

# PG DIPLOMA IN OPERATIONS AND PROJECT MANAGEMENT

Non-Semester

(With Effect from the Academic Year 2013-14)

## ELIGIBILITY FOR ADMISSION

Candidates who apply for the degree of PG Diploma shall possess the following qualifications.

### (a) AGE LIMIT:

There is no upper Age Limit.

### (b) QUALIFICATION:

Any Degree

## 3. DURATION OF THE COURSE

The course will be conducted for one year

**3.1. EXAM** : There will be an examination conducted by the University at the end of the year.

**3.2. Passing minimum** : 50

**3.3. MEDIUM OF INSTRUCTION:** The Medium of instruction will be English.

### Course Profile

Computer Integrated Manufacturing
Management Information System
Advanced Operations Management
Facilities Location and Process Design
Product Design and Project Management
Supply Chain and Logistics Management
Advanced Maintenance Management

## **PAPER I: COMPUTER INTEGRATED MANUFACTURING**

### **Course Objective**

The objective of this course is to expose the students to the role of computer in the manufacturing process. It also aims to improve the understanding of students about the technological aspects and the implementation issues computer integrated manufacturing.

### **UNIT I**

Computer Integrated Manufacturing – Definition, Concept, Evolution and Benefits - Types of Manufacturing Systems and Sub-systems – Automated Systems – Elements, Functions and Levels.

### **UNIT II**

Hardware, Software and Security Requirements for implementing CIM systems - Communication Systems for CIMS – Communications Matrix – Network architectures and Techniques - Creating and maintaining a manufacturing systems database.

### **UNIT III**

Fundamentals of Design for Manufacturing (DFM) - Computer Aided Design (CAD) - 3D Modeling packages - Finite Element Analysis packages and Transportability - NC, CNC and DNC machines - Introduction to part-programming - Tool Management - Data Logging and acquisition - Automated data collection.

### **UNIT IV**

Manufacturing Systems – Components, Classifications and Functions – Flexible Manufacturing Systems(FMS) – Components, Applications and benefits - Planning and Implementation issues in FMS - Group Technology – Part-Families - Classification and Coding.

### **UNIT V**

Concurrent Engineering - Role of Expert Systems in CIMS - Robotics-Overview - Types in CIMS - Automated Guided Vehicles – Types and Technology – Control - Overview of Automated Assembly systems-Lean Production –Agile Manufacturing

### **REFERENCES**

1. Mikell P.Groover, Automation, “Production Systems and Computer Integrated Manufacturing” PHI, 2001.
2. Ronald G.Askin, “Modelling and Analysis of manufacturing” John Wiley & Sons, 1993.
3. Vajpayee Kant. S, Principles of Computer Integrated Manufacturing, Prentice Hall India, Second Indian Reprint, 2005.

## **PAPER II: MANAGEMENT INFORMATION SYSTEM**

**Objectives:** Make the students to understand the interface of the Human Resources function with Operations, Marketing, and Finance functions and to impart knowledge on information systems and its relevance to business decisions.

**UNIT I :** Human Resource Philosophy - Changing environments of HRM - Strategic human resource management - Using HRM to attain competitive advantage - Trends in HRM - Organisation of HR departments - Line and staff functions - Role of HR Managers.

**UNIT II:** Employment planning and forecasting – Recruitment, selection process- Sources- Induction-Orientation & Training - Management Development - On-the-job and off-the-job- Management Developments - Performance appraisal in practice. Managing careers : Career planning and development - Managing promotions and transfers.

**Unit III :** Establishing Pay plans : Basics of compensation - factors determining pay rate - Statutory benefits - non-statutory (voluntary) benefits - Labour relations - Industrial relation- Discipline administration - grievances handling - managing dismissals and separation.

**UNIT IV:** Foundations of Information Systems: A framework for business users - Roles of Information systems - System concepts - Organisation as a system - Components of Information Systems - IS Activities - Types of IS-HRIS: Function, Usage and Application.

**UNIT V:** DSS: DSS models and software: The decision making process - Structured, Semi Structured and Unstructured problems; Managing Information Technology: Managing Information Resources and technologies - Security and Ethical Challenges: IS controls - facility control and procedural control

### **References**

1. Gary Dessler, "Human Resource Management", Seventh edition, Prentice-Hall of India
2. James A O'Brien, "Management Information Systems", Tata McGraw Hill.
3. VSP Rao, Human Resource Management : Text and cases, First edition, Excel Books

4. Waman S Jawadekar , "Management Information System Text and cases", TMH

## **PAPER III:ADVANCED OPERATIONS MANAGEMENT**

### **Course Objective**

The objective of this course is to enable the students to understand the advanced techniques of operations management. It also helps the students to gain an insight into the trends in operations management

### **UNIT I**

Current challenges in Operations management - Product development considerations - Value engineering, concurrent engineering, Robust design - Modular design - Selection and Justification of Advanced Manufacturing Technology.

### **UNIT II**

Strategic capacity planning for products and services - Scheduling for batch processing – The design and scheduling of flow processing system – Production planning and control - Routing, sequencing, loading, scheduling – master scheduling.

### **UNIT III**

Operating value chains – Information technology - value chain – Material management - supply chain – Special inventory models, Selective inventory control, Operations decision making tools – Acceptance sampling.

### **UNIT IV**

Recent Trends in operations management – Lean manufacturing - Resource requirement planning, Synchronous manufacturing - theory of constraints – Agile Manufacturing

### **UNIT V**

Cases in operations management

### **REFERENCES:**

1. Mohanty R. P. and S. G. Deshmukh, Advanced operations management, Pearson Education, First Edition,
2. Lee J. Krajewski and Larry P. Ritzman, Operations management : Processes & Value chains, Indian adaptation, Pearson education
3. Richard Chase and Nicolas Aquilano, Operations Management for Competitive advantage Tata McGraw Hill Publishers, tenth edition
4. Ray wild, Operations Management, Thomson Publishers, Sixth Edition.
5. William Stevenson, Operations management, Tata McGraw Hill Publishers, eighth edition.
6. Roberta S. Russell and Bernard W. Taylor, Operations Management , Pearson Education.
7. Norman Gaither and Greg Frazier, Operations Management, Thomson Publishers, Ninth edition.

## **PAPER IV :FACILITIES LOCATION AND PROCESS DESIGN Course Objective**

This course has the objective of enhancing the understanding of the students of location and layout decisions. It also helps the students to gain an insight into the organisational nuances and implementation issues.

### **UNIT I**

Facilities requirements, need for layout study – types of layout, Model Classification, Criterion Selection, Model Validation, Design Process.

### **UNIT II**

Layout problems - Plant layout procedures- various approaches - Flow and activity analysis - Designing the layout

### **UNIT III**

Plant location analysis – factors, costs, location decisions – simple problems in single facility location problems - multi-facility location problems - network location problems.

### **UNIT IV**

The Process View of Organizations - Performance Measures, Product Attribute and Process Competencies - Process Design - Planning and Control - Strategic Positioning and Operational Effectiveness - Strategic Fit, Matching Products and Processes - Operations Frontier and Trade-offs

### **UNIT V**

Process Flow - Key Measures - Flow Time - Flow Rate - Inventory Analysis -Process Flow Chart - Flow Time Measurement - Flow-Rate and Capacity Analysis - Managing Flow Variability - Process Integration- Lean operations – Process Synchronization and Improvement

## **REFERENCES**

1. Halevi G.and R.D.Weill, “Principles of Process Planning” Chappman and Hall, Madras 1995.
2. Raví Anupindi, Sunil Chopra, Sudhakar Deshmukh,Jan A. Van Mieghem, and Eitan Zemel, “Managing Business Process Flows: Principles of Operations Management” Pearson Education, 2006
3. Richard Francis, L. Leon McGinnis, F. Jr., John White, A., “Facility Layout and Location - an Analytical Approach”, Prentice Hall of India., 2nd Ed.

## **PAPER V :PRODUCT DESIGN AND PROJECT MANAGEMENT**

### **Course Objective**

This course has the objective of enhancing the understanding of the students of product design and project management. It also helps the students to gain an insight into the process of product design and the functions and implementation issues of project management.

### **UNIT – I**

Defining Product, Types of products. Successful Product development – characteristics, duration and cost, challenges. Development Process: Generic Process- Adapting to product types - Stage gate model - New Service Development Process

### **UNIT – II**

Product Planning Process – Product Life Cycle - Technology Life Cycle -- Disruptive Technologies- Product Specification - Concept Generation – Brain Storming

### **UNIT – III**

Concept Selection – Concept Screening - Concept Scoring - Concept Testing- Product Architecture - Platform Planning - Robust Design- Collaborative Product development

### **UNIT – IV**

Project - Definition –Scope – Significance – Project Proposal - Project management – Functions - organization - planning - human aspects and pre-requisites.

### **UNIT – V**

Project Monitoring and Control – Project Report – Types and Format – Project Evaluation – Types and Methodology – Appraisal Report

### **REFERENCES**

1. Bruce T. Barkley, Project Management in New Product Development, Tata McGraw Hill, 2008.
2. Chitale A.K. and R.C. Gupta, Product Design and Manufacturing, PHI, 2008.
3. Deborah E. Bouchoux, Intellectual Property Rights, Delmar, Cengage Learning, 2005.
4. Karl T. Ulrich and Steven D. Eppinger, Product Design and Development, Tata McGraw – Hill, Third Edition, reprint 2008.
5. Kerber, Ronald L, Laseter, Timothy M., Strategic Product Creation, Tata- McGraw Hill, 2007.
6. Stevel. E. Pauley, Daniel G.Riordan – Technical Report Writing Today – AITBS Publishing & Distributors, India 5th edition – 2000.

## **PAPER VI :SUPPLY CHAIN AND LOGISTICS MANAGEMENT**

### **Course Objective**

The objective of this course is to enable the students to understand the scope and significance of supply chain and logistics management. It also expose the students to the structural framework and the functional implications of logistics.

### **UNIT I**

Supply Chain management and logistics management – Definition - Evolution. Supply Chain – Fundamentals - and Importance. Supply chain strategy - Drivers of Supply Chain Performance - Supply Chain relationships

### **UNIT II**

Logistics – functions, objectives - solution- Customer Service - Warehousing and Material Storage - Material Handling, Transportation and Packaging – 3PL and 4PL.

### **UNIT III**

Distribution - Network Design – Role, Factors Influencing, Options, Value Additions. Models for Facility Location and Capacity allocation - Impact of uncertainty on Network Design - Network Design decisions using Decision trees.

### **UNIT IV**

Sourcing – Make or buy decision, Creating World Class Supply base, World Wide Sourcing Inventory Management – managing cycle inventory, safety inventory. Value of information, Bullwhip effect, Coordination in supply chain, Analysing impact of supply chain redesign on the inventory

### **UNIT V**

E-Business – Framework and Role of Supply Chain in e- business and b2b practices. Supply Chain IT Framework - E-Supply Chains, E – Logistics- eSCM - Agile Supply Chains - Reverse Logistics - Global Logistics.

### **REFERENCES**

1. Altekar Rahul V, Supply Chain Management-Concept and Cases, Prentice Hall India,2005.
2. Bowersox Donald J, Logistical Management – The Integrated Supply Chain Process” Tata McGraw Hill, 2000
3. Donald J. Bowersox, David J. Closs and M. Bixby Cooper, “Supply Chain Logistics Management”, Tata McGraw Hill, 2008
4. Joel D. Wisner, G. Keong Leong, Keah-Choon Tan, “Principles of Supply Chain Management- A Balanced Approach”, South-Western, Cengage Learning 2005
5. Mohanty R.P. and S.G. Deshmukh, “ Supply Chain Management”, Biztantra, 2005
6. Naraya Rangarj, G. Raghuram, Mandyam M. Srinivasan, “Supply Chain Management for Competitive Advantage – Concepts and Cases”, Tata McGraw Hill, 2009
7. Sunil Chopra and Peter Meindl, Supply Chain Management-Strategy Planning and Operation, Prentice Hall, 2007.

## **PAPER VII :ADVANCED MAINTENANCE MANAGEMENT**

### **Course Objective**

This course has the objective of imparting in-depth knowledge to the students with respect to maintenance management. It also helps the students to gain an insight into the advanced techniques and trends in maintenance management

### **UNIT I**

Objectives and functions of Maintenance, Types, Maintenance Strategies - Organization for Maintenance. Five Zero Concept

### **UNIT II**

MTBF, MTTF, Useful Life – Survival Curves – Repair Time Distribution - Breakdown time distributions, Poisson, Exponential and Normal distribution - Availability of repairable Systems  
– Maintainability Prediction – Design for Maintainability.

### **UNIT III**

Overhaul and Repair - Meaning and Difference – Optimal overhaul/Repair/Replace maintenance policy for equipment subject to breakdown - Optimal interval between preventive replacement of equipment subject to breakdown - group replacement

### **UNIT IV**

Fixed Time Maintenance - Condition based Maintenance- Operate to Failure - opportunity maintenance - Design out maintenance - Total Preventive maintenance.

### **UNIT V**

Reliability Centred Maintenance (RCM) – Total Productive Maintenance (TPM) - Philosophy and Implementation - Signature Analysis – MMIS – Expert Systems – Concept of Tero technology. Reengineering maintenance process.

### **References**

1. Mishra R.C.and K.Pathak, Maintenance Engineering & Management –Prentice Hall of India, 2005
2. Sushil Kumar Srivatsava, Industrial Maintenance Management, S.Chand & Company, 2005
3. Gopalakrishnan, P. Banerji, A.K., Maintenance and Spare Parts Management”, Prentice Hall of India, 2004
4. Kelly and M.J. Harris, Management of Industrial Maintenance, Butterworth and Company Limited,2003
5. Jardine AKS, Maintenance, Replacement and Reliability, Pitman Publishing Company Ltd, 2003