RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Industrial Production Engineering, VIII-Semester

IP 801- Supply Chain Management

COURSECONTENT:

UNIT 1 Introduction to SCM: Definition, elements of supply chain, building blocks of supply chain network, drivers of supply chain, Decision making in supply chain, Decision making models, supply chain performance measurement.

UNIT2 Demand management in supply chain: Demand planning and forecasting, types of demand, Forecasting methods, aggregate planning, Economic Order Quantity models and Reorder Point models, Inventory optimization in supply chain.

UNIT 3 Mathematical foundations of Supply chain Solutions: Stochastic models and Optimization techniques in Supply Chain Planning, Facility layout, capacity planning, routing and scheduling in supply chain, determining optimal levels of product availability.

UNIT 4 Logistic Management: Definition, Elements of logistics management, Organization forlogistics function, Logistics function integration, logistic function performance measurement, distribution and distribution strategies, integrated logistics and business logistics, customer orientation and relationship management.

UNIT 5 Transportation, Network design and Information Technology: Transportation fundamentals, Decisions in transportation, Network design in supply chain, Information Technology for supply chain management, Coordination, E-business, E-procurement, E-logistics, E-markets, Internet auctions, E-business process optimization.

TEXT BOOKS RECOMMENDED:

1 Chopra, S. and P. Meindl, SupplyChain Management: StrategyPlanning and Operation, (4th ed.),

2 PrenticeHall, Upper Saddle River, NJ, USA 2010.(Textbook)

3 Christopher, M.Logistics andsupplychain management: strategies forreducing cost and improving service (3rd ed.).London: FT Press, UK, 2005.

REFERENCE BOOKS RECOMMENDED:

1 Bowersox D.J., ClossD.J. and Helferich O.K.,Logistical Management,McGraw-HillCollege,UK

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New Scheme Based On AICTE Flexible Curricula

Industrial Production Engineering, VIII-Semester

Departmental Elective IP 802 (A) Advance machining Process

COURSECONTENT:

UNIT 1. Modern Machining Process: Introduction and classification. Abrasive Jet Machining: Fundamental principles, process parameters, Metal removal rate, effect of parameters, application & limitations. Ultrasonic Machining: Fundamental principles, process parameters, cutting tool design, tool feed mechanism, transducer, Design of velocity transformers, Mechanics of cutting, Effect of parameters, Economic considerations, application &limitations.

UNIT 2. Chemical Machining: Chemical milling, chemical engraving, chemical blanking, fundamental principles and process parameters. Electrochemical Machining: Classification, fundamental principles, elements of process, Metal removal rate, electro-chemistry of process, Dynamics and hydrodynamics of process, optimization analysis, choice of electrolytes.ElectrochemicalGrinding:Fundamentalprinciples,electro- chemical and process parameters, electrochemicaldebarring and honing.

UNIT 3. Electrical Discharge Machining: Mechanisms ofmetal removal, Basiccircuitry, Evaluation ofmetal removalrate,Machiningaccuracy, Surface finish,Analysisfor optimization,toolmaterial,dielectric fluid, application &limitation.

UNIT 4. Laser Beam Machining: Features, metal removal, thermal analysis, cutting speed and accuracy, application & limitation, Micro-drilling by laser. Electron Beam Machining: Theory, forces in machining, process capability. Plasma ArcMachining:Non-thermalgeneration of plasma, mechanics of metalremoval,various parameters, accuracyandsurface finish, applications.

UNIT 5. Plastics: Composition of plastic materials, Molding methods-Injection molding, compression molding, transfer molding, extrusion molding, Calendaring, Blow molding, Laminating & Reinforcing, Welding of plastics. Dies and Mold Design for Plastics and rubber Parts: Compression molding, transfer molding, blow molding.

TEXT BOOKS RECOMMENDED:

1 PandeyP. C.&Shan H.S., Modern Machining Process, Tata McGraw Hill

2 Dr. BhattacharyaAmitabh, New Technology, TheInstitution of EngineersPublication

REFERENCE BOOKS RECOMMENDED:

1 WilliamJ.Patton,PlasticTechnology Theory,Design&Manufacturing,RestonPublishingComp

2 V.K.Jain, Advanced Machining Processes, Allied Publishers

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Industrial Production Engineering, VIII-Semester

Departmental Elective IP 802 (B) Rapid Prototyping & Reverse Engineering

COURSE CONTENTS

UNIT 1 Phases of Product Development, Problems in Product Development. Need for Rapid product development. Virtual Reality (VR), Introduction, Features used in VR, Technologies used in VR.

UNIT 2 Rapid Prototyping. Methods of Rapid prototyping. CAD to Rapid prototyping Process, STL format, Support structures, Classification of RP methods. Laminated Object Manufacturing (LOM), Approaches to LOM, Steps in LOM, LOM machine and process capability, Applications, Kira's LOM. Fused Deposition Modeling (FDM), principles, steps, machines and applications. Selective Laser Sintering (SLS), Principles, Operations, Machines, Materials and Applications. 3D Printing. Principles, Operations, Machines, Materials and Applications

UNIT 3. Selective Photocuring technologies: Selective Laser Scanning, Stereo Lithography Apparatus (SLA). Principle, Steps and post processing. SLA machines and process capability, Applications. Photocuring through Mask, Solid Ground Curing (SGC), Principle, Steps, Application and machines. SLA Quick CAST and its applications. '

UNIT 4 Emerging Techniques in RP: Shape Deposition Modeling, Contour Crafting, Droplet Deposition Method. Reverse Engineering, Approaches, CMM and its applications, Principle of Non-contact Measurement: Laser Scanner, Introduction to Photo grammetry.

UNIT 5 Rapid Tooling: Indirect methods, Silicon Rubber Molding, Epoxy Tooling Electroforming, Spray Metal Tooling, Cast Kirksite Tooling, 3D Keltool, Direct methods: 3D printing, SLS, Laminated Tooling, Hybrid Layer Manufacturing.

TEXT BOOKS RECOMMENDED:

1 Integrated Product Management, Andreasen MM, Hein L, IFS Publication

2 Automated Fabrication: Burns

REFERENCES RECOMMENDED:

1 Peter D. Hilton and Paul F. Jacobs (Ed), 2000, Rapid Tooling: Technologies and Industrial Applications, Marcel Dekker

2 Rapid Prototyping, Principles and Applications, 2nd Edition, C

K Chua, K F Leong 8: C S Lim

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Industrial Production Engineering, VIII-Semester

Departmental Elective IP 802 (C) Plastic Engineering & Composites

COURSECONTENT:

UNIT 1 Introduction: Introduction to polymers classification of polymers - (a) Elastomers, (b) Fibre forming. Rheology of polymeric materials.
Chemistry ofPolymerisation :
(i) Chain Polymerisation (ii) Step Polymerization (iii) Miscellaneous Polymerization reactions (iv) Co-Polymerization.
Chemical & Geometrical Structure of polymer molecules:
(i) General introduction of polymer microstructure (ii) Microstructure based on the chemical structure (iii) Microstructure based on the geometric structure.
Properties of Plastics as an Engineering Material:
(i) Comparison of metals & plastics (ii) Mechanical properties of plastics (iii) Thermal properties of plastics.

UNIT 2Production Processes of Plastics :
(a) Press Moulding of Plastics -Compression moulding, moulding of thermostats and thermoplasts:
  (i) Product design of Press Moulding.
  (ii) Product design of Compression Moulding.
(b) Injection Moulding: (i) Injection moulding process (ii) Influence of material properties on moulding(iii) Design of nozzle, runners & gates (iv) Product design for injection moulding.
(c) Extrusion : (i) Extrusion operations (ii) The extruder screw, the banel, profile dies, bareker plate and screen pach, cooling & take-off equipment (iii) Manufacture of sheet and film (iv) Wire coating.
(d) Blow Moulding: (i) Blow moulding principle, Production of perison, material characteristics in blow moulding (ii) Rotational moulding (iii) Expandable polystyrene moulding.
(e) Thermoforming methods: Various types of vacuum forming methods.
(f) Powder coating.

UNIT 3Joining of Plastics:
(i) Adhesives, cement and solvent bonding.
(ii) Welding of plastics - by hot gas, hot wire, induction and ultrasonic.

UNIT 4Machining, Finishing & Decorating of Plastics:
(i) Effect of properties on machining in turning, drilling etc.
(ii) Abrasive finishing, barrel finishing and Buffing.
(iii) Decorating: Silk Screen, electroplating and vacuum metalizing.

UNIT 5Composites :(i) Introduction to composites (ii) Open and Closed mould processes (iii) Reinforcing fibres, Glass fibres (iv) The influence of reinforcing fibres on strength (v) Yarn designations (vi) Mats and fabrics.

TEXT BOOKS RECOMMENDED:

1. Govarikar V. R., Vishwanathan N. V., JayadevSreedhar, Polymer Science, Wiley Eastern Ltd., New Delhi
2. Akira Kobayashi, Machining of Plastics, McGraw Hill comp
3. William J. Patton, Plastic Technology Theory & Design & Manufacturing, Reston Publishing Comp. INC, A P.H. Comp.

REFERENCE BOOKS RECOMMENDED:

1. Miles D. C. &BristonJ. H., Polymer Technology, Chemical Publishing Comp.INC, New York.
2. Sidney Levy & Harry Van J, Plastic Product Design Engineering, Nostrand Reinhold Comp
3. Edward Miller, Plastics Products Design Hand Book Part A and B, Marcel Dekker INC, New York

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Industrial Production Engineering, VIII-Semester

Open Elective IP 803 (A) Principles & practices of Management

COURSECONTENT:

UNIT 1.Introduction: Origin of management concept, Management process. Principles related to organization: Organization, its role and importance, Theories of organization, Departmentation, Delegation, Span of control, line and staff relationship, Shaping overall structure.

UNIT 2.Personnel Management: Role and functions of personnel management, Organization of personnel dept., Personnel problems and their solution welfare techniques. Manpower Selection and Development: Sources of recruitment, Selection methods, Interviewing and testing, Training methods, Performance appraisal and its methods.

UNIT 3. Motivation and Leadership: Need analysis, theories of motivation, Integrating pay, need and organization, Wage curve, Salary structure and number of grades, Merit Rating.

UNIT 4. Job Evaluation: Purpose, Various types of job evaluation systems and their applications, Job classification, Wage curve, Salary structure and number of grades, Merit Rating.

UNIT 5. Employee-Employer Relations and Labour Legislation: Employee-Employer relations, Industrial conflicts, conciliation, Arbitration, Adjudication, Collective Bargaining, Strikes and lockouts, Grievances, Procedures, Trade Unions and their functions. Principles and practiceso flabour legislation.

TEXT BOOKS RECOMMENDED:

1 KoontzH. and O"DonnelH., *Essential ofManagement*, 8th ed., McGraw-Hill, New Delhi, 2009.

2 Robbins, S.*Fundamentals of Management*. 5th ed., Pearson Education, Canada, 2008.

3 Terry&Francklin, Principles of Management, Richard– Erwin.

REFERENCE BOOKS RECOMMENDED:

1 Prasad L M, Principles and Practices of Management, S. Chand and Sons, New Delhi

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Industrial Production Engineering, VIII-Semester

Open Elective IP 803 (B) Enterprise Resource planning & MIS

COURSE CONTENTS:

UNIT 1 Introduction to Information, Importance of Information, Characteristics of Information, Taxonomy of Information, Measurement of Information, Integrated Information System, Information Resource Management, search, storage and measurement of information.

UNIT 2 Introduction to M18, M15 definitions, Evolutionary Stages of M18, M18 components, MIS Model, MIS concepts, Management concept of M18, System concept of M15, approaches to MIS, System approach, Management approach, subsystem approach, production, marketing, finance and personnel subsystems of M18, Database Perspective of M15.

UNIT 3 Introduction to Computer Based Information Systems (CBIS), Importance and Characteristics of CBIS, Role of C.B.I.S. In Management , Transaction Processing System (TPS), Decision Support System (DSS), Group Decision Support System(GDSS), Executive Support System (ESS), Knowledge Work System (KWS).

UNIT 4 Evolutionary stages of Enterprise Resource Planning(ERP), Need for ERP, Variety accommodation, Strategic and operational issues in ERP, Integrated and Business model of ERP, Zachmann enterprise architecture, MRP and MRP-II.

UNIT 5. Introduction to Business Process Re-Engineering, ERP Implementation: Role of consultants, vendors and users, Guidelines and Procedure for ERP implementation, strategic advantage through ERP, ERP Domain.

TEXT BOOKS RECOMMENDED:

1. Chhabra, Abuja & Jain, Planning Men at Work.
2. Enterprise Resource Planning, Concept and Practice Garg V.K.
   Venkitkrishnan N.K., PHI
3. Business Process Re-Engineering, Jayaraman, , TMH.
4. ERP by Alexis Leon
5. Kanter, Management Information System, PHI

REFERENCES RECOMMENDED:

1. Murdick& Ross, Management Information System, PHI.
2. James A. O'brion, Management Information Systems, TMH
3. Alan Simpson, D. Base -III .

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Industrial Production Engineering, VIII-Semester

Open Elective IP 803 (C) Plant Safety Engineering

1. **Introduction** : History of development of industrial safety, implementation of factories Act, formation of various councils, safety and productivity, Safety organizations, safety committees structure, roll of management and roll of Govt. in industrial safety, safety analysis.

2. **Operational Safety (Hot Metal Operation**): Safety in cutting safety in welding. Safety in Boilers Pressure vessels Furnace (all types) Heat Treatment processes shops Electroplating Grinding Forming process Rolling Forging Surface hardening Casting Moulding Coiling. Operational safety (Cold metal operation): Safety in handling of portable power tools Hand grinder machine shop drilling polishing machine-Safety in assembly shop Material handling Dock safety – Safety in generation and distribution of power Distribution and handling of industrial gases – Safety in inspection – Safety in chemical laboratories Ammonia printing- Safety in power press – Safety in Sewage Disposal and cleaning. Safety in Industrial pollution and control, safety in working at height.

3. **Accident prevention and protective equipment**: Personal protective equipment surveying the plant for locations and hazards part of body to be protected. Education and training in safety Prevention of causes and cost of Accident. Housekeeping First Aid Fire fighting equipment Accident reporting investigations. Hazard identification and risk control, FMECA, Industrial psychology in accident prevention safety trials, safety audit.

4. **The Acts which deal the safety and industrial Hygiene**: Features of Factory Act, Explosive act, Boiler Act, ESI Act, Workman's compensation Act.

5. **Industrial Hygiene**: Occupational Safety Diseases prevention ergonomics. Occupational Diseases, Stress, Fatigue, Health safety and the physical environment. Engineering methods of controlling chemical hazards, safety and the physical environment: Control of industrial nose and protection against it- Code and regulations for worker safety and health.
6. **Case Studies**

Reference

1. L M Deshmukh Industrial Safety Management McGraw Hill 2006
2 Ray Asfahl C., " Industrial Safety and Health Environment". Fifth Edition, Prentice Hall, 2003
3. Willie Hammer, "Occupational Safety Management and Engineering", Fifth EditionPrentice Hall; Fifth Edition, 2000
4. "Occupational safety manual" – BHEL
5. Safety in industry, N.V.Krishna, Jaico Publishers House
6. Industrial Safety and the Law, John Ridley P.M.C Nair Publishers, Trivandrum, 1998
7. Safety Law for Occupational Health and Safety – John Channing Butterworth Heinemann;