RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

ME 801- Refrigeration & Air Conditioning

Course Objectives

After studying this course,students will be able to:

1. Learn the basic concepts and principles of refrigeration and air conditioning.
2. Learn the fundamental analysis methodology of refrigeration.
3. Learn the basic process and systems of air conditioning.
4. Will apply the course knowledge to do a design project of HVAC system.

Course Content

Unit-I Introduction: Principles and methods of refrigeration, freezing; mixture cooling by gas reversibleexpansion, throttling, evaporation, Joule Thomson effect and reverse Carnot cycle; unit of refrigeration, coefficient of performance, vortex tube & thermoelectric refrigeration, adiabatic demagnetization; air refrigeration cycles- Joule's cycle Boot-strap cycle, reduced ambient cycle and regenerative cooling cycles.

Unit-II Vapour compression system: Vapor compression cycle, p-h and t-s diagrams, deviations fromtheoretical cycle, sub-cooling and super heating, effects of condenser and evaporator pressure on cop; multi-pressure system: removal of flash gas, multiple expansion & compression with flash inter cooling; low temperature refrigeration: production of low temperatures, cascade system, dry ice, production of dry ice, air liquefaction system,.

Unit-III (a) **Vapour absorption system**: Theoretical and practical systems such as aqua-ammonia, Electrolux & other systems;

(b) **Steam jet refrigeration**: Principles and working, simple cycle ofoperation, description and working of simple system,

(c)**Refrigerants:** nomenclature & classification, desirable properties, common refrigeration, comparative study, leak detection methods, environment friendly refrigerants and refrigerant mixtures, brine and its properties

Unit-IV Psychometric: Calculation of psychrometric properties of air by table and charts;psychrometric processes: sensible heating and cooling, evaporative cooling, cooling and dehumidification, heating and humidification, mixing of air stream, sensible heat factor; principle of air conditioning, requirements of comfort air conditioning, ventilation standards,

infiltrated air load, fresh air load human comfort, effective temperature & chart, heat production & regulation of human body,

Unit-V Air conditioning : Calculation of summer & winter air conditioning load, bypass factor ofcoil, calculation of supply air rate & its condition, room sensible heat factor, grand sensible heat factor, effective sensible heat factor, dehumidified air quantity. Problems on cooling load calculation. Air distribution and ventilation systems

Evaluation:

Evaluation will be continuous and integral part of the class as well as through external assessment.

References:

1. Arora CP; Refrigeration and Air Conditioning; TMH
2. Sapali SN; Refrigeration and Air Conditioning; PHI
3. Ananthanarayan; Basic Refrigeration and Air conditioning; TMH
4. Manohar Prasad; Refrigeration and Air Conditioning; New Age Pub
5. Ameen; Refrigeration and Air Conditioning; PHI
6. Pita ; Air conditioning Principles and systems: an energy approach; PHI
7. Stoecker W.F, Jones J; Refrigeration and Air conditioning; McGH, Singapore
8. Jordan RC and Priester GB Refrigeration and Air Conditioning, PHI USA

List of Experiments:

1. General Study of vapor compression refrigeration system.
2. General Study of Ice Plant
3. General Study and working of cold storage
4. General Study Trane Air Condition (Package Type).
5. General Study of Electrolux Refrigeration
6. General Study One tone Thermax refrigeration unit.
7. General Study of Water cooler
8. General Study of Psychrometers (Absorption type)
9. General Study of Leak Detectors (Halide Torch).
10. General Study and working of Gas charging Rig.
11. General Study of window Air Conditioner.
12. General Study and working of Vapor compression Air conditioning Test rig.
13. Experimentation on Cold Storage of Calculate COP & Heat Loss.
14. Experimentation on Vapor compression Air Conditioning test rig.
15. Changing of Refrigerant by using Gas Charging Kit.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Departmental Elective ME 802(A) Automobile Engineering

COURSE OBJECTIVES

The students will be made to learn.

- The anatomy of the automobile in general.
- The location and importance of each part of automobile.
- The functioning of the engine and its accessories, gear box, clutch, brakes, steering, axles and wheels, suspension, frame, springs and other connections.
- The effect of automobile emissions on environment and how to control pollution.

Course Contents:

Unit-I: Chassis & Body Engg: Types, Technical details of commercial vehicles, types of chassis, layout, types of frames, testing of frames for bending & torsion on unutilized body frame, vehicle body andtheir construction, driver's visibility and methods for improvement, safety aspects of vehicles, vehicleaerodynamics, optimization of body shape, driver's cab design, body materials, location of engine, frontwheel and rear wheel drive, four wheel drive.

Unit-II: Steering System: front axle beam, stub axle, front wheel assembly, principles of types of wheelalignment, front wheel geometry viz. camber, Kingpin inclination, castor, toe-in and toe-out, conditionfor true rolling motion, centre point steering, directional stability of vehicles, steering gear, powersteering, slip angle, cornering power, over steer & under steer, gyroscopic effect on steering gears.

Unit-III: Transmission System: Function and types of clutches, single plate, multi-plate clutch, roller &spring clutch, clutch lining and bonding, double declutching, types of gear boxes, synchroniser, gearmaterials, determination of gear ratio for vehicles, gear box performance at different vehicle speed,automatic transmission, torque converters, fluid coupling, principle of hydrostatic drive, propeller shaft,constant velocity universal joints, differential gear box, rear axle construction.

Unit-IV: Suspension system : Basic suspension movements, Independent front & rear suspension,shock absorber, type of springs: leaf spring, coil spring, air spring, torsion bar, location of shackles,power calculations, resistance to vehicle motion during acceleration and breaking, power & torquecurve, torque & mechanical efficiency at different vehicle speeds, weight transfer, braking systems, disctheory, mechanical, hydraulic & pneumatic power brake systems, performance, self-energisation, air-bleedingof hydraulic brakes, types of wheels and tyres, tyre specifications, construction and materialproperties of tyres& tubes.

Unit-V: Electrical and Control Systems: Storage battery, construction and operation of lead acid battery,testing of battery, principle of operation of starting mechanism, different drive systems, starter relayswitch, regulator electric fuel gauge, fuel pump, horn, wiper, lighting system, head light dazzling,signaling devices, battery operated vehicles, choppers, importance of maintenance, scheduled andunscheduled maintenance, wheel alignment, trouble Shooting probable causes & remedies of varioussystems, microprocessor based control system for automobile, intelligent automobile control systems.

Unit-VI: Emission standards and pollution control: Indian standards for automotive vehicles-Bharat I, II, III, IV, Euro I to Euro VI norms, fuel quality standards, environmental management systems forautomotive vehicles, catalytic converters, fuel additives, and modern trends in automotive engineefficiency and emission control.

References:

1. Crouse , Automotive Mechanics TMH.
2. Srinivasan S; Automotive engines; TMH
3. Gupta HN; Internal Combustion Engines; PHI;
4. Joseph Heitner, Automotive Mechanics, Principles and Practices, CBS Pub.
5. Kripal Singh, Automotive Engineering Khanna Pub.
6. Newton &Steeds , Automotive Engineering
7. Emission standards from BIS and Euro –I to Euro-VI

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Departmental Elective ME 802(B) Tribology And Maintenance Engineering

Course Objectives

After studying this course, students will be able to learn;

- The basic principles governing the tribology and apply them to reduce friction and wear in mechanical machines and structures.
- About lubrication,lubricants, mechanism of lubrication
- About Nano tribology, Instrumental tests, Bearings,Clutches and Brakes

Chapter 1: Introduction, history of tribology, early scientific studies of - friction, wearand lubrication. Tribo-Surface preparations and characteristics. Surface contacts, Hertz contact stresses, residual stress, surface fatigue, creep, stress relaxation, fracture mechanics, elastic, viscoelastic and plastic behavior of materials. Choice of materials.

Chapter 2: Friction, laws of friction, rolling/sliding friction, theory of adhesion and abrasion, different mechanisms of friction , stick slip characteristics, interface temperature, thermal analysis, Molecular mechanical theory of friction, operating conditions and system parameters, calculations of coefficient of friction, design of friction devices.

Chapter 3: Wear, different types of wear mechanisms, adhesive, abrasive impact,percussion erosion, fretting wear calculations of wear rate, two body/ three body wear, wear prevention, wear of metal cutting and metal forming tools, wear mapping of materials, cavitation, surface fatigue, corrosion, performance levels classifications and specifications of lubricants

Chapter 4: Lubrication, lubricants and additives, composition and properties of lubricants, maintenance of oil and emulsions, industrial hygiene aspects, technical regulations for lubricants. boundary/ mixed and fluid film lubrication, industrial methods of lubrications, SAE,BIS, ASTM, IP, DIN Standards, oil testing's, wear and chemistry of lubricants.

Chapter 5: Nano tribology, Instrumental tests,. Bearings, clutches and brakes, slide units, dynamic seals, Automobile applications, machine tools/ press machines applications. Other applications and case studies.

Evaluation:

Evaluation will be continuous an integral part of the class as well through external assessment.

References:

1. Principles and applications of tribology, Bharat Bhushan, John Wiley& sons, ISBN 0471
   594075.
2. Tribology,, - lubrication ,friction and wear, I V Kragelsky and V VAlisin, Mir publication,
   ISBN 1860582885.
3. Applied Tribology,MMKhonsari and E. R. Booser, John Wiley, ISBN 04712830

Tutorial topics:

1. Testing equipments of tribology.
2. Various industrial applications of tribology.
3. NEMS and MEMS applications
4. Solid, liquid and mist/ gas lubricants.
5. Surface coatings.
6. Chemical analysis of materials
7. Various simulations
8. AFM/ FFM , SFA, STM, studies.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Departmental Elective ME 802(C) Machine Tool Design

Course Objectives

After studying this course, students will be able to :

- Understand the Kinematics of Machine Tools.
- Work with different drive systems
- Design Concepts of Metal working Tools.
- Do Design of Jigs, Fixtures and Gauges

Unit I Basic Features and Kinematics of Machine Tools: Features of basic machine tools; constructionand operation, types of machine tools, machine tools motions, transmission-rotation in to rotation, rotation in to translation, kinematic-structures of machine tools: elementary, complex and compound structure, kinematic-features of gear shapers and gear hobbing machine.

Unit II Regulation of Speed: Design of gear boxes- need for variation of speed, selection of speedrange, laws of stepped regulation, standardization of speeds, speed diagram, analysis of productivity loss, kinematic advantage of GP, structural diagrams, ray diagram and speed chart.

Gear Drives: Belt and cone pulley, slip gear type, north gear drive, draw key gear drive, clutch type, mechanical step less drives, electrical drives; hydraulic drive.

Unit III Design of Metal working Tools: Design of press working tools, shearing, piercing, blanking,dies, compound die design principles for forging dies, bending, forming drawing dies, tooling for forging design principles for forging dies, drop forging, upset forging, design principles and practice for rolling, roll press design.

Unit IV Design of Jigs and Fixtures: Principles of location, locating method and devices, principles ofclamping, clamping devices, drilling jigs, types, drill bushes, fixture and economics, types of fixture, milling, grinding, broaching, assembly fixtures indexing jig and fixtures, indexing devices.

Unit V Design of Gauges and Inspection Features: Design of gauges for tolerance for dimensions andform inspection; dies and mould design for plastics& rubber parts: compression molding, transfer molding, blow molding.

References:

1. Mehta N.K.; Machine Tool Design and Numerical Control; TMH
2. Sen G.C, Bhattacharya A; Principles of Machine Tools; New Central Book Agency.
3. Donaldson; Tool Design T.M.H.
4. Jain KC and Chitale AK; Text Book Of Production Engineering; PHI Learning
5. Juneja, Sekhon and Seth; Fundamentals of Metal Cutting and Machine Tools; New Age.
6. Krar SF, Gill AR, Smid P; Technology of Machine Tools;TMH
7. Sharma P.C; Production Engineering; Chand S
8. Wilson; Fundamentals of Tool Design; ASTME
9. Paqwin J.R; Die Design Handbook; The Industrial Press-NY
10. ASTME; Die Design Hand Book; McGraw Hill
11. Archinov; Metal Cutting & Cutting Tool Design; MIR Publishers
12. Moscow Kempster M.H.A; Introduction to Jig and Tool Design; FLBS

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Departmental Elective ME 802(D) Production Planning and Control

OBJECTIVES

After studying this course, students will be able to;

- To understand the various components and functions of production planning and control such as work study, product planning, process planning, production scheduling, Inventory Control.
- To know the recent trends like manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP)
- To learn work study,time study, work measurement

Unit-I

Introduction: Types and characteristics of production systems Objective and functions of Production, Planning & Control, Place of production, Planning in Engineering, manufactures organization. Preplanning: Forecasting & Market Analysis. Factory Location & Layout, Equipment policy and replacement. Preplanning production, capacity planning.

Unit II

Work Study : Method study, basic procedure-Selection-Recording of process – Critical analysis, Development – Implementation – Micro motion and memo motion study – work measurement – Techniques of work measurement – Time study – Production study – Work sampling – Synthesis from standard data – Predetermined motion time standards.

Unit-III

Production Planning: Aggregate Planning, MPS, Material Resource Planning, Selection of material methods, machines & manpower. Routing, Scheduling and Dispatching and its sheets & charts, ProductionLineBalancing.

Unit-IV

Production and Inventory Control: Progress control through records and charts. Types of inventories, Inventory Classification. Inventory Control under constraints Economic lot (batch) size. Trends in purchasing and store keeping, JIT production MRP II, comparison of Push & Pull systems, ERP, CAPPC.

Unit-V

Productivity: Importance, Productivity patterns, productivity measurements & ratios, improvement-maintenance process. 3 Human Factors & Ergonomics: Human abilities, Training & motivation safety programs,workplacedesign&workingconditions.

Reference Books :

1. Elements of Production Planning & Control –Eilon

2. Production Planning & Control – Jain and Agarwal

3. Operations Management – Buffa and Sarin.

4. Project Management, S.C. Sharma, Khanna Publishing House

5. Production System – J.L. Riggs.

6. Industrial Engineering and Production Management : Martand Telsang, First edition, S. Chand and Company, 2000.

7. Theory and Problems in Production & Operations Management: Chary. S.N, Tata McGraw Hill, 1995

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Open Elective ME 803(A) Data Analytics

Course Objectives:

Data Analytics is the science of analyzing data to convert information to useful knowledge. This knowledge could help us understand our world better, and in many contexts enable us to make better decisions. While this is broad and grand objective, the last 20 years has seen steeply decreasing costs to gather, store, and process data, creating an even stronger motivation for the use of empirical approaches to problem solving.

This course will enable you with a wide range of data analytic techniques and is structured around the broad contours of the different types of data analytics, namely, descriptive, inferential, predictive, and prescriptive analytics.

Pre-requisites:

This course requires that you are familiar with high-school level linear algebra, and calculus.Knowledge of probability theory, statistics, and programming is desirable

UNIT-I

DESCRIPTIVE STATISTICS :Probability Distributions, Inferential Statistics ,Inferential Statistics through hypothesis tests Regression & ANOVA ,Regression ANOVA(Analysis of Variance).

UNIT-II

INTRODUCTION TO BIG DATA: Big Data and its Importance, Four V's of Big Data, Drivers for Big Data, Introduction to Big Data Analytics, Big Data Analytics applications.

BIG DATA TECHNOLOGIES: Hadoop's Parallel World, Data discovery, Open source technology for Big Data Analytics, cloud and Big Data, Predictive Analytics, Mobile Business Intelligence and Big Data, Crowd Sourcing Analytics, Inter- and Trans-Firewall Analytics, Information Management.

UNIT-III

PROCESSING BIG DATA: Integrating disparate data stores, Mapping data to the programming framework, Connecting and extracting data from storage, Transforming data for processing, subdividing data in preparation for Hadoop Map Reduce.

UNIT-IV

HADOOP MAPREDUCE: Employing Hadoop Map Reduce, Creating the components of Hadoop Map Reduce jobs, Distributing data processing across server farms, Executing Hadoop Map Reduce jobs, monitoring the progress of job flows, The Building Blocks of Hadoop Map Reduce Distinguishing Hadoop daemons, Investigating the Hadoop Distributed File System Selecting appropriate execution modes: local, pseudo-distributed, fully distributed.

UNIT-V

BIG DATA TOOLS AND TECHNIQUES: Installing and Running Pig, Comparison with Databases, Pig Latin, User- Define Functions, Data Processing Operators, Installing and Running Hive, Hive QL, Querying Data, User-Defined Functions, Oracle Big Data.

Reference Books and Study Materials:

1. Hastie, Trevor, et al.�The elements of statistical learning. Vol. 2. No. 1. New York: springer, 2009.

2. Montgomery, Douglas C., and George C. Runger.�Applied statistics and probability for engineers. John Wiley & Sons, 2010

3. NPTEL Video Course :Introduction to Data Analytics by Dr. Balaraman Ravindran Department of Computer Science and Engineering IIT Madras and Dr. Nandan Sudarsanam Department of Management Studies IIT Madras.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Open Elective ME 803(B) Energy Conservation, Management & Audit

Course Objectives

After studying this course, students will be able to;

- Understand the concepts of energy management and conservation.
- Able to conduct energy audit and report.
- Concepts of Energy policy its purpose and formation.
- Able to do Electrical Energy Management in different electrical systems

UNIT-I

Energy Management: Concept of energy management, energy demand and supply, economic analysis; Duties and responsibilities of energy managers. Energy Conservation: Basic concept, energy conservation in Household, Transportation, Agricultural, service and Industrial sectors, Lighting, HAVC.

UNIT-II

Energy Audit: Definition, need and types of energy audit; Energy management (Audit) approach: Understanding energy cost, bench marking, energy performance, matching energy use to requirement, maximizing system efficiencies, optimizing the input energy requirement; Fuel & energy substitution; Energy audit instruments; Energy conservation Act; Duties and responsibilities of energy manager and auditors.

UNIT-III

Material energy balance: Facility as an energy system; Method for preparing process flow; material and energy balance diagrams. Energy Action Planning: Key elements, force field analysis; Energy policy purpose, perspective, content, formulation, rectification

UNIT-IV

Monitoring and Targeting: Definition monitoring & targeting; Data and information analysis. Electrical Energy Management: energy conservation in motors, pumps and fan systems; energy efficient motors.

UNIT-V

Thermal energy management: Energy conservation in boilers, steam turbine and industrial heating system; Application of FBC; Cogeneration and waste heat recovery; Thermal insulation; Heat exchangers and heat pump; Building Energy Management.

References:

1. Murphy & Mckay, Energy Management, BSP Books Pvt. Ltd.

2. Smith CB; Energy Management Principle, Pergamon Press, New York.

3. Rajan GG, Optimising Energy Efficiency in Industry, TMH.

4. Callaghan P O, Energy Management, McGraw-Hill Book Company.

5. Amit Kumar Tyagi, Handbook on Energy Audit and Management, Tata Energy Research Institute. 6. Bureau of Energy Efficiency, Study material for energy Managers and Auditors: Paper I to V.

7. Hamies; Energy Auditing and Conservation: Method, Measurement, Hemisphere, Washington.

8. Witty, Larry C, Industrial Enegy Management Utilisation, Hemisphere Publishers, Washington 9.Kreith & Goswami, Energy Management and Conservation Handbook, CRC Press

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Open Elective ME 803(C) Entrepreneurship and Management Concepts

Course Objective:

To familiarize the students with the concepts and applications of Management, Marketing, Productivity & Entrepreneurship in competitive world.

Unit-I

System Concepts: Types, definition & characteristics; supra & subsystems, key component; boundary & interface complexity; feedback (pull) & feed forward (push) controls, open flexible-adaptive system, computer as closed system, law of requisite variety; system coupling, stresses and entropy; functional & cross functional system; Steven Alter's nine element work system model and its comparison with IPO (input-processing-output) model, structure and performance of work systems leading to customer delight.

Unit-II

Management: Importance, definition and functions; schools of theories, knowledge driven learning organization and e-business; environment, uncertainty and adaptability; corporate culture, difficulties and levels of planning, BCG matrix, SWOT analysis, steps in decision making, structured and unstructured decision; dimensions of organizations, size/specialization, behavior formalization, authority centralization, departmentalization, spam and line of control, technology and Minzberg organization typology, line, staff & matrix organization, coordination by task force, business process reengineering and process of change management, HR planning placement and training, MIS; attitudes and personality trait, overlap and differences between leader & manager, leadership grid, motivation, Maslow's need hierarchy and Herzberg two factor theory, expectation theory, learning process, team work and stress management.

Unit-III

Marketing: Importance, definition, core concepts of need want and demand, exchange & relationships, product value, cost and satisfaction (goods and services) marketing environment; selling, marketing and societal marketing concepts; four P's, product, price, placement, promotion; consumer, business and industrial market, market targeting, advertising, publicity, CRM and market research. Finance: Nature and scope, forms of business ownerships, balance sheet, profit and loss account, fund flow and cash flow statements, breakeven point (BEP) and financial ratio analysis, pay-back period, NPV and capital budgeting.

Unit-IV

Productivity and Operations: Productivity, standard of living and happiness, types of productivity, operations (goods and services) Vs project management, production processes and layouts, steps in method improvement, time measurement, rating and various allowances; standard time and its utility,

predetermined motion and time method, product and process specification, TQM, cost of quality, introduction to lean manufacturing (JIT), QFD, TPM & six sigma quality.

Unit V

Entrepreneurship : Definition and concepts, characteristics, comparison with manager, classification, theories of entrepreneur, socio, economic, cultural and psychological; entrepreneur traits and behavior, roles in economic growth, employment, social stability, export promotion and indigenization, creating a venture, opportunity analysis competitive and technical factors, sources of funds, entrepreneur development program.

Evaluation:

Evaluation will be continuous an integral part of the class followed by the final examination .

References:

1. Daft R; The new era of management; Cengage.
2. Bhat Anil, Arya kumar; Management: Principles,Processes and Practices; Oxford higheredu.
3. Mukharji R.S.,Agrawal N.K.; Entrepreneurship and Management Concepts,Technocrats Publication
4. Davis & Olson; Management Information System; TMH.
5. Steven Alter; Information systems, Pearson, www.stevenalter.com
6. Kotler P; Marketing management; 6- Khan, Jain; Financial Management; 7- ILO; Work study;ILO.
7. Mohanty SK; Fundamental of Entrepreneurship; PHI.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

Open Elective ME 803(D) Management Information System

Course Objectives

After studying the course, students will be able to;

- Know about MIS, MIS Theory, Systems Approach
- Understand the concept of decision making and MIS
- Learn about conceptual system design, detailed system design
- Understand implementation,evaluation and maintenance of MIS

Unit-I

Introduction of MIS

What is MIS, Decision support systems, systems approach, The systems view of business, MIS organization within the Company. Management organizational theory and the systems approach:

Development of organizational theory, Management and organizational behavior, Management information and the systems approach.

Unit-II

Information systems for decision-making:

Evolution of an information system, Basic information systems, Decision making and MIS, MIS as technique for making programmed decisions, design assisting information systems.

Strategic and project planning for MIS

General business planning, appropriate MIS response, MIS planning-general, MIS planning-details

Unit-III

Conceptual System Design

Define the problems, Systems objectives, Establish system constraints, Determine information needs, Determine information sources, Develop alternative conceptual designs and select one, Document the system concept, Prepare the conceptual design report.

Detailed System Design

Information and involve the organization, arm of detailed design, Project management of MIS detailed design. Identify dominant and trade off criteria define the subsystems, Sketch the detailed operating MIS systems and information flows, Determine the degree of automation of each operation, inform and involve the organization again, Inputs, Outputs and processing, early system testing, Software, Hardware and tools, propose an organization to operate the system, Document the detailed design., Revisit the manager user.

Unit-IV

Implementation, Evaluation and Maintenance of the MIS

Plan the implementation, Acquire floor space and plan space layouts organized for implementation, Develop procedures for implementation, Train the operating personnel, Computer related acquisitions, Develop forms for data collection and information dissemination, Develop the files, Test the system, Cut over, Document the system, Evaluate the MIS, Control and maintain the system.

Unit-V

Pitfalls in MIS Development

Fundamental weaknesses, Soft spots in planning, Design problem, Implementation the TAR PITF.

Evaluation:

Evaluation will be continuous an integral part of the class followed by the final examination

References

1.Murdick R.G., Russ J.B., Clagget J.R., Information Systems for modem management

2.Effy OZ, Management Information Systems, 3rd edition, Thomson.

3. Jawadekar W.S., Management Information System.

4. Brien J.A.O., Irwin, Management Information Systems, McGraw Hill

5. Dour's G.B., Olson M.H., Management Information Systems, 2nd edition, McGraw Hill

6. Thireramp R.J., Decision Support Systems for Effective Planning and Control, PHI.

7. Sadagopan S., Management Information Systems, 4thedition, Prentice-Hall of India

8. Kanter J., Managing with Information, 4th edition, Prentice-Hall of India.

9. Ladon K.C., Landon, J.P., Management Information Systems, 4th edition, Prentice-Hall of India.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

ME 804- Simulation And Modeling

Course Contents:

Introduction to ModelingSoftware Packages like Solid Works, CATIA, ANSYS, Assembly of Sleeve and Cotter joint, Gib and Cotter joint/ Knuckle Joint/ Flanged Coupling, Assembly of Connecting Rod.

Introduction to Simulation software Packages like ANSYS, Fluent, and etc. Various types of analysis. Structure analysis, Thermal analysis, Stress analysis, CFD analysis, FEM analysis, and their problem solving in actual situations.

List of Experiments (Expandable)

1. Introduction to CATIA software.
2. Introduction to ANSYS software.
3. Assembly of Sleeve and Cotter joint/ Gib and Cotter joint/ Knuckle Joint/ Flanged Coupling using CATIA.
4. Assembly of Connecting Rod using CATIA.
5. Stress analysis using ANSYS (examples: plate with a circular hole, rectangular L bracket, Axis-symmetric components, various types of beams, etc.)
6. Thermal stress analysis of a 2D component.
7. Conductive and convective heat transfer analysis of a 2D component.
8. CFD Simulation of various situations (example: Laminar pipe flow, Flat plate boundary layer, steady flow past a cylinder, Compressible flow in a Nozzle, Flow over an airfoil.)

Evaluation will be continuous an integral part of the laboratory class followed by the final external viva/voce examination

References:

1. User manual of CATIA software.
2. User manual of ANSYS and Fluent software.
3. Chandrupatla, T.R. and Belegundu, A.D., Introduction to Finite Elements in Engineering, Prentice Hall of India Pvt. Ltd.
4. Zienkiewicz O C, The Finite Element Method, 3rd ed, Tata McGraw Hill.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Mechanical Engineering, VIII-Semester

ME 805- MAJOR PROJECT- II

COURSE GUIDELINES

The objectives of the course 'Major Project -II' are

- To provide students with a comprehensive experience for applying the knowledge gained so far by studying various courses.
- To develop an inquiring aptitude and build confidence among students by working on solutions of small industrial problems.
- To give students an opportunity to do some thing creative and to assimilate real life work situation in institution.
- To adapt students for latest developments and to handle independently new situations.
- To develop good expressions power and presentation abilities in students.

The focus of the Major Project-II is on preparing a working system or some design or understanding of a complex system using system analysis tools and submit it the same in the form of a write-up i.e. detail project report. The student should select some real life problems for their project and maintain proper documentation of different stages of project such as need analysis, market analysis, concept evaluation, requirement specification, objectives, work plan, analysis, design, implementation and test plan.Student may carry his /her topic of major project –I for major project –II provided that supervisor of the student is agree for the same on the basis of feasibilitity and scope of work of the selected topic. Each student is required to prepare a project report and present the same at the time of final examination with a demonstration of the working system (if any).

The faculty and student should work according to following schedule:

i) Each student undertakes substantial and individual project in an approved area of the subject and supervised by a member of staff.

ii) The student must submit outline and action plan for the project execution (time schedule) and the same be approved by the concerned faculty.

iii) At all the steps of the project, students must submit a written report of the same.

Evaluation

Evaluation will be continuous an integral part of the project work done by student on regular basis by the supervisor followed by the final external viva/voce examination.
