machines. Students will learn what is possible and the direction of this evolving field as well as acquire an ability to implement applications using semantic web technology.

Objectives:
By the end of the course the student will be able to design and implement a small semantic web in an application area of their choice. As a minimum, this means that the student will be able to Build and implement a small ontology that is semantically descriptive of their chosen problem domain Write code or applications that can access, use and manipulate the ontology. Represent data from a chosen problem in XML with appropriate semantic tags obtained or derived from the ontology.

UNIT - I
INTRODUCTION
(9)

UNIT - II
RDF
(9)

UNIT - III
ONTOMETRY
(9)

UNIT - IV
LOGIC AND INFERENCE
(9)

UNIT - V
APPLICATIONS OF SEMANTIC WEB TECHNOLOGIES
(9)

Total: 45

Reference Books:
2. “Spinning the Semantic Web: Bringing the world wide web to its full potential” – The MIT Press - 2004
Aim:
The subject aims to cover the concepts of cloud computing, developing and using cloud services.

Objectives:
- To understand the need for cloud computing.
- To develop cloud services.
- To learn cloud development tools.
- To learn collaborating cloud services.

UNIT I  UNDERSTANDING CLOUD COMPUTING  (6)

UNIT II  DEVELOPING CLOUD SERVICES  (10)

UNIT III  CLOUD COMPUTING FOR EVERYONE  (10)
Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation

UNIT IV  USING CLOUD SERVICES  (10)

UNIT V  OTHER WAYS TO COLLABORATE ONLINE  (9)

Total=45

Reference Books:
Sona College of Technology, Salem
(An Autonomous Institution)
Courses of study for ME III Semester under Regulations 2010R
Mechanical Engineering
Branch: M.E. Product Design and Development

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Approved by

Chairperson, Mechanical Engineering BOS
Dr. R. Venkatesan

Member Secretary, Academic Council
Prof. G. Prakash

Chairperson, Academic Council & Principal
Dr. V. Jayaprakash

Copy to:-
HOD/MECH, Third Semester ME PDD Students and Staff, COE
INTRODUCTION: Evolution of CAD/CAM, scope of CIM, segments of generic CIM, computers and workstations, an overview of CIM softwares. (5)

PRODUCT DEVELOPMENT THROUGH CAD AND CAE: Geometric modeling techniques, automated drafting, graphic standards, engineering analysis, optimization (6)

AUTOMATED PROCESS PLANNING: Process planning, general methodology of group technology, code structures variant and generative process planning methods, AI in process planning, process planning software. (6)

CNC TECHNOLOGY: Principles of numerical control, types of CNC machines, features of CNC systems, programming techniques, capabilities of a typical NC CAM software, integration of CNC machines in CIM environment, DNC - Flexible manufacturing systems, NURBS and High Speed Machining. (6)

MANUFACTURING SYSTEM SOFTWARE: MRP II software production control software, forecasting, master production schedule, materials requirements planning, capacity requirements planning, shop floor control, shop floor data collection techniques, inventory management, purchase orders and receiving financial control, bill of materials, standard product routing, job costing, marketing applications. (7)

ROBOTICS AND AUTOMATED ASSEMBLY: Types of robots and their performance capabilities, programming of robots, hardware of robots, kinematics of robots, product design for robotized manufacturing, selecting assembly machines, feeding and transfer of arts, applications of robots in manufacture and assembly, sensors. (7)

DATA COMMUNICATIONS AND TECHNOLOGY MANAGEMENT: Technology issues, configuration management, database systems, management of technology, networking concepts, LAN, MAN, SQL fundamentals, MAP/TOP fundamentals, CIM models, IBM, Siemens, DEC, ESPRIT - CIM OSA model, economics of CIM, implementation of CIM. (7)

Total: 45

REFERENCES:


MECHANICAL BEHAVIOUR OF A LAMINATE: Classical lamination theory - lamina stress - strain behaviour - Resultant forces and moments in a laminate - Types of laminates - Strength and Stiffness of laminates - Interlaminar stresses in laminates.

LAMINATED PLATES AND BEAMS: Types of laminated plates and beams - elementary mechanical behaviour - Bending and Buckling of laminated plates - forces and moments - Stresses and Deflections under different boundary conditions.

PRODUCTION OF COMPOSITE MATERIALS & PRODUCTS: Matrix and their role - Principal types of fibre and matrix materials - Basic principles of production of composite materials & products - Advantages & limitations of different processes.

MOULDING AND FORMING OF COMPOSITES: Lay up and curing - open and closed mould processes - hand lay up techniques - bag moulding - Filament winding - Pultrusion - Pulforming - Thermoforming - Injections moulding - blow moulding.

MACHINING AND JOINING OF COMPOSITES: Cutting, Machining of composites - drilling - mechanical fastening - adhesive bonding - joining methods - Advantages and limitations.

APPLICATIONS OF COMPOSITES: Aircraft - missiles - space hardware - Automobile - electrical and electronics recreational and sports equipments - Future potential of composites.

Total: 45

REFERENCES:
INTRODUCTION: Product lifecycle management-concepts, benefits, value addition to customer. Lifecycle models- creation of projects and roles, users and project management, system administration, access control and its use in life cycle. Product development process and functions. (8)

DATA MANAGEMENT: Components of typical PDM setup-hardware, software. Document management-creation and viewing of documents. Creating parts-part master, version and version control of parts and documents, case studies. CAD and ERP integration in PDM-use of product view and info engine. (9)


PRODUCT DEVELOPMENT: Quality function deployment-quality project approach and the problem solving process. Design creativity-innovations in design alternatives. Concurrent engineering. Rapid prototyping. Industrial design principles. (8)

Total: 42

REFERENCES:
Sona College of Technology, Salem  
(An Autonomous Institution)  
Courses of study for ME III Semester under Regulations 2010R  
Mechanical Engineering  
Branch: M.E. Engineering Design

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Approved by:

Chairperson, Mechanical Engineering BOS  
Dr. R. Venkatesan  

Member Secretary, Academic Council  
Prof. G. Prakash  

Chairperson, Academic Council & Principal  
Dr. V. Jayaprakash  

Copy to:-  
HOD/MECH, Third Semester ME END Students and Staff, COE
1. **OIL HYDRAULIC SYSTEMS AND HYDRAULIC ACTUATORS**

Hydraulic Power Generators – Selection and specification of pumps, pump characteristics- Determination of volumetric, mechanical and overall efficiencies of positive displacement pumps. Linear and Rotary Actuators – selection, specification and characteristics.

2. **CONTROL AND REGULATION ELEMENTS**

Pressure - direction and flow control valves - relief valves, non-return and safety valves - actuation systems. Electrical control solenoid valves, relays, Electro hydraulic servo valves.

3. **HYDRAULIC CIRCUITS**


4. **PNEUMATIC SYSTEMS AND CIRCUITS**

Pneumatic fundamentals - control elements, position and pressure sensing - logic circuits - switching circuits - fringe conditions modules and these integration - sequential circuits - cascade methods - mapping methods - step counter method - compound circuit design - combination circuit design.

5. **INSTALLATION, MAINTENANCE AND SPECIAL CIRCUITS**

Pneumatic equipments- selection of components - design calculations – application -fault finding - hydro pneumatic circuits - use of microprocessors for sequencing - PLC, Low cost automation - Robotic circuits.

REFERENCES:

1. INTRODUCTION
Introduction to PDM-present market constraints-need for collaboration - internet and developments in server-client computing.

2. COMPONENTS OF PDM
Components of a typical PDM setup-hardware and software-document management-creation and viewing of documents-creating parts-versions and version control of parts and documents-case studies.

3. CONFIGURATION MANAGEMENT
Base lines-product structure-configuration management-case studies.

4. PROJECTS AND ROLES

5. CHANGE MANAGEMENT
Change issue- change request- change investigation- change proposal - change activity - case studies.

6. GENERIC PRODUCTS AND VARIANTS
Data Management Systems for FEA data - Product configurator - comparison between sales configuration and product configurator-generic product modeling in configuration modeler-use of order generator for variant creation-registering of variants in product register-case studies.

Total: 45

REFERENCES
5. Wind-Chill R5.0Reference Manuals...2000.
1. **INTRODUCTION**

   Productivity concepts - Macro and Micro factors of productivity, Productivity benefit model, productivity cycle.

2. **PRODUCTIVITY MODELS**

   Productivity measurement at International, National and Organizational level, Total productivity models. Productivity management in manufacturing and service sector. Productivity evaluation models, Productivity improvement models and techniques.

3. **ORGANIZATIONAL TRANSFORMATION**

   Principles of organizational transformation and re-engineering, fundamentals of process reengineering, preparing the workforce for transformation and reengineering, methodology, guidelines, DSMCQ and PMP model.

4. **RE-ENGINEERING PROCESS IMPROVEMENT MODELS**

   PMI models, Edosomwan model, Moen and Nolan strategy for process improvement, LMICIP model, NPRDC model.

5. **RE-ENGINEERING TOOLS AND IMPLEMENTATION**

   Analytical and process tools and techniques - Information and communication technology - Enabling role of IT, RE-opportunities, process redesign - cases. Software methods in BPR - specification of BP, case study - Order, processing, user interfaces, maintainability and reusability

   **Total 45**

REFERENCES
1  Sumanth, D.J., " Productivity engineering and management ", TMH, New Delhi, 1990.
Sona College of Technology, Salem
(An Autonomous Institution)
Courses of study for ME III Semester under Regulations 2010R
Electrical and Electronics Engineering
Branch: M.E. Power Electronics and Drives

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Total Credits 17

Approved by

Chairperson, Electrical Engineering BOS
Dr.C.Easwarlal

Member Secretary, Academic Council
Prof.G.Prakash

Chairperson, Academic Council & Principal
Dr.V.Jayaprakash

Copy to:-
HOD/EEE, Third Semester ME PED Students and Staff, COE
UNIT – I ENERGY SOURCES AND UTILITIES
Trends in energy consumption - World energy scenario – Energy sources and their availability - Conventional and renewable sources - Need to develop new energy technologies - Stand alone inverters - Charge controllers - Water pumping, Audio visual equipments, Street lighting.

UNIT - II PHOTOVOLTAIC ENERGY CONVERSION

UNIT - III POWER CONDITIONING SCHEMES

UNIT - IV STAND ALONE SYSTEMS
Self Excited Induction Generator (SEIG) for isolated Power Generators - Theory of self excitation - Capacitance requirements - Power conditioning schemes - Controllable DC Power from SEIGs - System performance.

UNIT - V WIND ENERGY SYSTEMS

Lecture : 45, Tutorial : 0, TOTAL : 45

REFERENCE BOOKS
UNIT-I  MICROPROCESSOR CONTROL OF DRIVES  9
Introduction- Closed loop control of DC Drives- A Microprocessor based Induction Motor Drives- Pulse Width Modulation- Protection including Fault Monitoring and Control- Microprocessor based implementation of Field Oriented Control for a VSI.

UNIT-II  MICROCOMPUTER CONTROL OF DRIVES  9

UNIT-III  DSP MOTOR CONTROL APPLICATIONS  9
DSP Controller- Controller implementation using TMS 320 F 2407 and TMS 320 F 2812 for AC and DC Motor Control.

UNIT-IV  ASICS FOR CONTROL OF DRIVES  9
ASIC Terminology- ASIC Design- Field Programmable Gate Arrays and Programmable Logic Devices- Implementation of ASICs for control of Drives.

UNIT-V  PROGRAMMABLE LOGIC CONTROL FOR DRIVES  9
PLC-Architecture of PLC-Advantages- Types of PLC- PLC arithmetic functions- PLC control for AC and DC Drives.

Lecture : 45, Tutorial :0, TOTAL : 45

REFERENCE BOOKS
UNIT – I  GATE DRIVER CIRCUITS

Characteristics of Gate Drive circuits - Isolation techniques between the high level power circuit and low level gate drive circuits – Implementation techniques - types of power conversion processors and their comparison.

UNIT - II  RECTIFIERS


UNIT - III  INVERTERS AND MULTILEVEL INVERTERS


UNIT - IV  PHOTOVOLTAIC CELLS


UNIT - V  APPLICATIONS

Inverters in Adjustable speed drives - PV Module. Converters in Drives – PV module - Modeling and Control of PV module using Inverters and converters for hybrid energy storage system.

Lecture : 45 , Tutorial:0, TOTAL : 45

REFERENCE BOOKS

Courses of study for ME III Semester under Regulations 2010R
Electrical and Electronics Engineering
Branch: M.E. Power System Engineering

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Total Credits: 17

Approved by

Chairperson, Electrical Engineering BOS
Dr.C.Easwarlal

Member Secretary, Academic Council
Prof.G.Prakash

Chairperson, Academic Council & Principal
Dr.V.Jayaprakash

Copy to:-
HOD/EEE, Third Semester ME PSE Students and Staff, COE
P10PSE301   VOLTAGE STABILITY   L T P C

UNIT - I   INTRODUCTION
Voltage instability in power systems - voltage collapse, causes of voltage instability, voltage instability mechanisms - classification of voltage instability - Transmission system aspects - maximum deliverable power, Power - voltage relationship, P-V and QV curves.

UNIT - II  GENERATION ASPECTS

UNIT - III LOAD ASPECTS
Load aspects - Voltage dependence of loads - load restoration dynamics - Induction motors - Load tap changers - Thermostatic load recovery - Generic aggregate load models.

UNIT - IV VOLTAGE STABILITY
Loadability limit - sensitivity and bifurcation analysis - Saddle node bifurcation, static approaches - Modal analysis, Eigen value method, Power margin using continuation power flow - L-Index - Dynamic approaches - time domain simulation

UNIT - V VOLTAGE STABILITY ENHANCEMENT
Countermeasures for short term voltage instability - corrective actions against long term instability - Static VAR Compensator for voltage stability Enhancement

REFERENCE BOOKS
UNIT- I  INSULATING MATERIALS IN POWER SYSTEM  7

UNIT-II  BREAKDOWN MECHANISMS OF SOLID, LIQUID AND GASEOUS DIELECTRICS  10
Introduction to insulation systems used in high voltage power apparatus - breakdown mechanisms of solid, liquid, gas and vacuum insulation

UNIT-III  BASIC METHODS OF GENERATION AND MEASUREMENT OF TEST HIGH VOLTAGES  10

UNIT- IV  INSULATION TESTING OF ELECTRICAL EQUIPMENTS  10
Necessity for high voltage testing - testing of distribution and power transformers - voltage transformers - current transformers - bushings – overhead line and substation insulators - surge arresters – high voltage cables - circuit breakers and isolators – IEC and Indian standards.

UNIT- V  NON-DESTRUCTIVE TESTING  8
Insulation resistance measurement- Measurement of tan delta and capacitance of dielectrics - grounded objects like transformers and alternators – Measurement of Partial discharges - location and measurement of discharges in electrical equipment –Dissolved gas in oil measurement.

Lecture: 45, Tutorial: 0, Total: 45

REFERENCE BOOKS
6. IEC & IS Standards on testing.
UNIT – I  BASICS OF POWER SYSTEM SECURITY  9
Factors affecting power system security, decomposition and multilevel approach, state Estimation, system monitoring, security assessment and security enhancement

UNIT - II  POWER SYSTEM STATE ESTIMATION  9
Maximum likelihood weighted least-square estimation, state estimation, detection and Identification of bad measurements, estimation of quantities not being measure, network observability and pseudo measurements.

UNIT - III  SECURITY ASSESSMENT  9
Detection of network problems, network equivalent for external system, network Sensitivity methods, calculation of network sensitivity factors, fast contingency Algorithms, contingency ranking, dynamic security indices

UNIT - IV  SECURITY ENHANCEMENT  9
Correcting the generator dispatch by sensitivity methods, compensated factors, security Constrained optimization, preventive, emergency and restorative control through LP Method

UNIT - V  RECENT TECHNIQUES  9
Voltage security assessment-Transient Security assessment-methods-Comparison

REFERENCE BOOKS
# Courses of study for ME III Semester under Regulations 2010R

## Computer Science and Engineering

### Branch: M.E. Software Engineering

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**Total Credits** 17

Approved by

**Chairperson, Computer Science and Engineering BOS**
Dr. B. Sathiabhamma

**Member Secretary, Academic Council**
Prof. G. Prakash

**Chairperson, Academic Council & Principal**
Dr. V. Jayaprakash

Copy to:-
HOD/CSE, Third Semester ME SWE Students and Staff, COE
Aim:
To introduce the concepts of measurement associated with software development.

Objectives:
- To learn the data collection process.
- To analyze the collected data for complete utility.
- To understand product, quality and management metrics.

UNIT I MEASUREMENTS THEORY:

UNIT II DATA COLLECTION AND ANALYSIS:

UNIT III PRODUCTS METRICS:

UNIT IV QUALITY METRICS:
Software quality metrics - Product quality - Process quality - metrics for software maintenance - Case studies of Metrics program - Motorola - HP and IBM.

UNIT V MANAGEMENT METRICS:
Quality management models - Rayleigh Model - Problem Tracking report (PTR) model - Reliability growth model - model evaluation - Orthogonal classification.

Total: 45

Reference Books:
Aim:
To introduce the concepts of basic and advanced process models.

Objectives:
- To compare different process models.
- To apply appropriate process models for specific software development.
- To learn the standards available.

UNIT I  PROCESS AND BASIC PROCESS MODELS (9)

UNIT II  ADVANCED PROCESS MODELS (8)

UNIT III  ADVANCED PROCESS MODELS – II (12)

UNIT IV  PROCESS IMPROVEMENT MODELS – I (8)

UNIT V  PROCESS IMPROVEMENT MODELS – II (8)
Six Sigma – CMMI.

TOTAL = 45

Reference Books:
Aim:
To introduce the concepts of software documentation process.

Objectives:
- To understand the need for software documentation.
- To plan and test for documentation.
- To learn documentation layouts and guidelines.

UNIT I  FUNDAMENTALS

UNIT II  DOCUMENTATION PLANNING

UNIT III  DOCUMENTATION TESTING

UNIT IV  DOCUMENTATION LAYOUTS

UNIT V  DOCUMENTATION GUIDELINES

Total: 45

Reference Books:
Aim:

To know about the software program that can perform specific tasks for a user and possessing a degree of intelligence that permits it to perform parts of its tasks autonomously and to interact with its environment in a useful manner.

Objectives:

- Build simple agents and multi-agent systems using basic AI concepts
- Read and understand most of the research material in the field of software agents

UNIT I

AGENTS – OVERVIEW

Agent Definition – Agent Programming Paradigms – Agent Vs Object – Aglet – Mobile Agents – Agent Frameworks – Agent Reasoning.

UNIT II

JAVA AGENTS


UNIT III

MULTIAGENT SYSTEMS


UNIT IV

INTELLIGENT SOFTWARE AGENTS

Interface Agents – Agent Communication Languages – Agent Knowledge Representation – Agent Adaptability – Belief Desire Intension – Mobile Agent Applications.

UNIT V

AGENTS AND SECURITY


Total: 45

Reference Books

Sona College of Technology, Salem
(An Autonomous Institution)

Courses of study for ME III Semester under Regulations 2010R
Electronics and Communication Engineering
Branch: M.E. VLSI Design

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Total Credits 17

Approved by

Chairperson, Electronics and Communication Engineering BOS
Dr. K.R.Kashwan

Member Secretary, Academic Council
Prof.G.Prakash

Chairperson, Academic Council & Principal
Dr.V.Jayaprakash

Copy to:-
HOD/ECE, Third Semester ME VLSI Students and Staff, COE
COURSE OBJECTIVES

To enable students to,

1. Know about the introduction to ASICs, CMOS logic and library cell design.
2. Discuss about the programmable ASICs, Programmable ASIC logic cells and Programmable ASIC I/O cells.
3. Describe the programmable ASIC Interconnect, and low level design language.
4. Discuss about the Verilog and VHDL Logic synthesis, Simulation and testing.
5. Know the procedures for Floor planning, Placement and routing.

UNIT I  Introduction to ASICS, CMOS Logic and ASIC Library Design  9
Types of ASICs - Design flow - CMOS transistors CMOS Design rules - Combinational Logic Cell – Sequential logic cell - Data path logic cell - Transistors as Resistors - Transistor Parasitic Capacitance- Logical effort – Library cell design - Library architecture.

UNIT II  Programmable ASICS, Programmable ASIC Logic Cells and Programmable ASIC I/O Cells  9
Anti fuse - static RAM - EPROM and EEPROM technology - PREP benchmarks - Actel ACT – Xilinx LCA –Altera FLEX - Altera MAX DC & AC inputs and outputs - Clock & Power inputs - Xilinx I/O blocks.

UNIT III  Programmable ASIC Interconnect, Programmable ASIC Design Software and Low Level Design Entry  9

UNIT IV  Logic Synthesis, Simulation and Testing  9
Verilog and logic synthesis -VHDL and logic synthesis - types of simulation -boundary scan test – fault simulation - automatic test pattern generation.

UNIT V  ASIC Construction, Floor Planning, Placement and Routing  9
System partition - FPGA partitioning - partitioning methods - floor planning - placement - physical design flow –global routing - detailed routing - special routing - circuit extraction - DRC.

Total : 45 Hours

TEXT BOOK:

REFERENCES:
COURSE OBJECTIVES

To enable students to,

1. Know the basic architecture of embedded system
2. Describe the ARM and SHARC processor
3. Explain about the various networks in the embedded system.
4. State the real time characteristics of embedded system.
5. Provide an overview of system design techniques

UNIT I Embedded Architecture

UNIT II Embedded Processor and Computing Platform

UNIT III Networks
Distributed Embedded Architecture - Hardware and Software Architectures, Networks for embedded systems- I2C, CAN Bus, SHARC link ports, Ethernet, Myrinet, Internet. Design Example: Elevator Controller.

UNIT IV Real-Time Characteristics

UNIT V System Design Techniques

TEXT BOOKS:


REFERENCES

COURSE OBJECTIVES

To enable students to,

1. Know the basic circuit design using FINFET
2. Describe the concepts of SRAM, NRAM, MRAM.
3. How the interconnection is done using the nano wire and nano scale
4. Explain about the usage of CNT in VLSI.
5. Provide an overview of Graphene transistor and quantum cellular

UNIT I    Finfet Circuit Design


UNIT II    SRAM Design and Hybrid Nano CMOS System


UNIT III    Characterization Techniques ,Nano Wire Arrays And Nanoscale ASIC


UNIT IV    Carbon Nanotube VLSI Circuits and FPCNA


UNIT V    Graphene Transistor and RTD and Quantum Cellular Automate


Total: 45 Hours

TEXT BOOK:


REFERENCES:

PROJECT GUIDELINE

For carrying out the project work in the final semester, the following guidelines may be referred for quality research and development:

1. The PG students may be allowed to do their project work only in reputed organizations / related government organizations or within the department.

2. The project work must include Hardware Design as a compulsory component.

3. There may be continuous evaluation and periodic reviews during both the phases I & II.
   
   There will be a maximum of 600 marks and 20 credits for the project phase I and II
   
   I. Phase-I may have 3 Reviews. There will be 8 credits and 240 marks
      
      out of total 600 marks for Phase I.
   
   II. Phase-II may have 3 Reviews and one Model Viva. There will be 12 credits and 360 marks out of total 600 marks for phase II.

4. The following Topics may be encouraged:-
   
   - Nanoelectronics.
   - MEMS
   - SOC
   - Wireless Networks
   - Image processing / Signal Processing
   - Recent Areas

5. The students should publish their project work either in one or two quality International or National Conference which is mandatory, and if possible the entire project may be published in any international journal.

6. Report Submission:-

   The format for report submission may be followed as per 2010 autonomous Regulation of Sona College of Technology (Autonomous).
Sona College of Technology, Salem  
(An Autonomous Institution)  
Courses of study for ME III Semester under Regulations 2010R  
Civil Engineering  
Branch: Structural Engineering

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**Total Credits**: 19

Approved by

Chairperson, Civil Engineering BOS  
Prof. K. Prasad Babu

Member Secretary, Academic Council  
Prof. G. Prakash

Chairperson, Academic Council & Principal  
Dr. V. Jayaprakash

Copy to:-  
Dean/Civil, Third Semester ME STR Students and Staff, COE
Objectives

- To impart knowledge about the measurement of force, strain, vibration, wind flow, distress and nondestructive testing techniques.

Strain Measurements

Methods of Measurement
- Calibration-Load calibration of testing machines-I.S. Code provisions
- Measurement system-Strain measurement-Strain gauges- Principle, Types, Performance, Uses- Strain Rosettes- Wheatstone Bridge- Photo elasticity- Principle, Application-Moire fringe- Electronic load cells-Proving rings.

Measurement of Vibration & Wind Flow

Measurement of vibration - Vibration galvanometers- Vibrometer - Characteristics of Structural vibration
- Pressure gauges- Velocity transducers- Seismic transducers – Linear Variable Differential Transformer- Cathode ray oscilloscope – X Y Plotter- Wind Tunnels-Flow meters-Venturimeter - Digital Data Acquisition systems.

Distress Measurement & Control


Non Destructive Testing Methods

Load testing on structures-In situ load testing-Ultimate load testing-Rebound hammer-Principle and Applications-Limitations-Ultrasonic testing- Principles and Applications- Brittle coating- Principle and Applications-Stress coat- All Temp- Comparison of brittle coatings- Evaluation of the coating.

Model Analysis

Model laws- Laws of similitude-Model materials- Model testing- Necessity for Model analysis-Advantages- Applications- Types of similitude- Scale effect in Models- Indirect model study- Direct model study- Limitations of model investigations- Structural problems that may demand model studies- Usage of influence lines in model studies.

Total: 45

References

(Use of IS 456-2000, SP 16, IS 800-2007, IS 1343, IRC Standards and other relevant codes are permitted)

Objectives

- At the end of this course students will be able to design different types of reinforced concrete bridges
- To impart knowledge on the design of steel bridges and prestressed concrete bridges

Introduction

Classification - Investigation and planning - Choice of type - I.R.C. Specifications for road bridges - Standard live loads - Other forces acting on bridges - General design considerations

Short Span Bridges

Load distribution theories - Analysis and design of slab culverts - Tee beam and slab bridges

Long Span Girder Bridges

Design principles of continuous bridges - Box girder bridges - Balanced cantilever bridges - Bow string girder bridges - Suspension and cable stayed bridges

Prestressed Concrete Bridges

Design of prestressed Concrete Bridges - Preliminary Discussions - Flexural and torsional parameters - Design of Girder Section - Cable layout - Check for stresses at various sections - Check for diagonal tension - Diaphragms - End Blocks - Short term and Long term Deflections

Design of Plate Girder Bridges

Design of riveted and welded plate girder bridges for highway and railway loading - Wind effects - Main section - Splicing - Curtailment - Stiffeners

Total: 45

References

7. SP: 16 Design Aids to I.S.456
Objectives

- At the end of the course students will be in a position to find out the stresses in bodies subjected to two-dimensional and three dimensional forces
- They will be familiar with the elastic and plastic stage by the more general theory of elasticity and plasticity

Analysis of Stress and Strain in Cartesian Coordinates


Two Dimensional Problems in Cartesian Coordinates


Two Dimensional Problems in Polar Coordinates

General equations in polar coordinates - stress distribution symmetrical about an axis - pure bending of curved bars - strain components in polar coordinates - displacements for symmetrical stress distribution - Rotating Disc - Bending of a curved bar by force at the end - Effect of circular hole on stress distribution - concentrated force at a point of a straight boundary - Forces on wedges - A circular disc with diametric loading.

Torsion of Prismatic Bars

General solutions of the problem by displacement (St. Venant's warping function) and force (Prandtl's stress function) approaches - Membrane analogy-Torsion of shafts of circular and noncircular (elliptic, triangular and rectangular) cross sectional shapes. Torsion of thin rectangular section and hollow thin walled single and multicelled sections.

Introduction to Plasticity


References

Objectives

- To study the behaviour, analysis and design of tall structures
- At the end of the course, students will be able to analyze and design such structures taking into account the effect of creep, shrinkage and p-delta effect

Design Principles and Loading


Structural Elements

Sectional shapes - Properties and resisting capacity -Design, deflection, cracking – Prestressing -Shear flow - Design for differential movement, creep and shrinkage effects, temperature effects and fire resistance.

Behaviour of Various Structural Systems

Factors affecting growth, Height and Structural form - High rise behavior - Rigid frames - Braced frames - Infilled frames - Shear walls - Coupled shear walls - Wall-frames – Tubulars , cores, futrigger - Braced and hybrid mega systems.

Analysis and Design

Modelling for approximate analysis - Accurate analysis and reduction techniques - Analysis of buildings as total structural system considering overall integrity and major subsystem interaction - Analysis for member forces - Drift and twist - Computerised general three dimensional analysis.

Stability of Tall Buildings

Overall buckling analysis of frames - Wall-frames -Approximate methods - Second order effects of gravity of loading - P-Delta analysis - Simultaneous first-order and P-Delta analysis - Translational, Torsional instability-, out of plumb effects - Stiffness of member in stability -Effect of foundation rotation.

References

Courses of study for ME III Semester under Regulations 2010R
Information and Technology
Branch: M.Tech. Information and Technology

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Approved by

Chairman, Information Technology BoS
Dr. J. Akilandeswari

Member Secretary, Academic Council
Prof. G. Prakash

Chairman, Academic Council & Principal
Dr. V. Jayaprakash

Copy to: -
HOD/IT, Third Semester M.Tech IT Students and Staff, COE
UNIT I

Introduction to Multimedia Communications


UNIT II

Distributed Multimedia Systems (DMS)


UNIT III

Distributed Multimedia Systems (ATM)


UNIT IV

Multimedia Communication Standards


UNIT V

Multimedia Communications Across Networks


Total: 45 hours

REFERENCES


UNIT I ARCHITECTURE AND EVOLUTION


UNIT II DESIGN MODEL AND SERVICE ENABLEMENT TECHNOLOGIES


UNIT III SOA IMPLEMENTATION AND GOVERNANCE


UNIT IV DATA MANAGEMENT AND SECURITY


UNIT V MESSAGING AND TRANSACTION PROCESSING

Advanced Messaging: Reliable Messaging, Notification, Mobile Worker and Occasionally Connected Computing- Transaction processing: paradigm, impact of web service on Transactions protocols and coordination – transaction specifications.

Total : 45 hours

REFERENCES

UNIT I  FUNDAMENTALS  
Swarm Intelligence Vs Artificial Intelligence, Cellular Automata and the edge of chaos, Artificial life in computer programs –Intelligence in people –Intelligence in Machines, Binary optimization

UNIT II  EVOLUTIONARY COMPUTATION THEORY AND PARADIGMS  

UNIT III  PARTICLE SWARM AND BEE INTELLIGENCE  
Particle Swarm and Particle Swarm Intelligence –Honey Bee’s Intelligence: Bee’s Mating Intelligence – Bee’s Foraging Intelligence.

UNIT IV  APPLICATIONS OF BEE’S INTELLIGENCE  
Energy minimization in wireless Sensor Networks using Bee’s Mating Intelligence, Band width estimation using Bee’s Foraging Intelligence, Online recommendation system using Bee’s Foraging Intelligence, Determination of traverse path of Mobile sink node in WSN using Bee’s Foraging Intelligence.

UNIT V  ANT COLONY OPTIMIZATION  
Introduction to Ant Systems, Ant Colony Optimization Technique, Pheromones and its Density as Deciding Factor, Applications of Ant Colony Optimization in Travelling Salesman Problem and Routing. Comparison between ACO and PSO swarm intelligence models.

Total : 45 hours

REFERENCES: