B.Tech. (VI Sem.)	17MB80 - INDUSTRIAL ENGINEERING AND MANAGEMENT	L	T	P	Cr.
		3	-	-	3

Prerequisite: Principles of management, Human resources management, Production management, Project management

Course Description: In this course, students will learn fundamental concepts and contributions of management. This course also teaches human resources practices which play a vital role in the organisation it gives knowledge about use of improve quality of work and project management.

Course Objectives:

1. To make students understand management, its principles, contribution to management, organization, and its basic issues and types
2. To make students understand the concept of plant location and its factors and plant layout and types, method of production and work study importance
3. To understand the purpose and function of statistical quality control and material management techniques
4. To make students understand the concept of HRM and its functions
5. To make students understand PERT & CPM methods in effective project management and need of project crashing and its consequence on cost of project

Course Outcomes: At the end of the course, the student will be able to

CO1: Apply management principles to the particle situations to be in a position to know which type of business organisation structure suits

CO1: Able to make decision making relating to the problems in operations and production activities thereby improving the productivity by proper utilisation input factors by designing the better working methods and with better work study techniques.

CO3: Able to improve quality of working through SQC techniques and to take effective decision making relating to reduce the investment in materials through better control of inventory

CO4: Able to manage people in working environment with the practices of HRM across corporate businesses

CO5: Able to use PERT & CPM techniques in effective project management to identify critical path and try to complete projects on time as well as reducing the project durations if need arises.

UNIT - I

Introduction: Management - Definition, Nature, Importance of management Functions of Management - Taylor's scientific management theory, Fayal's principles of management, Contribution of Elton mayo, Maslow, Herzberg, Douglas MC Gregor, Basic Concepts Of Organisation - Authority, Responsibility Delegation of Authority, Span of control, Departmentation and Decentralization - Organisation structures(Line organization, Line and staff organization, Functional organization, Committee organization, Matrix organization)

UNIT - II

Operations Management: Plant location, Factors influencing location, Principles and types of plant layouts - Methods of production (job, batch and mass production), Work study - Basic procedure involved in method study and Work measurement

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UNIT - III

Statistical quality control –Concept of Quality & Quality Control-functions ,Meaningof SQC - Variables and attributes - X chart, R Chart, C Chart, P Chart,(simple Problems) Acceptance sampling, Sampling plans, Deming's contribution to quality.

Materials management –Meaning and objectives, inventory control-Need for inventory control, Purchase procedure, Store records, EOQ, ABC analysis, Stock levels

UNIT - IV

Human Resource management (HRM): Concepts of HRM, Basic functions of HR manager: Man power planning, Recruitment, Selection, Training and development, Placement, Wage and salary administration, Promotion, Transfers Separation, performance appraisal, Job evaluation and merit rating.

UNIT - V

Project management: Early techniques in project management - Network analysis: Programme evaluation and review technique (PERT), Critical path method (CPM), Identifying critical path, Probability of completing project within given time, Project cost analysis, project crashing (simple problems)

TEXT BOOK:

Dr. A.R.Aryasri, Management Science, TMH, 10th edition, 2012

REFERENCES:

1. Koontz &weihrich – Essentials of management, TMH, 10th edition, 2015
2. Stoner, Freeman, Gilbert, Management, 6th edition Pearson education, New Delhi, 2004
3. Bernard W. Taylor-Introduction to Management Science Twelfth Edition
4. O.P. Khana, Industrial engineering and Management L.S.Srinath, PERT & CPM

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B.Tech. (VI Sem.) **17MB81 - PROJECT MANAGEMENT**

L	T	P	Cr.
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Pre-Requisite:

The objective of this course is to lay an important foundation to students in managing projects with a special focus on every phase such as project planning, execution, monitoring and evaluation.

Course objectives:

1. To lay an important foundation to students in managing projects.
2. To focus on organization culture and creating a culture for Project Management.
3. To understand the importance of Project planning and controlling process.
4. To create an awareness on reporting objectives and execution Process.
5. Lay stress on building and leading a project team.

Course Outcomes: At the end of the course, the student will be able to

CO1: Understand the concept of project management.
CO2: Awareness on Organization strategy and structure and culture.
CO3: Knowledge on defining the project and its controlling process.
CO4: Ability in executing and evaluating the project.
CO5: Understand the importance of a team and achieving cross-functional co-operation.

UNIT-I

Introduction to Project management-What is Project Management-why Project Management-Project Lifecycle- Project Management Research in brief, Project Management today- future trends in project management.

UNIT-II

Organization strategy and structure and culture, Forma of organization structure, stake holder management, organization culture, creating a culture for Project Management.

UNIT-III

Project Planning Project Planning Defining the project, Approaches to project screening and selection, Work breakdown structure, financial Module, Getting Approval and compiling a project charter, setting up a monitoring and controlling process.

UNIT-IV

Project Execution Initiating the Project, Controlling and Reporting project objectives, conducting project Evaluation, Managing Risk-Four Stage Process, risk management an integrated approach, cost Management, Creating a project Budget.

UNIT-V

Leading Project Teams Building a project Team, Characteristics of an Effective project Team, achieving cross- functional co-operation, virtual project teams, Conflicts management, Negotiations

TEXT BOOKS:

1. Gray, Larson: Project Management-Tata McGraw Hill-2008.
2. Jeffery K.Pinto: Project Management-Pearson Education-2009.

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REFERENCES:

1. Enzo Frigenti: Project Management-Kogan, 2008
2. Larry Richman: Project Management-PHI, 2008
3. Scott Berkun: Project Management, SPD, 2008
4. Thomas M.Cappels: Financially Focused Project Management, SPD,2008.
5. Anita Rosen: Effective IT Project Management-PHI-2008.
6. R. Panneerselvam, P. Senthilkumar: Project Management, PHI, 2009
7. Guide to Project Management Body of Knowledge (PMBOK® Guide) of Project Management Institute, USA.

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B.Tech. (VI Sem.)	17MB82 - LOGISTICS AND SUPPLYMANAGEMENT	L	T	P	Cr.
		3	-	-	3

Pre-Requisite: Inventory management, production management, material management

Course Educational Objectives: The course aims to make the students to:

- Apply and gain in-depth knowledge on the integrated purchasing, logistics, materials and supply chain management
- Identify the integration between the various elements in the supply chain process
- Learn how to establish benchmark of the organization by taking best practices of the world class organisatons.
- Design transportation networks and use of deferent modes of transportation.
- Apply the latest IT tools and techniques to evaluate supply chain systems

Course Outcomes: After completing of this course, the students should be able to:

CO1: Examine the design and performance of supply networks and processes in different business contexts.

CO2: Develop capabilities in logistics, coordination for supply chain integration, inventory management; risk pooling, procurement, product and process design, and international supply chain management.

CO3: Configure logistics networks and assess their performance impacts on efficiency and service levels

CO4: Design supply chain contracts for effective governance of supply chain relationships.

CO5: Diagnose information integration problems across the supply chain and their consequent impacts in deploying physical and financial resources optimally.

UNIT - I

Introduction to Supply Chain Management: Concept, Objectives, Scope and Functions of Supply Chain; Process view of a Supply Chain; Impact of Supply Chain Flows.

Supply Chain Drivers: Facilities, Inventory, Transportation, Information, Sourcing, Pricing; Obstacles to Achieve Strategic fit; Role of Aggregate Planning in Supply Chain, Methods and Managing Supply and Demand.

Supply Chain Performance: Competitive Advantage and Supply Chain Strategies, Achieving Strategic fit.

UNIT - II

Logistics Management: Introduction, Difference between Logistics and Supply Chain; Inbound, Inter and Outbound Logistics; Integrated Logistics Management; 3PL, 4PL, Intermodal and Reverse Logistics.

Supply Chain Customer Service: The Marketing and Logistics interface, Customer Service and Customer Retention, Service-Driven Logistics System, Setting customer Service Priorities and Service Standards.

UNIT - III

Supply Chain Relationship: Bench marking - Objectives, Bench marking Cycle, Process and types, Setting Bench marking Priorities.

Sourcing in Supply Chain: Role of Sourcing in Supply Chain Management, Supplier Scoring and Assessment; Supplier Selection and Controlling; The Procurement process, Sourcing Planning and Analysis; Global Sourcing.

Pricing and Revenue in Supply Chain: The role of Revenue Management in Supply Chain.

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UNIT - IV

Network design in Supply Chain: The role of distribution in the Supply Chain Management, factors influencing distribution network design; Transportation Fundamentals: The role of Transportation in Supply Chain, Factors influencing Transportation Decisions, Modes of transportation, Transportation documentation.

Coordination in Supply Chain: Introduction, Lack of Supply Chain Coordination and the Bullwhip effect, Impact of Lack of Coordination, Obstacles to Coordination in Supply Chain, Managerial levers to achieve Coordination.

UNIT - V

IT in Supply Chain: The role of IT in the Supply Chain, The Supply Chain IT framework; CRM, Internal SCM, SRM; The future of IT in Supply Chain, Supply Chain IT in Practice.

Global Logistics and Global Supply Chain: Logistics in Global Economy, Change in Global Logistics, Global Supply Chain business process; Global Strategy; Global Purchasing, Global SCM.

TEXT BOOK

1. K.Sridhara butt, "*Logistics and Supply Chain management",* Himalaya Publishers, New Delhi, 2009

REFERENCES

1. Sunil Chopra and Peter Meindl, " *Supply Chain Management: Strategy, Planning & Operations",* Pearson Education, New Delhi, 2004.
2. Donald J Bowerfox and David J Closs, " *Logistics Management: The integrated Supply Chain Process",* TMH, 2003.
3. D.K.Agarwal, "*Logistics and Supply Chain management",* Mc millan Publishers, 201
4. B.Rajasekhar, Acharyulu, "*Logistics and Supply Chain management",* Excel Books, New Delhi, 2009.

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B.Tech. (VI Sem.)	17MB83 - BANKING AND INSURANCEMANAGEMENT	L	T	P	Cr.
		3	-	-	3

Pre-requisite: Banking management and banking and finance

Course objectives

1. To make students understand the relationship between bankers and customers for mutual benefit
2. To create awareness to the students on various functions of banking system
3. To update the students on the emerging trends and issues in banking sector
4. To educate the students the significance of coverage of insurance
5. To make students understand the credit worthiness of customers based on their financials

Course Outcomes: After completing of this course, the students should be able to:

1. Able to understand importance of relationship between bankers and customers
2. Able to get exposure on various functions of baking systems
3. Able to connect to the emerging trends and issues in banking sector
4. Able to identify the importance of coverage of insurance
5. Able to evaluate the credit worthiness of different customers based on their key financial details

UNIT - I

Bankers- customer relationship: definition and meaning of banker and customer, permitted activities of commercial banks in India- deposit accounts- opening operations and closure of fixed deposit accounts- bank accounts and types

UNIT - II

Banking investments- negotiable instruments, types of negotiable instruments and parties, banking services Safe custody ,MICR hearing ,ATM's ,credit cards debit cards travelling cheques ,ombudsmen and customer services.

UNIT - III

Emerging trends and issues- International banking euro bank and off-shore banking, overview of banking risks, Corporate governance, credit risk management in banks ,liquidity risk management and asset liability management.

UNIT - IV

Principles and practices of insurance: introduction to risk and insurance, types of insurance- basic principles of general and life insurance- regulations on investments, insurance funds with respect to shareholders funds and policy shareholders funds.

UNIT - V

Types of insurance products: General insurance products - fire, marine, motor engineering and others.

Life insurance products: endowments, whole life plans, money back, ULIPs, pension plans, health plans, group insurance schemes. Risk management: risk & uncertainty

TEXT BOOKS

Banking and Insurance: by Shakti R. Mohapatra (Author), Debidutta Acharya (Author)

Vaughan, E.J. and T. Vaughan, *Fundamentals of Risk and Insurance,* Wiley & Sons

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REFERENCES:

1. Agarwal, O.P., *Banking and Insurance*, Himalya Publishing House
2. Suneja, H.R., *Practical and Law of Banking,* Himalya Publishing House
3. Gupta, P.K., *Insurance and Risk Management,* Himalaya Publishing House
4. Black, K. and H.D. Skipper, *Life and Health Insurance,* Pearson Education

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L	T	P	Cr.
3	-	-	3

B.Tech. (VII Sem.) **17AE80 - PRINCIPLES OF FLIGHT**

Pre-requisites: Nil

Course Educational Objectives: To learn the components of airplane and different types of flight vehicles, the basic aspects of aerodynamics and airfoils, the elements of propulsive systems, function of structural components in wing and fundamental aspects of aircraft performance and stability.

Course Outcomes: At the end of the semester, the student will be able

CO1: To describe functions of various external and internal components of an airplane

CO2: To understand the basic aspects of aerodynamics, aircraft propulsion systems and aircraft structural components

CO3: To analyze the basic performance of an aircraft.

CO4: To analyze the elementary modes of stability and control aspects

UNIT- I

BASIC ASPECTS OF FLIGHTS: History of Aviation, Atmosphere and Its Properties, Classification of Aircrafts, Components of Aircraft and Their Functions, Aircraft Motions; Control Surfaces

UNIT- II

AERODYNAMICS AND PROPULSION: Aerofoil, Aerofoil Nomenclature, NACA Aerofoils, Aerodynamics Forces-Lift, Drag and Moment Co-Efficient, Generation of Lift and Drag, Centre of Pressure, Aerodynamic Center, Pressure Distribution Over Aerofoils
Aircraft Power Plants, Working Principle of Turboprop, Turbojet and Turbofan Engines, Propellers, Working Principle of Rocket

UNIT- III

AIRCRAFT STRUCTURES: Introduction; General Types of Construction, Monocoque, Semi-Monocoque and Geodesic Structures, Typical Wing and Fuselage Structure, Metallic and Non-Metallic Materials for Aircraft Application.

UNIT- IV

AIRCRAFT PERFORMANCE: Equations of Motion of an Airplane in Flight, Drag Polar, Thrust Required and Available, Power Required and Power Available, Rate of Climb, Time to Climb, Range, Endurance, Gliding Flight, Absolute and Service Ceilings, Take-Off and Landing Performance

UNIT- V

AIRCRAFT STABILITY AND CONTROL: Forces and Moments Acting On an Airplane in Flight, Static and Dynamic Stability, Longitudinal, Lateral and Directional Stability, Neutral Point, Static Margin, Side-Slip, Dihedral Effect, Adverse Yaw Effects, Aileron Reversal, Rudder Requirements, Phugoid Motion, Spiral Divergence, Dutch Roll, Auto-Rotation and Spin.

REFERENCES

1. Anderson. J. D, Introduction to Flight, McGraw-Hill, Sixth Edition, 2010.
2. Kermode. A.C, Mechanics of Flight, 12th Edition, Pearson Education, 2012.

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B.Tech. (VII Sem.) **17CE80 - BASIC CIVIL ENGINEERING**

L	T	P	Cr.
3	-	-	3

Prerequisites: Nil

Course Objectives: This course deals with the importance of building planning, properties and applications of various building materials, soil classification and different types of foundations, important aspects of surveying, levelling operations and identify the terminology in roadway and railway networks, principles of water resources and environmental engineering.

COURSE OUTCOMES : At the end of the course, the student will be able to

CO1: Recognize the importance of building planning for construction
CO2: Identify appropriate building materials for construction purposes
CO3: Distinguish the different types of soils and foundations required for specific usage
CO4: Evaluate the basics of surveying and levelling operations for field application and categorize the important elements of roadway and railway networks
CO5: Discriminate the importance of quantity and quality aspects of water in the society and priorities for sanitation management.

UNIT I: BUILDING PLANNING

Role of a Civil Engineer: Inter connection among specialisations in Civil Engineering
Elements of a Building: Elements of a Building, Basic Requirements of a Building, Planning- Hot and dry climates, Hot and wet climates, Cold climatic conditions, Aspect and Prospect, Roominess, Grouping, Privacy, circulation, Sanitation and ventilation, Orientation, Economy, Role of Bye-laws

UNIT II: BUILDING MATERIALS

Classification, Composition, Properties, Commercial forms, Uses of – Rocks, Bricks, Timber, Ply wood, Glass, Bitumen, Aluminium, Cement, Steel, Concrete, Mortar.
Concept of eco-friendly materials, examples.

UNIT III: SOIL CLASSIFICATION AND FOUNDATION

Types of soils, soil classification, engineering properties, Bearing capacity of soil, purpose and methods of improving bearing capacity – Foundations – Requirements, Loads, Types - Foundation for special structures-water tanks, silos, chimneys, cooling towers, telecommunication towers, transmission line towers.

UNIT IV: SURVEYING, LEVELLING & HIGHWAY NETWORK

Objective of surveying– Principles, applications and uses of - chain surveying, theodolite, levelling, contour maps, Planimeter, EDM concept- linear distance and area measurement, Total station- GIS-Concept and applications in civil engineering.
Indian highways- Basic terminology- Classification of roads - PIEV theory - Traffic signs - IRC Code provisions
Indian railways –Permanent way and components of railway track- Gauges – Rails -Sleepers – Ballast.

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UNIT V: WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

Objectives of water supply system-Sources of water supply-Hydrologic cycle-Rainfall measurement - Purpose of dams, reservoirs, intakes, infiltration galleries – Water demands – Water quality parameters and their impacts - Principles of water treatment – Objectives and methods of water distribution systems – Sewage generation in a society –Wastewater characteristics and their impacts –Principles of sewage treatment – Disposal of sewage – Water quality standards for – drinking purpose, –irrigation, -making and curing of concrete.

TEXT BOOKS

1. M.S Palanichamy "Basic Civil Engineering", Tata McGraw Hill Publishing 2000.

REFERENCES

1. S S Bhavikatti "Basic Civil Engineering", New age International Publications, 2010.
2. C P Kaushik& S S Bhavikatti "Basic Civil Engineering", New age International Publications 2010.

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B.Tech. (VII Sem.) **17CS80 - JAVA PROGRAMMING**

L	T	P	Cr.
3	-	-	3

Pre-requisites: C, C++.

Course Educational Objective: Concentrates on the methodological and technical aspects of software design and Programming based on OOP. Acquire the basic knowledge and skills necessary to implement object-oriented Programming techniques in software development through JAVA. Know about the importance of GUI based applications and the development of those Applications through JAVA. Get sufficient knowledge to enter the job market related to Web development.

Course Outcomes: At the end of the course, the student will be able to:

CO1: Identify Object Oriented concepts through constructs of JAVA.
CO2: Analyze the role of Inheritance, Polymorphism and implement Packages, Interfaces in Program design using JAVA.
CO3: Explore Exception handling and Multi-threading concepts in program design using JAVA.
CO4: Develop GUI based applications using Applet class and explore the concept of Event Handling using JAVA.
CO5: Design some examples of GUI based applications using AWT controls and Swings.

UNIT – I

Introduction: Drawbacks of POP, Object Oriented paradigm, OOP concepts.
Java Language: History of Java, Java Buzzwords, The Byte code, Simple types, Arrays, Type conversion and casting, simple java programs.
Introducing classes: Class fundamentals, declaring objects, access control and recursion, Constructors, garbage collection, Simple example programs of String and StringBuffer classes, Wrapper classes.

UNIT – II

Inheritance & Polymorphism: Inheritance basics, using super keyword, multilevel hierarchy, Method overloading, Method overriding, Dynamic method dispatch, abstract class, Object class and final keyword.
Packages: Defining a package, Accessing a Package, Understanding CLASSPATH, importing packages, exploring java.util package (StringTokenizer, date classes).
Interfaces: Defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces. Differences between classes and interfaces.

UNIT – III

Exception handling: Exception handling fundamentals, exception types, usage of try& catch, throw, throws and finally, Java Built-in Exceptions.
Multithreading: Differences between multi-threading and multitasking, java thread model, Creating thread, multiple threads and synchronizing threads.

UNIT – IV

Applet Class: Concepts of Applets, differences between applets and applications, applet architecture, skeleton, creating applets, passing parameters to applets, working with Graphicsclass.
Event Handling: Events handling mechanisms, Events, Event sources, Event classes, Event Listeners interfaces, Delegation event model, handling mouse and keyboard events, Adapterclasses, Inner classes.

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UNIT – V

AWT controls: label, button, scrollbars, text components, check box, check box groups, Choices controls, lists, scrollbar, text field, layout managers – border, grid, flow.

Introducing Swing:– Introduction, key features of swings, limitations of AWT, components &containers, swing packages, creating swing applet- JApplet class, JComponents- Labels, text fields, buttons – The JButton class, Tabbed Panes, Scroll Panes, Tables.

TEXT BOOKS

Herbert Schildt, "Java: The complete reference", TMH Publications, 7th edition, 2006.

REFERENCES

1. Dr.R.Nageswara Rao,"Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition, 2008.
2. E. Balaguruswamy, "Programming with JAVA", TMH Publications, 2ndEdition, 2000.
3. Patrick Niemeyer & Jonathan Knudsen, "Learning Java", O'REILLY Publications, 3rd Edition, 2005.
4. Benjamin J Evans & David Flanagan,"Java–in a Nutshell – A desktop quick reference", O'REILLY Publications, 6th Edition, 2014.
5. David Flanagan, "Java Examples In a nutshell – A Tutorial companion to java in a nutshell", O'REILLY Publications, 3rd Edition, 2004.

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B.Tech. (VII Sem.) 17CS81 - INTRODUCTION TO OPERATING SYSTEMS

L	T	P	Cr.
3	-	-	3

Prerequisite: Knowledge of Computers fundamentals, Data structures & CO.

Course Educational Objective (CEO):
The main objective of the course is to provide basic knowledge of computer operating system structure and functioning. Students able to understand how Operating Systems evolved with advent of computer architecture. Comprehend the different CPU scheduling algorithms, page replacement algorithms and identify best one.

Course Outcomes (COs): After the completion of this course, student will be able to:

CO1: Identify the functional aspects and implementation methods (system call And System programs of different modules in a general purpose operating System).
CO2: Evaluate scheduling and communication methods of processes handled by Operating systems through examples.
CO3: Analyse the process synchronization methods and deadlock handling Approaches employed in operating systems.
CO4: Evaluate memory management strategies such as paging and segmentation, Virtual Memory, swapping, and page replacement algorithms.
CO5: Analyse the implementation strategies of file systems regarding directory, Allocation, free space management and file recovery.

UNIT – I:
Introduction: Computer-System Organization, Computer-System Architecture, Operating System Structure, Operating-System Operations, Process Management, Memory Management, Storage Management, Protection and Security, Distributed Systems, Special-Purpose Systems
Operating-System Structures: Operating-System Services, User Operating-System Interface, System Calls, Types of System Calls, System Programs, Operating-System Design and Implementation, Operating-System Structure, Virtual Machines, Operating-System Generation, System Boot.

UNIT – II:
Processes: Concept, Process Scheduling, Operations on Processes, Inter-process Communication, Examples of IPC Systems, Communication in Client-Server Systems.
Multithreaded Programming: Multithreading Models, Thread Libraries, Threading Issues.
Process Scheduling: Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling.

UNIT – III:
Synchronization-The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization Examples, and Atomic Transactions.
Deadlocks- System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention. Deadlock Avoidance, Deadlock Detection, Recovery from deadlock.

UNIT – IV:
Memory Management Strategies: Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation.
Virtual Memory Management: Demand Paging, Page Replacement, Allocation of Frames, Thrashing, Memory-Mapped Files, Allocating Kernel Memory.

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UNIT-V:

File-System- The Concept of a File, Access Methods, Directory Structure, File-System Mounting, File Sharing, Protection.

Implementing File System: File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management, Efficiency and Performance, Recovery.

TEXT BOOK:

1. Silberschatz & Galvin, "Operating System Concepts", Wiley, 7th edition, 2007.

REFERENCES:

1. William Stallings, "Operating Systems", PHI, 5th Edition, 2004.
2. Charles Crowley, "Operating Systems: A Design-Oriented Approach", TMH Publications, 1998.
3. Andrew S.Tanenbaum, "Modern Operating Systems", PHI, 2nd edition, 1995.
4. http://codex.cs.yale.edu/avi/os-book/OS9/slide-dir/index.html

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B.Tech. (VII Sem.) **17EC80 - SATELLITE TECHNOLOGY**

L	T	P	Cr.
3	-	-	3

Pre-Requisites: Basics related to Dynamics, Kinematics, Thermodynamics and Properties of an Ellipse.

Course Educational Objective: This course provides the knowledge on different laws associated with the motion of a satellite. The course gives the knowledge on launching a satellite into orbit with launch vehicles. The course also provides the knowledge on various subsystems, structures, thermal control and applications of a satellite.

Course Outcomes (COs): At the end of the course, student will be able to

CO1: **Identify** various applications of satellites, launch vehicles and basic functions of satellite system

CO2: **Understand** components, characteristics of a power subsystem and various aspects of spacecraft control

CO3: **Evaluate** the orbital model, parameters related to satellites and the requirements needed for the selection an earth station

CO4: **Analyze** the satellite structures, internal and external design issues of a spacecraft

UNIT - I

Introduction to Satellite Systems: Need of space communication, common satellite applications and missions, General structure of satellite communication system, Types of spacecraft orbits, Launch vehicles, Satellite system and their functions (structure, thermal, mechanisms, power, propulsion, guidance and control, bus electronics)

UNIT - II

Orbital Mechanics: Fundamentals of orbital dynamics – Kepler's laws, Orbital parameters, Orbital perturbations-need for station keeping, Co-ordinate systems, GPS System- architecture, working principle, merits, demerits and applications, Ground/Earth station network requirements.

UNIT - III

Power System and Bus Electronics: Solar panels: Silicon and Ga-As cells, power generation capacity, efficiency-Space battery systems-battery types, characteristics and efficiency parameters-Power electronics. Telemetry, Tracking, command and monitoring (TTC&M) control functions. Generally employed communication bands (UHF/VHF, S, L, Ku, Ka etc), their characteristics and applications-Coding systems –Onboard computer –Ground checkout systems.

UNIT – IV

Spacecraft Control: Control requirements: attitude control and station keeping functions type of control maneuvers-Stabilization schemes: spin stabilization, gravity gradient methods, 3 axis stabilization-Commonly used control systems: mass expulsion systems, Momentum exchange Systems. Gyro and magnetic torque-sensors, star and sun sensor, earth sensor, magnetometers and inertial sensors.

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UNIT - V

Satellite Structures and Thermal Control: Satellite mechanical and structural configuration: satellite configuration choices, launch loads, separation induced loads, deployment requirements-Design and analysis of satellite structures-Structural materials and fabrication-The need of thermal control: externally induced thermal environment-Internally induced thermal environment-Heat transfer mechanism: internal to the spacecraft and external heat load variations –Thermal control systems, active and passive methods.

TEXT BOOKS

1. Timothy Pratt, Charles Bostian, Jeremy Allnutt , "Satellite communications", John Wiley & Sons,2nd edition, 2003.
2. Dennis Roddy,"Satellite communications", Tata McGraw Hills, 4th Edition, 2009.

REFERENCES

1. M. Richharia, "Satellite Communications Systems: Design principles", BS Publications, 2nd Edition, 2005.
2. D.C Agarwal , "Satellite communications", Khanna Publications, 5th Edition,2006.
3. Richard.F, Filipowsky Eugan I Muehllorf, 'Space Communication Systems', Prentice Hall 1995.

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MYLAVARAM, Krishna Dt., Andhra Pradesh

B.Tech. (VII Sem.)

17EC81 - ANALOG AND DIGITAL COMMUNICATIONS

L	T	P	Cr.
3	-	-	3

Pre-requisites: Vector, Scalar, Approximation of a vector by another vector, Differentiation and Integration of signals.

Course Educational Objective: This course provides the knowledge on fundamental characteristics of signals in time and frequency domain. The course will give an idea about various analog modulation techniques like amplitude, frequency, phase, pulse modulations. The course also gives the complete information regarding digital modulation.

Course Outcomes (COs): At the end of the course, students will be able to

- **CO1:** **Understand** the fundamentals of signals and their properties.
- **CO2:** **Analyze** the analog communication systems using amplitude and angle modulation.
- **CO3:** **Apply** various modulation techniques for pulse transmission.
- **CO4:** **Evaluate** the performance of fundamental blocks constituting various analog and digital modulation techniques.

UNIT-I:

Signal analysis: Concept of Signal, Classification of Signals; Representation of various Signals- Impulse, Unit Step, Unit Ramp, Signum, Decaying Exponential, Raising Exponential, Double Exponential, Gate and Rectangular, Sinc and Sampling Signals; Operations on Signals– Time Shifting, Time Scaling, Time Reversal (Folding), Amplitude Scaling, Convolution; Graphical Method of Convolution; Introduction to Fourier series and Fourier transform.

UNIT-II:

Linear Modulation: Introduction to Electrical Communication System, Need for modulation, Classification of modulation schemes, Amplitude modulation: Definition, time domain and frequency domain representation, Single tone amplitude modulation, modulation index, Generation of AM waves: Square law modulation, Envelope Detection of AM waves. Double side band suppressed carrier modulation (DSBSC): Definition, time domain and frequency domain representation, Generation of DSBSC waves: Balanced modulator, Coherent detection of DSBSC waves, Limitations of Coherent detection: Frequency error, Phase Error, Single side band (SSB) Modulation: Definition, Generation of SSB waves: phase discrimination method, Coherent detection of SSB waves.

UNIT-III:

Angle modulation: Definition, types of angle modulation: Frequency modulation, Phase modulation; single tone frequency modulation, Narrow band FM: time and frequency domain representation, Wide band FM: time and frequency domain representation, Transmission bandwidth of FM, Generation of FM: direct method, indirect method. Detection of FM waves: Frequency discrimination method, Phase discrimination method.

UNIT-IV:

Pulse modulation: Sampling theorem for low pass signals, types of sampling, Pulse modulation: types of pulse modulation, Pulse amplitude modulation (PAM): definition, generation of PAM waves: Ideal, natural and flat top sampling. Demodulation of PAM waves, Pulse width modulation (PWM): Definition, generation of PWM, Demodulation of PWM waves, Pulse position modulation (PPM): Definition, generation of PPM, Demodulation of PPM.

UNIT-V:

Digital modulation: (Qualitative treatment only) Advantages of digital communication over analog communication, Quantization, Pulse Code Modulation system, Delta Modulation, drawbacks of delta modulation, Adaptive delta modulation, Amplitude Shift Keying, Frequency Shift Keying, Binary Phase Shift Keying, Comparison of various digital modulations.

TEXT BOOKS

1. Simon Haykin, Communication Systems, Second Edition, John Wiley & Sons Publications, Singapore, 1983.
2. Kennedy, Davis, Electronic Communication Systems, 4th edition, Tata McGraw-Hill Publications, 2009.

REFERENCES

1. Herbert Taub , Donald L. Schilling, Principles of Communication Systems, Second Edition, Tata McGraw-Hill, New Delhi, 1991.
2. **B.P.Lathi, Modern Digital and Analog Communication Systems, Third Edition,** Oxford University
3. Hwei, P. Hsu, Analog and Digital Communications, Schaum's Outline series, Second Edition, TMH Publications, 1991.
4. R.P.Singh, S.D.Sapre, Communication Systems (Analog & Digital), Second Edition, Tata McGraw-Hill Publications, 2009.
5. Wayne Tomasi, Electronic communication systems, third edition, Pearson Education,2006.
6. Gary M. Miller, Jeffy S. Beasley, Modern Electronic Communication, Seventh Edition, Prentice Hall of India,2002.

LBRCE EXAM CELL Dt.

HEAD
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B.Tech. (VII Sem.) **17EE80 - BASIC CONTROL SYSTEMS**

L	T	P	Cr.
3	-	-	3

Pre Requisite: None

Course Educational Objective: This course enables the students to
- Introduce the principles and applications of control systems in day to day life.
- Study the importance of modelling of different systems
- Test the Stability, Controllability and Observability of systems

Course Outcomes: At the end of the course, the students will be able to:
CO1. Develop mathematical of electromechanical systems.
CO2. Analyze for absolute stability, relative stability, Controllability and Observeabilty
CO3. Analyse linear control systems in time & frequency domain

UNIT-I: INTRODUCTION-MATHEMATICAL MODELLING OF CONTROL SYSTEM

Concepts of Control Systems- Classification of control systems, Open Loop and closed loop control systems - Different examples of control systems, Feed-Back Characteristics, Effects of feedback. Mathematical models – Differential equations, Impulse Response and transfer functions – Translational and Rotational mechanical systems,
Block diagram representation of systems -Block diagram algebra, Signal flow graph - Reduction using Mason's gain formula.

UNIT - II: STATE SPACE ANALYSIS OF CONTINUOUS SYSTEMS

Concepts of state, state variables and state model, Canonical state space models, Solving the Time invariant state Equations- State Transition Matrix and it's Properties – Concepts of Controllability and Observability.

UNIT - III: TIME RESPONSE ANALYSIS

Standard test signals - Time response of first order systems – Characteristic Equation of Feedback control systems, Time response of second order systems - Time domain specifications, Steady state errors and error constants.

UNIT - IV: FREQUENCY RESPONSE ANALYSIS

Introduction, Frequency domain specifications, Polar Plot, Bode diagrams, Nyquist Plot -Phase margin and Gain margin (Elementary treatment only).

UNIT - V: STABILITY ANALYSIS

The concept of stability – R-H stability criterion, The root locus concept - construction of root loci- Stability Analysis from Bode Plots and Nyquist plot(Elementary treatment only).

TEXT BOOKS

1. B. C. Kuo , "Automatic Control Systems" John wiley and son's ,9th edition, 2009
2. I. J. Nagrath and M. Gopal, "Control Systems Engineering", New Age International (P) Limited Publishers, 6th edition , 2017

REFERENCES

1. Katsuhiko Ogata, "Modern Control Engineering", Prentice Hall of India Pvt. Ltd., 3rd edition,1998.
2. Norman S. Nise, "Control Systems Engineering", John Wiley, New Delhi, 6th edition, 2012
3. Richard C Dorf and Robert H Bishop, "Modern control systems", Prentice Hall Pearson education, Inc. New Delhi, 12th edition, 2003.

B.Tech. (VII Sem.) **17EE81 - UTILIZATION OF ELECTRICAL ENERGY**

L	T	P	Cr.
3	-	-	3

Pre-requisites : **None**

Course Educational Objective: This course enables the student to
- familiarize with characteristics of various drives,
- comprehend the different issues related to heating, welding and illumination.

Course Outcomes: At the end of the course, the student will be able to:
CO1: Choose a drive for a particular application.
CO2: Identify a heating/ welding scheme for a given application
CO3: Illustrate the different schemes of traction and its main components
CO4: Develop a lighting scheme for a given practical case
CO5: Assess the economic aspects in utilisation of electrical energy

UNIT – I: ELECTRIC HEATING AND WELDING
Introduction, classification of methods of electric heating, requirements of a good heating material, electric arc furnace, induction heating, dielectric heating.
Electric welding: Resistance welding, electric arc welding.

UNIT – II: ILLUMINATION ENGINEERING
Introduction, Nature of light, laws of illumination, lighting schemes, sources of light, fluorescent lamps, compact fluorescent lamps, LED lamps discharge lamps, mercury vapour lamps, sodium vapour lamps and neon lamps, comparison between tungsten filament lamps and fluorescent tubes, requirements of good lighting, street lighting,

UNIT – III: ELECTRIC DRIVES
Introduction, Factors affecting selection of motor, Types of loads, Steady state characteristics of drives, Transient characteristics, size of motor, Load equalization, industrial applications.

UNIT – IV: ELECTRIC TRACTION
Introduction, requirements of an ideal traction system, supply system for electric traction, train movement, mechanism of train movement, the traction motors, modern trends in electric traction, automation in electric traction.

UNIT – V: REFRIGERATION AND AIRCONDITIONING
Introduction, Types of refrigeration, compression refrigeration system, basic vapour compression cycle, absorption refrigeration system, operational features, household refrigerator, Airconditioning, Types of airconditioning system, room airconditioner, cooling capacity of an airconditioner, working of electrical system.

TEXT BOOKS:
1. C.L.Wadhwa, "Generation, Distribution and Utilization of Electrical energy", New Age International publishers, 3rd Edition 2015.
2. N.V.Suryanarayana, "Utilization of electric power including electric drives and electric traction ", New Age International publishers New Delhi, 2rd Edition 2014

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REFERENCES:

1. G.C.Garg, "Utilization of electric power & electric traction",Khanna Publishers,2014.
2. H.Partab, "Art & Science of utilization of electrical energy", Dhanpat Rai &co,2017.
3. Tripathy S.C."Electric energy utilization and conservation" TMH, 1991.
4. J.Upadhyay,S.N.Mukunda, "Electric Traction"Allied publishers Ltd, New Delhi, 1st edition,2000.
5. Open Shaw Taylor, "Utilization of Electrical Energy", Orient Longman, 1st edition 2006 .

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B.Tech. (VII Sem.) **17EI80 - INSTRUMENTATION TECHNOLOGY**

L	T	P	Cr.
3	-	-	3

COURSE EDUCATIONAL OBJECTIVES:

In this course student will learn about the basic concepts of measurement and instrumentation and measurement of strain, pressure, flow and temperature

COURSE OUTCOMES: At the end of the course student will be able to

CO1: Illustrate the concepts of measurement, sources of error, different electrical Transduction principles and behaviour of first order and second order systems.

CO2: Summarize the theory of operation of strain measurement, types and materials for resistance strain gauges and gauging techniques.

CO3: Identify suitable methods for pressure measurement..

CO4: Categorize the flow measurement techniques.

CO5: Analyze the temperature measuring techniques.

UNIT – I

BASIC CONCEPTS OF MEASUREMENT AND INSTRUMENTATION SYSTEMS:

Introduction, System Configuration, Problem Analysis, Basic Characteristics of measuring devices, Calibration, Electrical Transducer, Classification, Basic requirements of a transducer, Generalised measurements, zero order systems, first order systems, second order systems, dead time element, Specifications and testing of dynamic response

UNIT – II

MEASUREMENT OF STRAIN:

Introduction, Factors affecting strain measurements, Types of strain gauges, Theory of operation of resistance strain gauge, Types of Electrical Strain gauge, Materials for Strain gauges, Gauging Techniques and other factors, Strain gauge Circuits, Temperature Compensation, Applications.

UNIT – III

MEASUREMENT OF PRESSURE:

Introduction, Diaphragms, other elastic elements, Transduction methods, Force balance transducer, solid state devices, thin film pressure transducers, piezo electric pressure transducer, vibrating element pressure sensors.

UNIT – IV

MEASUREMENT OF FLOW:

Introduction, Classification of flow meters, head type of flow meters, rotameters, electromagnetic flow meter, mechanical flow meters, anemometers, ultra sonic flow meters, vortex flow meters, other flow meters, mass flow meters.

UNIT – V:

MEASUREMENT OF TEMPERATURE:

Introduction, Temperature scales, mechanical temperature sensors, resistance type temperature sensors, platinum resistance thermometers, thermistors, thermo couples, solid state sensors, Quartz thermometer, temperature measurement by radiation methods, optical pyrometer, Calibration of Thermometers.

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TEXT BOOK

1. C S Ragan, G R Sarma, V S V Mani, "Instrumentation Devices & Systems-Second Edition",Tata Mc Graw hill publishing Company Ltd..

REFERENCES

1. B.E.NOLTINGK, "Jones' Instrument Technology-Volume 1 Mechanical Instruments"-Forth Edition, Butterworth Heinemann International Editions.
2. B.E.NOLTINGK, "Jones' Instrument Technology-Volume 2 Measurement of Temperature and Chemical Composition"-Forth Edition, Butterworth Heinemann International Editions.

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B.Tech. (VII Sem.) **17IT80 - INTRODUCTION TO DATABASE**

L	T	P	Cr.
3	-	-	3

Pre-requisite: Elementary set theory, concepts of relations and functions, propositional logic data structures (trees, Graphs, dictionaries) & File Concepts.

Course Educational Objective:
This course enables the students to know about DBMS basic concepts, Database Languages, Data base Design, Normalization process and Transaction processing AND Indexing.

Course Outcomes: At the end of the course, the student will be able to:
CO1: Understand DBMS concepts, architecture.
CO2: Design entity relationship model and make them to data model.
CO3: Understand the usage of keys and constraints for relational data.
CO4: Apply the normalization process for data base design.
CO5: Analyze the issues in transaction processing and different recovery strategies.

UNIT – I: Introduction:
An overview of database management system, database system Vs file system, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure.

UNIT –II: Data modelling using the Entity Relationship Model:
ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.

UNIT – III: Relational data Model and Language:
Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL.

UNIT – IV: Normalization:
Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependences, loss less join decompositions, normalization using FD, MVD,
and JDs, alternative approaches to database design.

UNIT – V: Transaction Processing Concepts:
Transaction system, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, log based recovery, checkpoints, ARIESalgorithm,deadlock handling.

TEXT BOOK
1. Korth, Silbertz, Sudarshan, "Database Concepts", Tata McGraw Hill.
2. Elmasri, Navathe, "Fundamentals of Database Systems", Addision Wesley.

REFERENCES
1. Raghu Ramakrishnan, "Database Management System", McGraw Hill.
2. Maheshwari Jain, "DBMS: Complete Practical Approach", Firewall Media, New Delhi.
3. Date C.J, "An Introduction to Database System", Addision Wesley.

LBRCE EXAM CELL Dt.....

Verified by

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MYLAVARAM-521 230, Krishna Dt.,A.P.,INDIA.

B.Tech. (VII Sem.) **17ME80 - OPTIMIZATION TECHNIQUES**

L	T	P	Cr.
3	-	-	3

COURSE EDUCATIONAL OBJECTIVE: The main objective of this course is to understand the theory of optimization methods and algorithms developed to promote research interest in optimization models to apply for the numerical techniques and mathematical results of optimization theory for solving various types of optimization problems to Engineering problems.

COURSE OUTCOMES: At the end of the course, the student will be able to:

CO1: Understand the impact of optimization in Engineering.
CO2: Develop mathematical optimization models for a range of practical problems
CO3: Apply linear programming approach for optimizing the objectives of industrial oriented problems.
CO4: Apply the concepts of nonlinear programming techniques.
CO5: Resolve the complex problem into simple problems by dynamic programming approach.

UNIT-I

INTRODUCTION: Optimization – Historical Development – Engineering applications of optimization – Statement of an Optimization problem –Design vector, design space, design constrain and objective function

UNIT-II

CLASSICAL OPTIMIZATION TECHNIQUE: Single variable optimization, multivariable optimization with Equality and No constraints, Multi variable optimization with Inequality constraints. Convex programming problem.

UNIT - III

LINEAR PROGRAMMING: Linear programming - Graphical method – simplex method – Artificial variable methods-Big-M-Two Phase simplex method.

UNIT –IV

NON-LINEAR PROGRAMMING: Introduction – Lagrange on Method – Kuhn-Tucker conditions – Quadratic programming – Separable programming – Stochastic programming – Geometric programming

UNIT – V

DYNAMIC PROGRAMMING: Dynamic Programming – Formulation, Various applications using Dynamic Programming, Multistage Decision Processes, Concept of Sub optimization and Principle of Optimality

TEXT BOOKS

1. Engineering optimization-theory practice-fourth edition- Singiresu S. Rao, Published by John Wiley & Sons, Inc., Hoboken, New Jersey.
2. Hamdy A. Taha, Operations Research – An Introduction, Prentice Hall of India, 9th edition, 2010.

REFERENCES

1. Ravindran, Philips and Solberg, Operations Research Principles and Practice, John, Wiley & Sons, Singapore, 2nd edition, 2007.
2. J.K.Sharma, Operations Research – Theory and Applications – Macmillan India Ltd. 4th edition, 1997. 4. P.K. Guptha and Man-Mohan, Problems in Operations Research – Sultan Chand & Sons, 3rd edition, 2009.

LBRCE EXAM CELL Dt.....

B. Udaya Lakshmi

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B.Tech. (VII Sem.)	17ME81 - ELEMENTS OF AUTOMOBILE ENGINEERING	L	T	P	Cr.
		3	-	-	3

Course Education Objectives: The objective of this course is to make students learn about lay-out of an automobile, working of internal combustion engine, Cooling system, Transmission system, Steering system, Suspension system, Braking system, Fuel system and different Electrical systems.

Course Outcomes: After completion of the course students are able to

CO1: Understand the basic knowledge of internal combustion engines and their functioning.
CO2: Recognize the need of fuel supply systems and Cooling systems in Automobile.
CO3: Describe the functioning of different lubrication systems and various Electrical systems in Automobile.
CO4: Distinguish various transmission systems in automobiles.
CO5: Compare various types of Steering system, Braking system and Suspension system in Vehicles.

UNIT-I

INTRODUCTION: Components of Automobile, Classification of Automobiles, Chassis and Frame, Rear wheel drive- Front wheel drive-Four wheel drive.

ENGINE: Classification of Internal combustion engines, Basic Engine components, Basic terminology of Engines, Working principles of Four stroke and Two stroke engines, Engine construction Details- Cylinder Block and Crankcase- Cylinder Head- Oil Pan- Cylinder Liners- Piston- Connecting Rod- Crankshaft, Alternative Fuels, Application of IC Engines.

UNIT- II

FUEL SUPPLY SYSTEM IN PETROL AND DIESEL ENGINES: Fuel supply systems, Fuel pumps, Simple Carburettor, Petrol Injection- Types, Mechanical Petrol Injection, Electronic Petrol Injection, Types of Injection systems in Diesel Engines, Fuel Filters, Air cleaners, Fuel Injector.

COOLING SYSTEM: Methods of cooling- Air cooling and water cooling, Components of Water cooling system-Radiators-Thermostat- Fan-Coolant pump, Anti-freeze solutions.

UNIT - III

LUBRICATION SYSTEM: Objectives of Lubrication, Types of Lubrication systems- Dry sump and wet sump Lubrication, Oil filters and Oil pumps.

ELECTRICAL SYSTEMS: Types of Ignition systems, Battery Ignition system- Components of Battery Ignition system, Spark plug, Magneto Ignition system, Batteries- Types, Lead-acid battery, Charging system- Introduction- Principle of Generator and constructional details, Starting Motor, Starting drives- Bendix drives, Horn, Windscreen wiper, Central Locking facility.

UNIT - IV

TRANSMISSION SYSTEM: Clutches- Introduction, Types- Single plate clutch-Multi plate clutch- Centrifugal clutch, Necessity of Transmission, Types of Transmission- Sliding Mesh Gear Box- Constant Mesh gear box, Propeller shaft, Final drive, Differential.

WHEELS AND TYRES: Types of Wheels, Wheel dimensions, Tyre- Types of Tyres, Carcass types, Tyre Materials, Tyre designations.

LBRCE EXAM CELL Dt.

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UNIT - V

FRONT AXLE AND STEERING: Front Axle, Types of stub axle, Steering geometry- Camber- Kingpin inclination- Combined angle and scrub radius- Castor- Toe in and Toe out, Understeer and Oversteer, Power steering, Steering Linkages.

SUSPENSION SYSTEM: Introduction, Types of Suspension springs, Leaf springs, Coil springs, Torsion bars, Shock Absorbers, Independent suspension- Types, Air-suspension.

BRAKING SYSTEM: Braking Requirements, Types of Brakes, Drum brakes and Disc Brakes, Hydraulic Brakes, Air brakes, Anti-lock braking systems.

TEXT BOOKS

1) Dr. Kirpal Singh, Automobile Engineering-Vol I& II, 13thEdition, Standard Publishers Distributors, 2014.
2) K.K. Ramalingam, Automobile Engineering- Second edition, Scitech Publications, 2014.

REFERENCES

1) V.A.W Hillier and David R.Rogers, Hillier's Fundamentals of Motor Vehicle Technology, Book1, 5th edition- 2007.
2) R.B.Gupta, Automobile Engineering, 8th edition, Tech India publication series, 2013.
3) Heinz Heisler, Advanced Vehicle Technology, 2nd edition, Butterworth-Heinemann Series, 2002.
4) David A Crolla, Automotive Engineering, 1st edition, Butterworth-Heinemann series, 2009.

LBRCE EXAM CELL Dt.....

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MYLAVARAM - 521 230, Krishna Dt, A.P.

B.Tech. (VIII Sem.) **17AE81 - SPACE TECHNOLOGY**

L	T	P	Cr.
3	-	-	3

Course Educational Objectives: To learn the space mission strategies and fundamental orbital mechanics, the flight trajectories of rockets and missiles, the fundamentals of atmospheric re-entry issues and satellite attitude.

Course Outcomes: At the end of the semester, the student will be able
CO1: To analyze the orbital elements and it's manoeuvring
CO2: To analyze the trajectories of rockets and missiles
CO3: To understand the re-entry and atmosphere
CO4: To analyze the dynamics of spacecraft attitude

UNIT - I
INTRODUCTION
Space Mission-Types-Space Environment-Launch Vehicle Selection, Introduction to Rocket Propulsion-Fundamentals of Solid Propellant Rockets- Fundamentals of Liquid Propellant Rockets-Rocket Equation

UNIT - II
FUNDAMENTALS OF ORBITAL MECHANICS & ORBITAL MANEUVERS
ORBITAL MECHANICS: Two-Body Motion-Circular, Elliptic, Hyperbolic, And Parabolic Orbits-Basic Orbital Elements-Ground Trace
ORBITAL MANEUVERS: In-Plane Orbit Changes-Hohmann Transfer-Bi-Elliptical Transfer-Plane Changes- Combined Maneuvers-Propulsion for Maneuvers

UNIT - III
ASCENT FLIGHT MECHANICS OF ROCKETS AND MISSILES
Two-Dimensional Trajectories of Rockets and Missiles-Multi-Stage Rockets-Vehicle Sizing-Two Stage Multi-Stage Rockets Trade-Off Ratios-Single Stage to Orbit- Sounding Rocket-Aerospace Plane-Gravity Turn Trajectories

UNIT - IV
ATMOSPHERIC REENTRY
Introduction-Steep Ballistic Reentry-Ballistic Orbital Reentry-Skip Reentry-"Doubledip" Reentry - Aero-Braking - Lifting Body Reentry

UNIT - V
SATELLITE ATTITUDE DYNAMICS
Torque Free Axi-Symmetric Rigid Body-Attitude Control for Spinning Spacecraft - Attitude Control for Non-Spinning, Spacecraft - The Yo-Yo Mechanism – Gravity – Gradient Satellite-Dual Spin Spacecraft-Attitude Determination

TEXT BOOKS
1. Wiesel. W. E, Spaceflight Dynamics, McGraw-Hill, 1997
2. Cornelisse. J. W, Schoyer H. F. R, Wakker K. F, Rocket Propulsion and Space Flight Dynamics", Pitman publications, 1984.
3. Sellers. J, Understanding Space: An Introduction to Astronautics, McGraw- Hill, 2000.
4. Francis J Hale., Introduction to Space Flight, Prentice-Hall, 1994.

LBRCE EXAM CELL Dt.....

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B.Tech. (VIII Sem.) **17CE81 - DISASTER MANAGEMENT**

L	T	P	Cr.
3	-	-	3

Prerequisites: Nil

Course Objectives: This course deals with different types of disasters, impacts of disasters, importance of technology in handling disaster management situations, importance of planning and risk prevention in case of occurrence of disaster, importance of education and community approach for the responsive actions to be taken in case of occurrence of disaster.

COURSE OUTCOMES: At the end of the course, the student will be able to

CO1: Identify the basic terms and types of disasters
CO2: Describe the impacts of disasters
CO3: Illustrate the role of technology in handling disaster management situations
CO4: Identify the stake-holders concerned and design the different action plans for responding in case of disaster occurrence.
CO5: Evaluate the importance of education and community approach for the responsive actions to be taken in case of disaster occurrence.

UNIT I: DEFINITIONS & TYPES OF DISASTER

Inter disciplinary–nature of the subject - Definitions – types of Disasters- Relationship between Disaster and Human and Development- Disaster Management Cycle

Various types of disasters: *Natural:* Drought, cyclone, extreme heat and cold, avalanche, earth quake, volcano, mudflow and landslide, hailstorm, Lightning, *Manmade and Industrial*: Engineering and Technical failure, Nuclear and Chemical disasters, Accident Related Disasters, Biological Disasters, Disasters Caused due to Social, Ethnic and Religious Conflicts, Fire hazards – transport hazard dynamics – solid waste management – post disaster – bio terrorism - threat in mega cities, rail and air craft's accidents, High Power Committee on Disaster Management in India-Disaster Management Act 2005

UNIT – II: IMPACT OF DISASTERS

Life & livestock: Habitation, agriculture & livelihood loss-health hazards-malnutrition problems-contamination of water-impact on children-environmental loss.

UNIT – III: ROLE OF TECHNOLOGY IN DISASTER MANAGEMENT

Assessment of disaster impacts using Modern Technologies: Disaster management for infra structures - electrical substations – roads and bridges – mitigation programme for earth quakes – flowchart, geospatial information in agriculture drought assessment – multimedia technology in disaster risk management and training – transformable indigenous knowledge in disaster reduction.

UNIT – IV: PLANNING &RISK PREVENTION

Planning, early warning system-crisis intervention and management-Response and Rehabilitation after Disasters-temporary shelter – food and nutrition-safe drinking water –rehabilitation after cyclones- response to drought, response to river erosion, response after earth quake-response after Tsunami- Hunger and Disaster.

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UNIT – V: EDUCATION AND COMMUNITY PREPAREDNESS & CASE STUDIES

Essentials of disaster education –Community based disaster recovery - Building community capacity for action - Corporate sector and disaster risk reduction - A community focused approach

Case studies on different disasters in the world, Impacts, Technology usage, Risk prevention, Education and community preparedness

TEXT BOOKS

1. Tushar Bhattacharya, "Disaster Science and Management", Tata McGraw Hill Publications, New Delhi, 2012.
2. Jagbir Singh (Ed.), "Disaster Management – Future Challenges and Opportunities", IK International Publishing, 2007.

REFERENCES

1. G.K. Ghosh, "Disaster Management", APH Publishing Corporation, 2006.
2. U.K. Chakrabarty, "Industrial Disaster Management and Emergency Response", Asian Books Pvt. Ltd., New Delhi 2007.
3. H K Gupta (Ed.), "Disaster Management", Universities Press, 2003
4. W.N. Carter, "Disaster Management: A Disaster Management Handbook", Asian Development Bank, Bangkok, 1991.
5. Government of India website on Disaster Management: www.ndmindia.nic.in

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B.Tech. (VIII Sem.) **17CS82 - INTERNET TECHNOLOGIES**

L	T	P	Cr.
3	-	-	3

Pre-requisites: Java Programming Language.

Course Educational Objective: Students will be familiarized with the tools and web technologies necessary for business application design and development. This course covers client side and server side scripting languages to develop static and dynamic web applications

Course Outcomes: At the end of the course, the student will be able to:
CO1: Design web pages by using HTML and CSS.
CO2: Develop user defined tags by using XML, Validating form data by using JavaScript.
CO3: Create data driven web applications by applying database connectivity techniques.
CO4: Design and implement dynamic Web Pages using server side components like servlets.
CO5: Understand the concepts of JSP and apply them in solving real world problems.

UNIT-I: HTML & CSS
HTML: Introduction, Versions, Text Formatting Tags, Lists, Tables, Images, Links, Marquee, Forms, Frames.
CSS: Types of Cascading Style sheets; CSS Selectors, Properties: Text, Backgrounds, Font, Links, Borders, Margins, Cell padding, Layouts.

UNIT-II: JAVASCRIPT & XML
JAVASCRIPT: Introduction to JavaScript, Objects in Java Script, Form validation using JavaScript.
XML: Document Type Definition, XML Schema, Presenting XML, using XML Processors: DOM and SAX.

UNIT-III: JDBC
Introduction, Types of Drivers, **java.sql package** - Procedure to establish connection between java applications and database, Database operations - create, insert, delete & update using JDBC, Types of Statements, ResultSet types.

UNIT-IV: INTRODUCTION TO SERVLETS:
Lifecycle of a Servlet, **The Servlet API:** The **javax.servlet** Package- Servlet, ServletRequest, ServletResponse, GenericServlet, ServletConfig, ServletContext, RequestDispatcher. The **javax.servlet.http** package – HttpServlet, HttpServletRequest & HttpServletResponse, HttpSession, Cookie. Accessing different databases from Servlet programs.

UNIT-V: INTRODUCTION TO JSP:
Lifecycle of JSP, scripting elements, Implicit objects, directive elements, action elements. Error Handling and Debugging. Access database from JSP pages.

TEXT BOOKS
1. Chris Bates, "Web Programming building internet applications", WILEY Dreamtech, 2nd edition, 2002. (UNITS-1,2)
2. MartyHall, Larry Brown, "Core Servlets and Java Server Pages Volume 1: Core Technologies", Pearson, 2nd Edition, 2004. (UNITS – 3, 4, 5)

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HEAD
Dept. of Computer Science and Engineering
Lakireddy Bali Reddy College of Engg.
MYLAVARAM - 521230, Krishna Dt, A.P.

REFERNCES

1. Robert W Sebesta, "Programming the World Wide Web", Pearson Education, 8th Edition,2015.
2. A.A.Puntambekar, "Web Technologies", Technical Publications, 2009.
3. Harvey M. Deitel, Paul J. Deitel, "Internet and World Wide Web How to program", Pearson Education Asia, 5th Edition, 2008.
4. Subramnyam Allamraju, Cedit Buest, "Professional java server programming J2EE 1.3 Edition", Apress Publications, 1.3 Edition, 2001.
5. https://www.w3schools.com/html/html_intro.asp
6. https://www.javatpoint.com/servlet-tutorial
7. https://www.tutorialspoint.com/jsp/index.htm
8. http://nsr-materials.blogspot.in/2017/02/

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MYLAVARAM - 521 230, Krishna Dt, A.P.

B.Tech. (VIII Sem.) **17CS83 - SHELL PROGRAMMING**

L	T	P	Cr.
3	-	-	3

Pre-requisites: Knowledge in Operating Systems

Course Educational Objective: Introduce the student to Linux kernel programming techniques. Review basic concepts covered in the core Operating Systems course prerequisite as they are realized in the Linux platform. Discuss the Process, Inter-Process Communication Techniques.

Course Outcomes: At the end of the course, the student will be able to:
CO1: Explore LINUX Ecosystem.
CO2: Apply of LINUX commands
CO3: Implement Shell scripting in LINUX Kernel.
CO4: Apply Regular Expressions for Pattern Matching.
CO5: Design AWK scripts for text processing and Design Scripts for Process Creation.

UNIT – I
Introduction to LINUX: Operating System concepts, Introduction to LINUX, Features of LINUX, LINUX Kernel, Terminal and shell.
Introduction to LINUX File System: The LINUX file System, File System Hierarchy, File system and inodes, File Attributes, File Permissions.

UNIT – II
LINUX Commands: man, echo, script, pwd, passwd, who, uname, date, sty, telnet, rlogin, ftp, more, printf, PATH, SU, ps, arp, mkdir, cd, rmdir, ls, cp, rm, mv, cat, wc, lp, od, ln, df, du, locate, tar, zip, chmod, unmask, mount, unmount, ulimit.
Introduction to Shell: Shell responsibilities, running a shell script, Pipes, Redirection, Command Substitution.

UNIT – III
Shell Programming: VI Editor, the shell as a programming Language, Shell Meta Characters, Shell Variables, Shell Commands, Control Structures, Various Shell Scripts.

UNIT – IV
Filters: simple filters and commands: pr, cmp, comm., ulink, diff, head, tail, find, cut, paste, sort, uniq, tr, w, finger.
Regular Expressions: grep, egrep, fgrep, Sed- line addressing, context addressing, text editing, substitution.

UNIT –V
Programming with awk: awk statements, variables and expressions, comparison and logical operators, Begin and End sections, decision and looping statements.
The Process: Process concept, Process Creation Mechanism, process attributes.
LINUX Internal: LINUX Kernel Structure, System Calls, Signals, Memory Management.

TEXT BOOKS
1. Sumitabha Das., Your "Unix The Ultimate Guide", TMH Publications, 2001.
2. M.G. Venkatesh Murthy, "Introduction to UNIX & SHELL programming" , Pearson Education, First Edition, New Delhi, 2009.

REFERENCES

1. B.A. Forouzan & R.F. Giberg, "Unix and shell Programming", Thomson, First Edition, New Delhi, 2003.
2. E. Foster – Johnson & others, "Beginning shell scripting", John Wiley & sons, First Edition, New Delhi, 2008.
3. Sumitabha Das, "Unix concepts and applications", TMH Publications, 4th Edition,.
4. Gaham Glass & K. Ables, Unix for programmers and users, pearson education,3rd edition,.

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B.Tech. (VIII Sem.)

17EC82 - ELEMENTS OF COMMUNICATION SYSTEMS

L	T	P	Cr.
3	-	-	3

Pre-requisites: Concept of signals and modulation theory.

Course Educational Objective: This course provides the knowledge on fundamental properties of systems and random processes. The course will give an idea about radio transmitters, receivers and noise present in the communication channel. This course also gives a brief introduction regarding transmission lines and antennas used in communication systems.

Course Outcomes (COs): At the end of the course, students will be able to

CO1: Memorize the properties of systems, random signals, and concepts of noise in communication systems, RF transmitters, receivers, transmission lines and antennas.

CO2: Understand the performance of fundamental blocks of RF transmitter, receivers, transmission lines and antennas.

CO3: Analyze the response of linear systems, impact of noise in communication systems and performance of RF transmitters and receivers.

CO4: Evaluate the mathematical concepts on noise in communication systems.

UNIT - I

Introduction to Systems: Definition of System, Classification of Systems. Properties of Systems-Linear and Non Linear, Time Invariant and Variant, Causal and Non Causal, Stable and Unstable; Signal and System Bandwidth, Response of Linear Systems-Transfer Function, Impulse Response, Distortion less Transmission through a system, transmission of a signal through LTI system, Block diagram of a typical communication system and its description.

UNIT-II

Random Signals: Concept and types of random variables, random processes, Cumulative distribution function and properties, Probability density function and properties, Expectation, Moments, Moment about the origin, Central moments, Variance, Skew, Skewness.

UNIT-III

Noise in Communication Systems: Concept of noise, external noise, internal noise, White noise, Band limited white noise, Colored noise, noise calculations, noise figure, noise temperature, noise equivalent bandwidth, Narrow band noise and its mathematical representation, power spectral density of a inphase and quadrature components of a noise.

UNIT-IV

Radio Transmitters and Receivers:

Radio Transmitters: Classification of radio transmitters, carrier frequency requirements, AM transmitter, effect of feedback on the performance of AM transmitters, FM transmitter- Direct method of FM transmission, indirect method of FM transmission.

Radio Receivers: Classification of radio receivers, Types of radio receivers-Tuned Radio frequency receiver and its limitations, Super hetero dyne receiver , various sections present in super hetero dyne receiver-RF section , Concept of Intermediate frequency, Automatic gain control.

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UNIT-V

Transmission lines and Antennas:

Transmission lines: Fundamentals of transmission lines, characteristic impedance, losses in transmission lines, standing waves, Quarter and half wave length lines and reactance properties of transmission lines.

Antennas: Basic considerations, Terms and definitions, Directional High Frequency Antennas: Dipole Arrays, Folded dipole and applications, UHF and Microwave Antennas: Antennas with parabolic reflectors, Horn antennas, Lens antennas. (Qualitative Analysis Only)

TEXT BOOKS

1. Simon Haykin, Communication Systems, Second Edition, John Wiley & Sons Publications, Singapore, 1983.
2. Kennedy, Davis, Electronic Communication Systems, 4th edition, Tata McGraw-Hill Publications, 2009

REFERENCES

1. Gray M Miller, Jeffery S. Beasley, " Modern Electronic Communication", Seventh Edition , Prentice Hall of India Pvt Ltd, New Delhi.
2. Herbert Taub , Donald L. Schilling, "Principles of Communication Systems", Second Edition, Tata McGraw-Hill, New Delhi, 1991.
3. B.P.Lathi, "Modern Digital and Analog Communication Systems", Third Edition, Oxford University
4. Y Mallikarjuna Reddy, "Probabilty theory and Staochastic Processes", Universites Press (India), Pvt Ltd.

B.Tech. (VIII Sem.) **17EC83 - SYSTEMS AND SIGNAL PROCESSING**

L	T	P	Cr.
3	-	-	3

Pre-requisite: Differentiation and Integration of signals.

Course Educational Objective: This course provides basic knowledge on signals and various operations on them. It also provides knowledge about representation of Signals in frequency domain using Fourier series and Fourier Transform. This course introduces underlying concepts of sampling and reconstruction. It also provides brief overview on various systems and their applications.

Outcomes (COs): At the end of the course, students will be able to

CO1: Understand various signals & systems with their properties.

CO2: Apply Fourier series, Fourier Transform on continuous and discrete signals

CO3: Analyze the Systems and observe the response of Linear Systems.

CO4: Evaluate DFT,FFT for the discrete time signals

UNIT – I

Signal Analysis: Concept of Signal, Classification of Signals-Continuous Time and Analog Signals, Discrete Time and Digital Signals; Representation of Signals- Impulse, Unit Step, Unit Ramp, Signum, Decaying Exponential, Raising Exponential, Double Exponential, Complex exponential signal, Gate and Rectangular, Sinc and Sampling Signals.

Operations on Signals: Time Shifting, Time Scaling, Time Reversal (Folding), Amplitude Scaling, Convolution; Graphical Method of Convolution, Properties of Signals- Even and Odd, Causal and Non Causal, Bounded and Unbounded, Periodic and Aperiodic, Energy and Power, Deterministic and Random Signals.

UNIT – II

Fourier Series: Concept of Fourier Series, Trigonometric Fourier Series, Exponential Fourier Series, Relations among coefficients of Trigonometric Fourier Series and Exponential Fourier Series,

Fourier Transforms: Need of Transform, Existence of Fourier Transform, Properties of Fourier Transform- Symmetry, Linearity, Scaling, Time Reversal, Time Shifting, Time Convolution, Frequency Convolution and Parsevalls Theorem; Fourier Transform of Aperiodic Signals, Fourier Transform of Periodic Signals.

UNIT – III

Sampling Theorem: Representation of continuous time signals by its samples, Reconstruction of signal from its samples, effect of under sampling- Aliasing.

Signal Transmission Through Linear Systems: Definition of System, Classification of Systems, Properties of Systems- Linear and Non Linear, Time Invariant and Variant, Causal and Non Causal, Stable and Unstable; Signal and System Bandwidth, Response of Linear Systems- Transfer Function, Impulse Response, Filter Characteristics of Linear System, Ideal Filter characteristics of LPF, HPF, BPF and BEF, Physically Realizable System.

Correlation Functions and Spectral Densities: Basics of Autocorrelation Function, Energy Spectral Density, Power Spectral Density and Cross Correlation Function.

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UNIT – IV

Discrete Fourier Transform: Introduction to DTFT, Concept of DFT, Computation of DFT, Computation of IDFT, Properties of DFT- Linear, Periodicity, Time Shifting, Frequency Shifting, Time Reversal, Conjugate, Basic Concept of Convolution, Linear Convolution, Circular Convolution, Circular Convolution through DFT and IDFT, Linear Convolution through DFT and IDFT.

UNIT – V

Fast Fourier Transform: Need of FFT, Radix-2 Decimation in Time FFT Algorithm, Radix-2 Decimation in Frequency FFT Algorithm, Comparison between DIT and DIF Algorithms, Inverse FFT.

Signal Processing: Digital Signal Processing System, Advantages of DSP, Limitations of DSP, Applications of DSP.

TEXT BOOKS

1. A V Oppenheim, A S Wilsky and IT Young, Signals and Systems, PHI/Pearson publishers, 2nd Edition.

REFERENCES

1. John G. Proakis, Digital Signal Processing, Principles, Algorithms & Applications, Pearson education, Fourth edition, 2007
2. B P Lathi, Signals, Systems and Communications, BSP, 2003, 3rd Edition.
3. Manson H Hayes, Digital Signal Processing, Schaum's Outlines, TMH Publications, 2004
4. Michel J. Robert, Fundamentals of Signals and Systems, McGraw Hill Publishers.
5. Narayana Iyer, Signals and Systems, Cengage Learning Publishers, 2011.
6. A.Anand Kumar, Signals and Systems, 2nd Edition, PHI, 2012.

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B.Tech. (VIII Sem.) **17EE82 - ENERGY AUDITING**

L	T	P	Cr.
3	-	-	3

Prerequisite: Concepts of basics of electrical engineering, generating sources.

Course Educational Objective This course enables the student to

- Develop energy audit procedures
- Build energy efficient motors for energy audit.
- Analyze the energy crisis using energy audit

Course Outcomes: At the end of the course, the student will be able to

CO1: Analyze the energy data of industries.

CO2: Carry out energy accounting and balancing.

CO3: Suggest methodologies for energy savings for different sources

CO4: Apply the different energy instruments for auditing.

UNIT - I: INTRODUCTION

Types & Forms of Energy - Primary / Secondary Energy Sources – Energy Auditing: Types, classifications, energy index, cost index ,pie charts, Sankey diagrams , load profiles , energy saving potential ,energy audit of process industry.

UNIT - II: ENERGY COSTING, MONITORING & TARGETING

Data & Information Analysis – Cost / Energy Share Diagram – Data Graphing – Electricity Billing : Components & Costs – kVA – Need & Control – Determination of kVA demand & Consumption – Time of Day Tariff – Power Factor Basics – Penalty Concept for PF.

UNIT - III: ENERGY EFFICIENT MOTORS

Energy efficient motors, factors affecting efficiency, loss distribution, constructional details, characteristics - variable speed , variable duty cycle systems, motor energy audit.

UNIT - IV: LIGHTING SYSTEMS

Concept of lighting systems - The task and the working space - Light sources - Ballasts - Luminaries - Lighting controls - Optimizing lighting energy - Cost analysis techniques - Lighting and energy standards.

UNIT - V: ENERGY INSTRUMENTS

Energy Instruments wattmeter, data loggers, thermocouples, pyrometers, lux meters, tongue testers.

TEXT BOOK

1. W.C. turner, "Energy Management Hand book" Wiley press, New York, 1982
2. .Y. Y. Haimes (ed), 'Energy Auditing and Conservation' Hemisphere Publishing Corporation, New York, 1980

REFERENCES

1. W.R. Murphy and G. McKay "Energy Management" Butterworths, London 1987
2 Abbi.Y.P. and Shashank Jain, (Jan 30, 2009) Handbook on Energy Audit and Environment Management.

B.Tech. (VIII Sem.) **17EE83 - RENEWABLE ENERGY SOURCES**

L	T	P	Cr.
3	-	-	3

Pre-requisite course: -

Course Educational Objective: This course enables the student to

- Know the challenges and problems associated with the use of various energy sources, including fossil fuels, with regard to future supply and the environment.
- familiarize renewable energy technologies

COURSE OUTCOMES: At the end of the course, students will be able to :

CO1: Compare the conventional and sustainable energy resources
CO2: Illustrate the planning and operation of renewable energy systems.
CO3: Analyze various factors for the erection of the wind power plant.

UNIT I: PRINCIPLES OF SOLAR RADIATION

Role and potential of new and renewable source, the solar energy option, Environmental impact of solar power, physics of the sun, the solar constant, extraterrestrial and terrestrial solar radiation, solar radiation on titled surface, instruments for measuring solar radiation and sun shine, solar radiation data.

UNIT II: SOLAR ENERGY COLLECTION,STORAGE AND APPLICATIONS

Flat plate and concentrating collectors, classification of concentrating collectors, orientation and thermal analysis, advanced collectors.
Different methods, Sensible, latent heat and stratified storage, solar ponds. Solar Applications- solar heating/cooling technique, solar distillation and drying, photovoltaic energy conversion.

UNIT III: WIND ENERGY

Sources and potentials, horizontal and vertical axis windmills, performance characteristics, Betz criteria

UNIT IV: BIO-MASS

Principles of Bio-Conversion, Anaerobic/aerobic digestion, types of Bio-gas digesters, gas yield, combustion characteristics of bio-gas, utilization for cooking, I.C.Engine operation and economic aspects.

UNIT V: OCEAN ENERGY

OTEC, Principles utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy: Potential and conversion techniques, mini-hydel power plants, and their economics.

TEXT BOOKS

1. Non-Conventional Energy Sources /G.D. Rai, Khanna Publishers,6th edition,2014
2. Renewable Energy Resources – Twidell & Wier, CRC Press(Taylor & Francis),2015

REFERENCES

1. Renewable energy resources/ Tiwari and Ghosal/ Narosa.2004
2. Renewable Energy Technologies /Ramesh & Kumar /Narosa 1997
3. Non-Conventional Energy Systems / K Mittal /Wheeler, 2003
4. Renewable energy sources and emerging technologies by D.P.Kothari, K.C.Singhal, P.H.I. 2008

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M. Chandra

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B.Tech. (VIII Sem.) **17EI81 - NANO TECHNOLOGY**

L	T	P	Cr.
3	-	-	3

Pre-requisites: Engineering Physics, Engineering Chemistry

Course Educational Objectives (CEOs): In this Course student will learn about- Fundamentals of nanotechnology, size dependence of properties, synthesis approaches of nanomaterials, details of characterization instruments, quantum nanostructures, carbon nano tubes (CNTs), micro/nanoscale machines and devices.

Course Outcomes (COs): At the end of the course, the student will be able to:

CO1: Acquire basic understanding on advanced materials and properties for technological applications.

CO2: Illustrate the basic science behind the properties of nanomaterials and the principles involved in experimental techniques for studying nano materials.

CO3: Familiar with fabrication techniques of quantum nanostructures and nano machines by means of size effects.

CO4: Identify current nanotechnology solutions for design, fabrication and characterization.

CO5: Realize the basics of instrumentation for nanoscale items, measurement, interpretation and analysis.

UNIT – I
SYNTHESIS METHODS

Definition of Nano-Science and Nano Technology, various nanomaterial synthesis approaches, RF plasma, sputtering, chemical methods, thermolysis, Pulsed Laser Methods.

UNIT – II
METHODS OF MEASURING PROPERTIES

Microscopy: Scanning Probe Microscopy (SPM), Atomic Force Microscopy (AFM), Field Ion Microscopy, Scanning Electron Microscopy, Transmission Electron Microscopy (TEM)
Spectroscopy: Infrared and Raman Spectroscopy, X-ray Spectroscopy, Magnetic resonance, Luminescence.

UNIT – III
CARBON NANOTUBES

Carbon molecules, nature of the carbon bond, carbon nanotubes, fabrication, types, electrical, vibrational and mechanical properties, Applications of carbon nanotubes: computers, fuel cells, chemical sensors.

UNIT - IV
QUANTUM WELLS, WIRES AND DOTS

Preparation of quantum nanostructures, size and dimensionality effects, size effects, conduction electrons and dimensionality, potential wells, partial confinement, Properties dependent on density of states, Excitons.

UNIT – V
NANOMACHINES AND NANODEVICES

Micro-electro-mechanical systems (MEMS), characteristics, Nano-electro-mechanical systems (NEMS), fabrication techniques, nano devices and nano machines, Molecular and supramolecular switches.

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Department of Electronics & Instrumentation Engg
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Mylavaram - 521 230, Krishna Dt, A.P

TEXT BOOKS

1. Charles P. Poole, Frank J. Owens, "Introduction to Nanotechnology", Wiley Inter Science, 2003.
2. Mark A. Ratner, Daniel Ratner, "Nanotechnology: A gentle introduction to the next BigIdea", Prentice Hall P7R:1st Edition, 2002.

REFERENCES

1. Mick Wilson, KamaliKannargare., Geoff Smith, "Nano technology: Basic Science andEmerging technologies", Overseas Press, 2005.
2. Hari Singh Nalwa, "Nanostructured Materials and Nanotechnology", Academic Press, 2002.
3. T. Pradeep, "Nano: The Essentials, Understanding of Nanoscience andNanotechnology," Tata McGraw-Hill, 2007.
4. KarkareManasi, "Nanotechnology Fundamentals and Applications" I.K. International,2008.

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Mylavaram - 521 230, Krishna Dt, A.P

B.Tech. (VIII Sem.) **17IT81 - COMPUTER NETWORKS**

L	T	P	Cr.
3	-	-	3

Pre-requisites : Data communication

Course Educational Objective:

The Students will be able to learn the concepts, vocabulary and techniques currently used in the area of computer network, study protocols, network standards, the OSI model, IP addressing, cabling, networking components, and basic LAN design, accumulate existing state-of-the-art in network protocols, architectures, and applications, familiar with contemporary issues in networking technologies .

Course Outcomes: At the end of the course, the student will be able to:

CO1: Observe the concepts of various network architectures, physical media, and channel access techniques.

CO2: Interpret Data Link Layer and medium access protocols for direct link networks.

CO3: Analyse and implement internetworking and Routing Algorithms.

CO4: Visualize Adaptive Flow control, Adaptive retransmission and congestion avoidance mechanisms in TCP.

CO5: Examine various applications like e-mail, DNS, SNMP, and PGP.

UNIT - I

Introduction: Use of Computer Networks- Network Hardware- Network software-Reference models Example Networks- Network Standardization. Physical Layer: The theoretical basis for Data communication- Guided Transmission Media.

UNIT - II

Data link layer: design issues- framing, error detection and correction, CRC, Elementary data link protocols- Simplex, Stop &Wait protocols, Sliding window protocols-one-bit, go-back n, selective repeat. Medium Access Control Sub layer: Channel allocation problem- multiple access protocols-ALOHA, CSMA protocols, token bus, token ring, Ethernet, Collision free protocols, Data link layer switching, Bridges, Local internetworking, Overview of Two DLC Protocols: HDLC, PPP.

UNIT – III

Network layer: Network layer design issues- Routing algorithms- Shortest path, Flooding, Distance vector routing, Link State routing , Hierarchical Routing, Broadcast routing & Multicast Routing, ICMP, ARP,RARP, IPv4 Datagram Format, IPV4 Addresses notation , Classful Addressing, Classless Addressing,, Congestion control algorithms- Leaky Bucket, Token Bucket, Quality of service.

UNIT - IV

Transport layer: Transport service- Elements of transport protocols- Internet transport protocols: TCP & UDP, .Flow control-Segments, TCP Timers.

UNIT - V

Application Layer: Domain Name System- Electronic Mail -the World Wide Web, Simple Network Management Protocol (SNMP), Multimedia, Network Security Standards.

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Head of the Department
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TEXT BOOKS

1. Andrews S. Tanenbaum, "Computer Networks", PHI, Fourth Edition.
2. Computer Networks: A Top –Down Approach, Behrouz A. Forouzan and Firouz, Mosharraf,2012 , Tata McGraw Hill.

REFERENCES

1. William Stallings, "Data and Computer Communications", Pearson Education, seventh Edition.
2. James F.Kurose, Keith W.ROSS, "Computer Networking a Top-Down Approach featuring the Internet", Pearson Education.

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B.Tech. (VIII Sem.) **17ME82 - ROBOTICS AND AUTOMATION**

L	T	P	Cr.
3	-	-	3

Course Educational Objectives (CEOs): To impart knowledge on the basic concepts of automation and robotics.

Course Outcomes (COs): At the end the student will be able to
CO1: Understand fundamentals in Automation.
CO2: Identify various robot configurations and components
CO3: Select and design of various end effectors.
CO4: Comprehend various Methods of robot programming.
CO5: Select appropriate actuators and sensors for a robot based on specific application

UNIT – I
AUTOMATION
Introduction, Types and strategies of automation, pneumatic and hydraulic components circuits. Automated Material Handling: Types of equipment, functions, analysis and design of material handling systems, conveyor systems, Automated guided vehicle system.

UNIT – II
ROBOTICS
Introduction - Basic concepts – Robot anatomy –Components of robots- Robot motions-Number of D.O.F – Work volume – Classification of robots by control method-Specifications of robots.

UNIT – III
END EFFECTORS: Introduction – Types of end effectors – Mechanical grippers – Vacuum cups, magnetic grippers, adhesive gripers and others – Robot / End effectors interface – Considerations in gripper selection
and design

UNIT – IV
ROBOT PROGRAMMING
Methods of robot programming – Lead through method.-Textual robot languages – Generations of programming languages – Robot language structure – Motion commands – End-effector and sensor commands – VAL II programming language.

UNIT – V
ACTUATORS
Pneumatic, Hydraulic Actuators, servo motors, stepper motors.
SENSORS
Feedback components: Position sensors – potentiometers, resolvers, encoders; velocity sensors
ROBOT APPLICATION: Robots in Manufacturing and Non-Manufacturing applications – Future applications.

TEXT BOOKS
1. Mikell P.Groover,"Automation, Production systems and computer Integrated Manufacturing", Prentice Hall of India Private Limited, New Delhi, 2008.
2. MikellP.Groover, Mitchell Weiss, Roger N. Nagel& Nicholas G. Odrey; Industrial Robotics, McGraw- Hill International Editions, 1986.

LBRCE Dt..... EXAM CELL

HEAD
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AKIREDDY BALI REDDY COLLEGE OF EN
AVR... 521 230, Krishna Dt.

REFERENCES

1. R.K.Mittal and IJ Nagrath, Robotics and Control, Tata Mc Graw – Hill publishing companyLimited, New Delhi, 2003.
2. Robert J.Schilling, Fundamentals of robotics analysis & control, PHI learning private limited, New Delhi, 2009.
3. Saeed B.Niku, Introduction to robotics analysis systems Application, PHI learning private limited, New Delhi, 2004.
4. K.S.Fu, R.C Gonzalez and C.S.G.Lee, Robotics control, Sensing, vision, and intelligence; Mc Graw HILL International Editions,1987.
5. Richard D.Klafter, Thomus A. Chmielewski, Michael Negin, "Robotic Engineering – An integrated approach", Prentice Hall India Private ltd, New Delhi, 2010.

LBRCE Dt..... EXAM CELL

HEAD
Dept.of Mechanical Engineering
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B.Tech. (VIII Sem.)	17ME83 - MECHANICAL HANDLING SYSTEMS AND EQUIPMENTS	L	T	P	Cr.
		3	-	-	3

PRE-REQUISITES : None

COURSE EDUCATIONAL OBJECTIVE:

The main objective of this course is to provide comprehensive understanding of the issues involved in the handling of Materials. It will cover the problems in, materials handling equipment selection.

COURSE OUTCOMES: At the end of the course, the student will be able to:

CO1: Understand various industrial layouts.
CO2: Select the appropriate transportation equipment for various applications
CO3: Analyse the AGVS used in industrial applications.
CO4: Select appropriate storage system for industrial application.
CO5: Analyse the design consideration of a material handling equipment.

UNIT-I

MATERIAL HANDLING: Introduction, Bulk material handling concept, plant layout and material handling, material handling systems, material handling principles, Classification of material handling equipment, Design considerations in material handling.

UNIT-II

MATERIAL TRANSPORTATION EQUIPMENT: Unit load concepts, Industrial trucks, Conveyors, cranes, hoists and Rail Guided Vehicles, Analysis of transportation equipment.

UNIT - III

AUTOMATED GUIDED VEHICLES: Introduction, classification of AGVS, vehicle guidance technology, vehicle management, AGVS applications, Analysis of AGVS, self-guided vehicles.

UNIT –IV

MATERIAL STORAGE EQUIPMENT: Storage system performance, location strategies, Manual storage equipment, carousel storage systems, automated storage and retrieval systems, Classification of AS/RS, Analysis of AS/RS, warehousing.

UNIT – V

IDENTIFICATION AND DATA CAPTURE SYSTEMS: Bar codes, RFID, Machine vision. Methods to minimize cost of material handling- Maintenance of Material Handling equipment, Safety in handling Ergonomics of Material Handling equipment. Design, Miscellaneous equipment.

TEXT BOOKS:

1. Materials Handling Handbook, by- Raymond A. Kulwiec, John Wiley & Sons, 2nd edition/2008.
2. Automation, production systems and computer integrated manufacturing/ Mikell. P.Groover/ PHI/ 3rd edition/2012.

REFERENCES

1. Apple, James. Materials Handling Systems Design. Ronald Press, 1972. [TS180.A66]
2. Allegri, Theodore. Materials Handling. Van Nostrand Reinhold, 1984.

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