DEVI AHILYA VISHWAVIDYALAYA, INDORE

FACULTY OF ENGINEERING

SCHEME OF EXAMINATION
&
COURSE OF CONTENTS

ME Programme (Part Time)
(Industrial Engineering & Management)

INSTITUTE OF ENGINEERING & TECHNOLOGY
(www.iet.dauniv.ac.in)

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM631 **PRINCIPLES AND PRACTICES OF MANAGEMENT.**	L	T	P		TH	CW	SW	PR	Total
	3	1	-	Max	100	50	-	-	150
Duration of Theory Paper: **3 Hours**				Min	50	25			75

Objectives & Pre requisites: To impart the basics of Management Concepts, Evolution of management as discipline and to deal with different Management Functions.

COURSE CONTENTS

UNIT-1
The Nature of Management:
Definition and role of management, the function of a manager, scientific management. Various schools of management thought.

UNIT-2
Planning:
Nature and purpose of planning, components of planning objective of business, forecasting, decision making, policy formulation and strategies. Management by objectives.

UNIT-3
Organization:
Nature and purpose of organizing structure, centralization, decentralization, span of control, delegation of authority relationship. Shaping the overall structure, formal and informal organization.

UNIT-4
Directions & Staffing:
Direction process, theories of motivation and leadership, need analysis, communication.
Role and function of personal management, manpower planning, selection and recruitment, interviewing, training methods, welfare techniques.

UNIT-5
Control:
Meaning and process of control techniques of control evaluation, developing and compensating the employees, merit rating. Comparison of American, Japanese and Indian philosophies of management.

BOOKS RECOMMENDED:

[1]. Koontz and O'Donnell, *Essentials of Management* .Mc.Graw-Hill, Jan 1986.
[2]. Terry G.R, *Principals of Management.*
[3]. Peter Drucker, *Practice of Management.* 1992.
[4]. Farland Mc, *Management, Principal and Practice.*
[5]. Prasad L.M, *Principal and Practice & Mgt.*Sulatan Chand & Sons.
[6]. Chhabra T.N, *Principal and Practice & Mgt*.
[7]. Agrawal R.D, *Organization & Management.* McGraw-Hill New Delhi, 1997.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM632 **PRODUCTIVITY AND TECHNOLOGY MANAGEMENT.**	L	T	P		Th	CW	SW	PR	Total
	3	1	2	Max	100	50	50	50	250
Duration of Theory Paper: **3 Hours**				Min	50	25	25	25	125

Objectives & Pre requisites: To impart the basics of Productivity Concepts, to refine the skills of Workplace design through Work Study, Job Evaluation, etc. To develop the skills of Technology management through different technology transfer.

COURSE CONTENTS

UNIT-1
Productivity:
Productivity, Introduction, types of productivity, methods to improve productivity.
Introduction to work study, method study, definition, importance, selection, recording, different recording techniques, principal of motion economy.

UNIT-2
Work Measurement:
Introduction to work measurement, time study, Steps in time study. Various techniques to measure time, slandered time, normal time, observed time. Allowances, measurement & significance. Work sampling, introduction & importance

UNIT-3
Job Evaluation:
Job evaluation and merit rating, introduction to job evaluation, various method of job evaluation, importance of job evaluation.

UNIT-4
Technology Management:
Introduction to technology, technology management, importance of technology management, know how of technology, know why of technology, dimensions of technology management Technology life cycle, syndication diffusion.

UNIT-5
Technology Transfer
Technology forecasting, introduction, importance, absorption & adoption, generation of technology, method of technology transfer, technology transfer modes, technology diffusion, importance. Technology requirement for India, strategies for the companies in the changing environment. Case studies.

BOOKS RECOMMENDED:
[1]. Dhawan, *Productivity and Technology Management*.2002
[2]. I.L.O, *Work Study*. 2004
[3]. Branes K.M, *Time & Motion Study.*
[4]. Farland Mc, *Management –Principal and Practice*. .Dec 1990
[5]. Dr. Sushil, *Technology Management.* New Delhi Vikas, 2001

LABORATORY EXPERIMENTS:

1. Study and analysis of Differrent produtivity Measures relted to specific industries.
2. Study and analysis of different Recoding techniques for a given pocess.
3. Estimation of Standard Time for a given Job, Process and its comparison with relevent industry data.
4. Study and Analysis of Job Evaluation process and its compraison with related industry.
5. Study of Technology Transfer process with special cases of indusries or service organisation.
6. Study of Technology Forescating methods and their applications in Indian context.
7. Case studies.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM633 QUANTITATIVE TECHNIQUES AND MANAGEMENT.	L	T	P		TH	CW	SW	PR	Total
	3	1	2	Max	100	50	50	50	250
Duration of Theory Paper: **3 Hours**				Min	50	25	25	25	125

Objectives & Pre requisites: To develop the skills of decision making in dynamic business situations through quantitative analysis using different mathematical models like linear programming, Transportation, Assignment, Queuing etc. Strategies formulation with the help of game theory and simulation etc.

COURSE CONTENTS

UNIT-1
Introduction:
History and development of O.R Present Trend.

UNIT-2
I Assignment Models.
II Transportation: Formulation, graphical methods
III Linear Programming:
Formulation, graphical methods, simplex method, Big- M- method, two phase method, degeneracy unrestricted variables. Quality in L p. revised simplex, duality, sensitivity analysis.
IV Introduction to Integer Programming.

UNIT-3
Waiting Line Models:
Introduction, classification, state in queue, probability distribution of arrival and service times. Single server model (M/M/I). Multiple server model (MMS). Birth & death process.

UNIT-4
Game Theory & Simulation:
Rectangular, two persons, zero sum games, maximin and minimax Principles. Saddle point. Dominic. graphical and algebraic method of solution by transforming into linear programming problem. Bidding problem. Building a simulation model, Monte-Carlo simulation and application.

UNIT-5
Inventory Models & Decision Making: Costs EOQ and EMQ models, RI and safety stocks etc. Shortages, PRS and spare parts inventory. Introduction application, decision under uncertainty, tree diagram, probability tree, decision trees.

BOOKS RECOMMENDED:

[1]. Taha, *Operations Research*, Tata Mc.Graw Hill.
[2]. Wagner, *Operations Research*, PHI. New Delhi, 2003
[3]. Ravindram & Philips, *Operations Research*, Tata Mc.Graw Hill.
[4]. Gupta & Hira, *Operations Research*, S. Chand. 1e, 2008
[5]. Chitle & Negi, *Operations Research*, Jain Brothers.
[6]. Vohra N.D, Kataria S.K, *Quantitative Techniques for Management*. Tata Mc.Graw Hill, 2004.

LABORATORY EXPERIMENTS:

1. Development, Formulation and Analysis of Linear Programming Problem for given decision making situations.
2. Development and Analysis of Transportation and Assignment models.
3. Development, Formulation and Analysis of Inventory problem for a given system.
4. Study and modeling of Queuing situations at a given service problems.
5. Simulations exercise relating various operations research problems.
6. Development & solution of dynamic programming models.
7. Formulation and solution of various replacement models.
8. Case studies based on Operations Research Problems.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM684 **LOGISTICS AND SUPPLY CHAIN MANAGEMENT.**	L	T	P		TH	CW	SW	PR	Total
	3	1	2	Max	100	50	50	50	250
Duration of Theory Paper: **3 Hours**				Min	50	25	25	25	125

Objectives and Pre requisites: To inbuilt the concepts of Logistics and supply chain Management. To strengthen skills related to supply chain strategies decisions.

COURSE CONTENTS

UNIT-1

Introduction of Logistics:

Introduction and scope of logistics, operation and systems logistics, missions of logistics and elements of logistics. An integration of logistics, logistics prerequisites and logistics in design and development phase, system engineering and supportability analysis, logistics in production and construction phase.

UNIT-2

System Logistics:

Logistics in system utilization and support, application of logistics in spare and repair parts provisioning and management, test and support equipments, data collection, analysis and system evaluation.

UNIT-3

Logistic support:

Evaluation of logistic support elements, integrated logistic support. Process and application of logistic support analysis (LSA), LSA measurement techniques, logistic support models and life cycle cost analysis, logistics in system retirement, material recycling and disposal phase.

UNIT-4

Supply chain strategies

Introduction to Supply Chain Management, Supply chain management, logistics in supply chain, Supply chain performance. Competitive and Supply chain strategies, achieving strategic fit, expanding strategies scope, Supply chain drives & obstacles: Frame work, inventory, transportation facilities, information, and obstacles to achieving fit.

UNIT-5

Transportation in supply chain

Transportation in supply chain : Factors affecting transportation decision , modes of transportation & their performance characteristics , design options , trade offs , tailor transportation , routing & scheduling in transportation , Network design in supply chain : Factors affecting network designing decisions, frame work, models , information technology in supply chain.

BOOKS RECOMMENDED:

[1]. Hutchinson Norman E., *an Integrated approach to logistics management*, PHI, 1987
[2]. Finkelstein & Guertin, *Integrated logistics support*, IFS publication U.K., 1988
[3]. Benjamin Blanchard, *Logistics engineering & management*, Pearson education Asia, 2001.
[4]. Copra Sunil & Meindl Peter, *Supply chain management*. McGraw-Hill, 1998.
[5]. Mentzer, *Supply chain management.* . Sage Publications, 2004
[6]. Chistofer M., *Logistics & supply chain management*. 1998.

LABORATORY EXPERIMENTS:

1. Case studies related to operation and systems logistics.
2. Case studies related to Logistics in system utilization and support
3. Case studies related to integrated logistic support.
4. Case studies related to Competitive and Supply chain strategies.
5. Case studies related to Factors affecting transportation decision.
6. Case studies related to Network design in supply chain.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM682 **FINANCIAL MANAGEMENT.**	L	T	P		TH	CW	SW	PR	Total
	3	1	2	Max	100	50	50	50	250
Duration of Theory Paper: **3 Hours**				Min	50	25	25	25	125

Objectives and Pre requisites: To inbuilt the concepts of Financial management. To strengthen skills related to Accounting. Application of financial tools and techniques, helpful for financial planning Capital Budgeting and Decision Making.

COURSE CONTENTS

UNIT-1
Nature and Scope of Financial Management:
Role of financial management in business decisions, goals of financial management, evolution of corporate finance, finance function, broader applicability of financial management concepts, tasks of finance controller.

UNIT-2
Book Keeping and Accounting:
Introduction of book keeping. Accounting Process & its concepts, Introduction & working knowledge of different books of account. Preparation of Financial Statements of the firm**.**

UNIT-3
Tools of Financial Analysis:
Funds flow analysis – sources and use of funds, balance sheet and profit and loss statements, measurement of cash flows, revenue cost, profit relationship, break even analysis, ratio analysis, analysis of operating and financial leverages, long term and short term cost out put relationship.

UNIT-4
Financial Planning:
Financial forecasting, forecasting techniques, criterion for investment decisions, dividend policy, cost of capital problems of financial planning and budgeting in public sector undertaking.

UNIT-5
Financial Budgeting:
Capital budgeting, capital budgeting, capital rationing, sources of rising fixed and working capital, management of working capital, internal financing, balanced capital structure,

BOOKS RECOMMENDED:

[1]. Kuchchal, *Financial management*. Tata McGraw Hill, 2003
[2]. Chandra Prasanna, *Financial management*. Tata Mc.Graw Hill, 2000

LABORATORY EXPERIMENTS:

1. Case studies related to Accounting Procedure and Book Keeping.
2. Case studies related to Preparation of different Financial Statements.
3. Case studies related to Ratio Analysis.
4. Case studies related to Funds Flow and Cash flow statement.
5. Case studies related to Capital Budgeting and Financial Planning.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM681 **MARKETING MANAGEMENT.**	L	T	P		TH	CW	SW	PR	Total
	3	1	-	Max	100	50	-	-	150
Duration of Theory Paper: **3 Hours**				Min	50	25	-	-	75

Objective and Pre requisites: To build a strong foundation of Marketing concepts & to acquaint the students about the different Marketing Functions. To develop the skills of Marketing Strategies formulation & its implementation in an organization to maximize profits and improvement of Brand Image.

COURSE CONTENTS

UNIT-1
Introduction:
Tasks and philosophies of marketing MANAGEMENT, the marketing system and environment, system and environment, system approach to marketing. Marketing Organization**,** Organization of marketing department, responsibilities and functions of marketing managers, interaction of marketing in other functions.

UNIT-2
Marketing Research:
Scope and objective, planning and formulating marketing research projects, methods of collecting data, analysis and evolution of data, consumer behavior analysis, vendor analysis.

UNIT-3
Product Planning:
Product policy decision, life cycle innovation, product failure, introduction new products, product mix strategies, product portfolios management ,BCG GF-directional matrices, planning & budgeting for establishing and new products- MARMIX model.

UNIT-4
Sales Promotion and Advertising:
Role of promotion and advertising, type of promotion and advertising method, promotion and advertising appropriation, development and evaluation of advertising program.

UNIT-5
Distribution & Sales Function:
Importance of middlemen, types of distribution channel, channel design decisions, problems in channel determination and uses. Recruitment, selection, training, motivation and compensation of sales force, controlling and evaluating**.**

BOOKS RECOMMENDED:

[1]. Kotler Philip, *Marketing management, planning, analysis and control*. PHI, 2001
[2]. Cundiff, Still & Govoni, PHI. , 2003

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Subject Code & Name	Instructions Hours per Week			Marks					
5IM634 PRODUCTION AND OPERATIONS MANAGEMENT.	L	T	P		TH	CW	SW	PR	Total
	3	1	2	Max	100	50	50	50	250
Duration of Theory Paper: **3 Hours**				Min	50	25	25	25	125

Objective and Pre requisites: To inbuilt the foundation of different Operations strategies like Aggregate planning, Plant location decisions, capacity planning. To ensure the development of skills required for new product development their production planning & control.

COURSE CONTENTS

UNIT-1
Introduction:
Overview of operation management, nature & content of operation management, various schools of management thought, framework for managing operations strategy & competitiveness, strategic planning for production & operations.

UNIT-2
Product Design:
Product / service and process design, product development, morphology of design process , product life cycle concept need identification, conceptual design , creative design concepts , feasibility study, Preliminary design , detailed design , design for customer, for manufacturer and assembly , types of processes, process planning and selection process flow structure , product / process matrix , technologies in manufacturing , FMS and CIM.

UNIT-3
Operation Capacity Planning:
Operation capacity planning , design and system capacity , capacity planning models , economic analysis capital budgeting and analysis , capital investment evaluation techniques, facility location and layout, foreign locations , factory affecting location decisions , models , analysis and selection of layouts , cellular manufacturing layouts.

UNIT-4
Production Planning & Control:
Functions of production planning and control, forecasting, qualities and quantitative models for forecasting, accuracy of forecasting and selection of forecasting technique, aggregate planning, master production scheduling and MRP, operations scheduling, loading sequencing detailed scheduling and expediting, forward and backward scheduling, optimized production technology (OPT).

UNIT-5
Modern operations Techniques:
Overview of synchronous manufacturing and theory of constraints, introduction to Japanese contribution for WCM overview, JIT purchasing, KANBAN, KAIZEN concepts, modern trends in operations management, introduction to learn and agile manufacturing**.**

BOOKS RECOMMENDED:

[1]. Chase, Aquiline & Jacobs, *Production & Operations management.* Tata Mc.Graw Hill
[2]. Dilworth, *Production & Operations management*. 1999
[3]. Adams & Ebert, *Production & Operations management*. 1999
[4]. Monks, *Operations Management*. . Tata McGraw Hill, 1985

LABORATORY EXPERIMENTS:

1. Study and analysis of Production planing & Control situations in industry.
2. Study and analysis of variuous Forecasting Models.
3. Developmentr and analysis of Aggregate Planning Maodels.
4. Development and Analysis of matertrial requirement planning for the given data.
5. Study and analysis of prodution Sheduling.
6. Case studies related to proudction & Operations Management(manufacturing Sector).
7. Case studies related to proudction & Operations Management(Service Sector).

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM 635 STATISTICAL QUALITY CONTROL AND TQM.	L	T	P		TH	CW	SW	PR	Total
	3	1	-	Max	100	50	-	-	150
Duration of Theory Paper: **3 Hours**				Min	50	25	-	-	75

Objective and Pre requisites: To develop the skills required for Quality consciousness among the students. Basics of Quality control through different techniques like theory of Control charts & Acceptance sampling. To build the Knowledge base of Total Quality Management, Six Sigma etc.

COURSE CONTENTS

UNIT-1

Quality Control:

Definitions, place of quality control in industries, quality control organization, difference between inspection and quality control, application of quality control in industries, economic of quality systems, quality assurance. Theory of Control Charts

Sample size and frequency of sampling, out control, control for variables and attributes and their application design of X and R charts, Process capability studies.

UNIT-2

Acceptance Sampling:

Single sampling planes, double sampling& sequential sampling planes, rectifying inspection for lots, sampling planes for continues production, selection of sampling planes for different situation, economics of acceptance sampling.

UNIT-3

TQM:

Evolution of total quality management , historical perspective, elements of TQM - Total employee involvement , elimination of waste and problem exposure , total quality control systems , Deming's wheel , Deming's 14 points – pros and cons in industrial engineering context , Philip Croshy philosophy , Juran philosophy , Ishikwa diagram , Just – in- Tinme philosophy design and development strategy in TQM – Quality function deployment. Application of TQM to service type organization, service guarantees, case studies on application of TQM to services type organization, various quality award, cost benefit analysis, life cycle costing.

UNIT-4

Reliability:

Distributions encountered in controlling reliability mean time to failure , exponential failure density, MTTF, Weibull, failure density, measurement and tests , maintenance and reliability , life testing.

UNIT-5

Concepts & Application of 6 – Sigma Quality:

Comparison between 3-sigma & 6- sigma quality relationship between DPMO and slandered normal variate , short term and long term yield cost and quality effectiveness of 6- sigma strategy , DMAIC approach to 6-sigma implementation application to service industry link between 6- sigma & DOE. ISO 9000 Series and SPC, Quality Circles

BOOKS RECOMMENDED:

[1]. Mahajan M., *Statistical Quality Control*, Dhanpat Rai & Sons, 2001.
[2]. Mitra A., *Quality Control Applications*, Pearson Education. 2e, 1998
[3]. Sharma D. D, *Total Quality Management*, Sultan Chand & Sons. New Delhi, 2000
[4]. Basterfield, *Total Quality Management*, Pearson Education, 2003
[5]. Logothitis, *Total Quality Management*, PHI.

LABORATORY EXPERIMENTS:

1. Study and Analysis of set parameters relating to different mathematical distributions (Variable).
2. Study and Analysis of set parameters relating to different mathematical distributions (Discrete).
3. Construction & analysis of various process control charts.
4. Performance of Acceptance Sampling for a given set of lots.
5. Analysis of tools of related to total Quality Management like QFD, Fish bone diagram etc.
6. Case studies related to subject.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM683 **MATERIALS MANAGEMENT.**	L	T	P		TH	CW	SW	PR	Total
	3	1	2	Max	100	50	50	50	250
Duration of Theory Paper: **3 Hours**				Min	50	25	25	25	125

Objective and Pre requisites: To inbuilt the concepts of Material handling and purchase procedure of an organization. To impart the basics of standardization & stores management within an organization. To concrete the concepts of inventory management for effective decision making related to material & inventory.

COURSE CONTENTS

UNIT-1
Introduction:
Objective of materials management, field and scope of material management, general analysis material quality, material planning programming.

UNIT-2
Standardization, simplification, codification.

UNIT-3
Purchase Management:
Problems of purchasing , organization of purchasing Deptt, purchase procedures , placing of orders , inspection and testing , purchasing for mass production , purchase contract , make or buy decision , material import , DGS & D rate contract.

UNIT-4
Stores Management:
Stores organization, methods of storing, record – keeping & checking, issue methods, stores layout.

UNIT-5
Inventory Management:
Various inventory models, quantity discounts, shortages, instantaneous production with back orders, fixed time mode, single period model of profit maximization with time independent costs, lead time , re-order point, Buffer stock, models with price breaks, selective control of inventory, POQ system.

BOOKS RECOMMENDED:

[1]. Lee & Dobler, *Material management.* Tata Mc.Graw Hill, 1990
[2]. Arnold J.R Tony & Stephen N. Chapman, *Introduction to Material management.* 2003
[3]. Gopal Krishnan, *Material Management*.1992

LABORATORY EXPERIMENTS:

1. Cases related to material handling problem in the plant or organization.
2. Cases related to the problem of Standardization, simplification, codification.
3. Cases related to Problems of purchasing.
4. Cases related to inspection and testing, purchasing for mass production.
5. Cases related to stores layout.
6. Cases related to various inventory models.
7. Determination of EOQ from the given data & its comparoson with data of the industry.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				M.E.(Industrial Engineering & Management) (Part Time)					
Subject Code & Name	Instructions Hours per Week			Marks					
5IM685 PROJECT MANAGEMENT.	L	T	P		TH	CW	SW	PR	Total
	3	1	-	Max	100	50	-	-	150
Duration of Theory Paper: **3 Hours**				Min	50	25	-	-	75

Objective and Pre requisites: To develop the Knowledge & concepts of Project Management. To develop the of Project's Analysis on different criteria like Market potential, Technical & Financial Analysis. To develop the skills of Project Appraisal through different criteria.

COURSE CONTENTS

UNIT-1
Project Management:
Definition characteristics and life cycle, difference with operation s management, steps in PM, projects managers jobs organization for PM, critical chain concepts.

UNIT-2
Market Potentiality & Technical Analysis:
Identification of opportunities of new products.
Materials and input production technology, product mix, plant capacity, project planning and analysis tools.

UNIT-3
Financial Analysis:
Estimation of cost of project, means of finance, estimate of working capital, estimate of cost of production, working result & profitability, projected balance sheet and projected cash flow statements. Project Appraisal Criteria: Pay back period, net present value methods, cost benefit analysis, internal rate of return.

UNIT-4
Project Management through Network:
Work break down structure, Gantt chart etc. PERT: - Activity average time variance and project completion time by normal distribution. CPM: - Critical path, floats their interpretation, event occurrence time, slacks, resource allocation, crashing of NW, time cost trade-off, resource smoothing and leveling.

UNIT-5
Monitoring and Control:
Features of control, project control, performance analysis and cost control curves, line of balance, GERT, computer applications.

BOOKS RECOMMENDED:

[1]. Chandra Prasanna, *Project preparation,* Tata Mc.Graw Hill publishing CO. 1, New Delhi
[2]. Jain D.K, *Project planning and appraisal in planned economy,* Uppal publishing house, New Delhi.
[3]. Lock Dennis, *Project management,* Galgotia book service, New Delhi.
[4]. Mohsin M., *Project planning and control* Vikas publishing house, New Delhi.
[5]. Sonha A.K and Sinha Ram, *project engineering and management,* Vikas publishing house, New Delhi.