SYLLABUS

MASTER OF ENGINEERING

Industrial Management and Engineering

In

PRODUCTION AND INDUSTRIAL ENGINEERING
(SEMESTER SCHEME)

Self Financing Course

M.E I Semester 2011-2012
ME II Semester 2011-2012
ME III Semester 2012-2013
ME IV Semester 2012-2013

JAI NARAIN VYAS UNIVERSITY
JODHPUR

(Accredited with 'A' Grade by NAAC)

CONTENTS

MASTER OF ENGINEERING

General Information for Students

1. The Course of Study for M.E. degree in Civil, Electrical, Mechanical, Mining, Electronics & Communication, Computer Science & Engineering and Production and Industrial Engineering shall extend over a period of not less than four semesters spread over twenty four months. On satisfactory completion of the course and after passing the final examination including the dissertation, a candidate shall be awarded M. E. Degree in the respective branch.

2. (a) No candidate shall be admitted to the course of study for the degree of M.E. in any of the above branches unless he produces satisfactory evidence to the effect that he has obtained at least a high second class BE/B.Tech/Equivalent Degree.

2(a)(i) Candidates with BE/B.Tech/Equivalent Degree in any branch of engineering recognized by AICTE, New Delhi with at least 55% aggregate marks from this University or from any other University or Institute recognized as equivalent thereto are eligible for admission in ME Course 'Industrial Management and Engineering', Department of Production and Industrial Engineering.

2. (b) All the applications, received in the department for admission to M.E. degree in Production and Industrial Engineering will be screened by the department. **The applicants, found suitable after screening, will be required to appear an interview before the P.G. Admission Committee constituted by the Department for this purpose.**

3. Teachers, Research Fellows/Scholars or Engineers or Technical Staff employed in this University, serving engineers in the departments/industries/self employed engineers/teachers in Polytechnic/engineers employed in research laboratories and other organizations in Jodhpur fulfilling the eligibility criteria specified in 2(a) / 2(b) may be admitted to the M.E. course as part-time students.

4. The course of study for a part-time student will extend over a period of not less than six semesters spread over 3 years. He shall be required to attend regular lecture classes, complete the prescribed course work including the practicals and sessionals and submit a dissertation.

5. There shall be an examination at the end of each semester.

At the end of First Semester – First Semester Examination for M.E. Degree
At the end of Second Semester – Second Semester Examination for M.E. Degree
At the end of Third Semester – Seminar Examination for M.E. Degree
At the end of Fourth Semester – Dissertation Examination for M.E. Degree

6. The examination shall be conducted by means of written papers, practicals including sessionals, viva-voce and dissertation as per scheme of examination specified in the syllabus.

7. A candidate who has undergone regular course of study for the first semester shall be eligible to appear at the First Semester Examination for the M.E. Degree.

8. A candidate appearing at the First Semester Examination for the M.E. Degree shall be required to show competent knowledge of the subjects mentioned in the teaching and examination scheme for the respective branch of study.

9. A candidate who has passed the First Semester Examination and has undergone a regular course of study for the Second Semester shall be eligible for appearing at the Second Semester Examination for the M.E. Degree.

10. A candidate appearing at the Second Semester examination for the M.E. Degree shall be required to show competent knowledge of the subjects mentioned in the teaching and examination scheme of respective branch of study.

11. (a) Each candidate shall submit for examination a seminar report embodying a critical review of the latest developments in a subject related to M.E. Degree course in Production and Industrial Engineering. Three copies of the seminar report printed or type written shall be submitted to the Head of the Department along with a note of recommendation from his/her supervisor.

11. (b) Each candidate shall submit for examination a dissertation embodying the research work carried out by him/her during the course of study.

12. The attendance requirement for the candidate shall be as per University Ordinance.

13. (a) A candidate who fails in the course work in any course shall not be permitted to take examination in the theory paper of that course. He should join as a regular student in the course when it is offered next by the Department. In case, the course is discontinued in the Department, the student can take up, subject to approval of the Head of the Department, another course in lieu of the course discontinued.

13. (b) If a candidate passes in course work but fails in the corresponding theory paper, he shall reappear and pass in the subjects in which he has failed, at the next regular examination of the semester. The course work marks obtained by him in the previous semester shall be carried over to the semester in which he reappears.

13. (c) If a full time candidate fails in three or more units and a part-time student fails in two or more units in any semester, he shall not be permitted to continue his studies in the next semester. He shall be required to join as a regular student whenever these courses are offered next by the Department. In case, any of these courses is discontinued in the Department, the student can take up, subject to the approval of Head of the Department, another course in lieu of the course discontinued.

Rule No. 13 (c) is clarified as follows:

“Whenever a full time student fails in 3 or more units/courses prescribed for that semester, he/she will have to repeat all the papers in that semester as a regular student and consequently re-appear in all the units/courses in that semester as a regular student”.

For part-time students, the rule is clarified as follows:

“Whenever a part-time student fails in 2 or more units/courses prescribed for that semester, he/she will have to repeat all the papers in that semester as a regular student and consequently re-appear in all the units/courses in that semester as a regular student”.

(Approved by the Academic Council held on 8-9-1994)

14. A candidate who fails in any elective subject may be permitted by the Head of the Department to change the elective subject. He shall be required to undergo a regular course of study for the new elective subject.

15. (a) In no case will a candidate, who has not passed finally after six years from the date of enrolment, be allowed to continue the course.

15. (b) Provided the Vice-Chancellor in consultation with the Head of the Department may waive this limit of six years in the case of candidates who could not complete their M.E. Courses in one stretch. The reasons for granting exemption shall be recorded in writing. Such extension shall not exceed one year.

16. The subject for the dissertation shall be approved by the Head of the Department.

17. Three copies of dissertation printed or type-written shall be submitted to the Registrar through Head of Department, along with the certificate from the supervisor that the work has been undertaken and completed, the dissertation has been written under his guidance and meets the requirements of the course. A certificate should also be appended that the dissertation has not formed the basis of award of any previous degree or diploma etc. of this or any other University.

18. The dissertation shall be referred to two examiners, one External and one Internal. They shall examine the dissertation. The candidate shall also be required to appear for the Viva-voce examination conducted by a Board of Examiners consisting of the External Examiner, the Internal Examiner and the Head of the Department or his nominee who shall be the Chairman of the Board.

19. The dissertation examination shall be held only after the candidate has passed in all the theory papers, course work and Seminar.

20. (a) The number of part-time students to be admitted to a particular branch of study shall be decided by the Head of the Department concerned.

20. (b) The programme of instruction for a part-time student shall be drawn up by the Head of the Department so as to suit the requirements of the student concerned.

21. (a) For a pass, candidate should obtain 35 per cent marks in each theory paper, 50 per cent marks in each course work, 50 per cent marks in Seminar and the Dissertation should be "accepted".

21. (b) In case the dissertation is found "unacceptable", the candidate shall be required to repeat the dissertation work.

22. The division shall be awarded to the M.E. students as follows:

(a) Honours - 75 per cent marks or above
(b) First Division - 65 per cent marks or above
(c) Second Division - 50 per cent marks or above

23. A candidate may be permitted to offer additional units, subjects in excess of the minimum requirements for the M.E. Degree. The result of these additional units/subjects shall be separately mentioned in the mark-sheet and it will not be counted for the award of the division.

24. Candidates who have passed the Section ‘A’ and ‘B’ examinations of the Institution of Engineers (India) shall be eligible for the admission to the M.E. Course provided they pass a written and oral qualifying examination to be conducted by the Department concerned. On admission, a candidate may be required to offer and pass additional courses to make up the deficiency, if any, and when this is done, his normal instruction load of Master of Engineering will be correspondingly reduced. The admission of candidates under this category would be restricted to maximum two for each course out of which not more than one may be on a full time basis. The candidate’s M.E. result will be announced only when he clears the deficiency papers.

DEPARTMENT OF PRODUCTION AND INDUSTRIAL ENGINEERING
FAC ULTY OF ENGINEERING, JAI NARAIN VYAS UNIVERSITY
JODHPUR

LIST OF TEACHING STAFF

1.	Dr.Arvind Kumar Verma Associate Professor	B.E., M.E. Ph.D., MISTE
2.	Dr. Vikas Kapoor Associate Professor	B.E., M.E., Ph.D., MISTE
3.	Dr. Manish Kumar Associate Professor	B.E. (Hons), M.E., Ph.D., MISTE, MIE
4.	Dr. Milind Kumar Sharma Associate Professor	B.E., M.E. (Hons.) Ph.D.
5.	Mrs. Rama Mehra Assistant Professor	B.E.

DEPARTMENT OF PRODUCTION AND INDUSTRIAL ENGINEERING

ME (P&I) INDUSTRIAL MANAGEMENT AND ENGINEERING (2011-2012)

ME (P&I) **Semester I**

Teaching and Examination Scheme

Subject Code	Subject	Lecture	Tutorial/Practic	Contact Hrs.	Units	Exam Hrs.	Marks		
							Theory	Course Work	Total
	Written Papers								
PI 501	Principles of Management	4	2	6	1	3	100	50	150
PI 502	Work Study & Ergonomics	4	2	6	1	3	100	50	150
PI 503	Quality Management	4	2	6	1	3	100	50	150
MA 504	Engineering & Management Statistics	4	2	6	1	3	100	50	150
PI 505*	Elective I	4	2	6	1	3	100	50	150
	Total	**20**	**10**	**30**	**5**	**15**	**500**	**250**	**750**

List of Papers in Elective I (PI 505) *

PI 505 (a): Organizational Behaviour & Human Resource Management
PI 505 (b): Industrial Environmental and Policy
PI 505 (c): Personnel Management & Industrial Relations
PI 505 (d): Costing & Finance
PI 505 (e): Maintenance Management
PI 505 (f): Advance Operations Research

DEPARTMENT OF PRODUCTION AND INDUSTRIAL ENGINEERING

ME (P&I) INDUSTRIAL MANAGEMENT AND ENGINEERING (2011-2012)

ME (P&I) **Semester II**

Teaching and Examination Scheme

Subject Code	Subject	Lecture	Tutorial/Practic	Contact Hrs.	Units	Exam Hrs.	Marks		
							Theory	Course Work	Total
	Written Papers								
PI 506	Materials Management	4	2	6	1	3	100	50	150
PI 507	Marketing & Financial Management	4	2	6	1	3	100	50	150
PI 508	Operations Management	4	2	6	1	3	100	50	150
PI 509	Engineering & Management Economics	4	2	6	1	3	100	50	150
PI 510*	Elective II	4	2	6	1	3	100	50	150
	Total	**20**	**10**	**30**	**5**	**15**	**500**	**250**	**750**

List of Papers in Elective II (PI 510)*

PI 510 (a): Data Base Management Systems & Management Information Systems
PI 510 (b): Computer Integrated Manufacturing Systems
PI 510 (c): Advances in Management Problem Solving
PI 510 (d): Facilities Planning
PI 510 (e): Product Design Management
PI 510 (f): Software Engineering

DEPARTMENT OF PRODUCTION AND INDUSTRIAL ENGINEERING

ME (P&I) INDUSTRIAL MANAGEMENT AND ENGINEERING (2012-2013)

ME (P&I) **Semester III**

Teaching and Examination Scheme

Subject Code	Subject	Lecture	Tutorial/Practic	Contact Hrs.	Units	Exam Hrs.	Marks		
							Theory	Course Work	Total
PI 511	Seminar	-	24	-	1	-	-	-	150
	Total	**-**	**24**	**-**	**1**	**-**	**-**	**-**	**150**

DEPARTMENT OF PRODUCTION AND INDUSTRIAL ENGINEERING

ME (P&I) INDUSTRIAL MANAGEMENT AND ENGINEERING (2012-2013)

ME (P&I) **Semester IV**

Teaching and Examination Scheme

Subject Code	Subject	Lecture	Tutorial/Practic al	Contact Hrs.	Units	Exam Hrs.	Marks		
							Theory	Course Work	Total
PI 512	Dissertation	-	24	-	-	-	-	-	
	Total	**-**	**24**	**-**	**-**	**-**	**-**	**-**	

	Grand Total	**-**	**-**	**-**	**11**	**-**	**-**	**-**	**1650**

SEMESTER -I

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 501 – PRINCIPLES OF MANAGEMENT

4L, 2T **3 hours, 100 Marks**

Management Principles: Management Functions, Roles & Skills, History of Management Thought, Various Theories and Approaches to Management, Planning process, tools & techniques, Management by Objectives, Decision making process, approaches and aids, Formal & informal organisations, Organization structure and design, Organization principles of line and staff authority and span of control, Delegation, decentralisation and autonomy, Managerial Control- need and principles, Role of information in control, Control methods and techniques, Managerial Ethics & Social Responsibility.

Systems Approach in Problem Solving: Systems concepts, System, Environment, Input, Output, Process, Feedback and Control, Classification of Systems, System analysis: System Design and Systems Engineering, General systems theory and its application to business problems, Systems design: System purchaser/(s), objectives, constraints, design of input, output process and feedback control. Examples of application and case studies in different areas of business management.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 502 –WORK STUDY & ERGONOMICS

4L, 2T **3 hours, 100 Marks**

Work Study: Concept of Work and Productivity, Possibility Guides, Methods Study, Charting Techniques, Concept of Standard Time and Bench Mark Jobs, Timing Techniques and Work Sampling, Elemental Techniques and Work Sampling, Elemental Motions, THERBLIGS and Principles of Motion Economy, Introduction to Predetermined Motion Time Standards. MTM System and its application to production and Maintenance. Integration of Methods and Time, Learning Theory implications on Standard Time, Work Study applications in Production, maintenance, Quality and other service functions.

Job Evaluation and Incentive Scheme: Job Description & Job Analysis, Job Evaluation-different methods, Individual and Group Incentive Concepts and Implications, Different types of Incentive Schemes, Suggestion Schemes.

Human Factors Engineering: Introduction to Ergonomics and Human Factors, Engineering Physiological Basis of Human Performance Biomechanics, Psychology of work and work load perception, Physical Work Environment, Basis of Ergonomic Problem Identification, Safety.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 503 – QUALITY MANAGEMENT

4L, 2T **3 hours, 100 Marks**

Basic Concepts of Quality Assurance System, Statistical Quality Control, Process Capability Analysis, Inspection Standards, Control Charts for Process Control, Acceptance Sampling including Sampling Tables, Quality Costs Estimation and Reduction, Quality Circles including Fault-tree Analysis, Total Quality Control including Automation, Product & System Reliability: Basic Concepts, Quantitative Measurement, Prediction, Evaluation & Optimisation, Maintainability, Case Studies on/in Quality and Reliability Management in manufacturing and service organizations. Introduction to Advanced Quality Management Tools.

ME (P&I) SEMESTER I EXAMINATION SCHEME

MA 504 –ENGINEERING & MANAGEMENT STATISTICS

4L, 2T **3 hours, 100 Marks**

Bivariate data; bivariate, marginal and conditional frequency distribution. Variance and covariance of a linear function of variates. Karl Pearson's correlation coefficient, rank correlation. Partial and multiple correlation. Simple and multiple regression.

Probability: Classical, relative frequency and axiomatic approach of probability. Additive law of probability, conditional probability, Statistical independence of events, multiplicative law of probability, Baye's theorem and its simple application.

Random Variable and Probability Distribution: Discrete random variable, probability mass function, continuous random variable, probability density function. Expectation and different measures of random variables. Binomial, Poisson, Normal, Gamma and Beta distributions.

Statistical Inference: Concept of Sampling distribution and standard errors, Parameter & estimator, Point and interval estimation. Testing of hypothesis: Two types of errors, level of significance and power of the test. Large sample tests, tests based on student t, χ^2 and F distribution.

Design of experiments: Analysis of variance, one way and two way classification including multiple but equal number of observations per cell. The completely randomized design, Randomized block design and Latin square design. Factorial experiments, the main and interaction effects, Layout and analysis in of 2^2 and 2^3 factorial experiments carried out in a RBD. (without any derivation)

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 505 (a) – ORGANIZATIONAL BEHAVIOUR & HUMAN RESOURCE MANAGEMENT (ELECTIVE I)

4L, 2T **3 hours, 100 Marks**

A Social Systems Approach Human Behaviour- Perception, Learning & motivation Theories of Personality, Formation of Attitudes and Value Systems, Group Dynamics, Leadership and Team Building, Factors affecting group performance, Resolving conflicts, Management of Changes, Systems Approaches to Changes, The role of Industrial Engineer as a Change Agent, Organisational Development; and small group activity, Research studies and case studies in organisational behaviour.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 505 (b) – INDUSTRIAL ENVIRONMENTAL AND POLICY (ELECTIVE I)

4L, 2T **3 hours, 150 Marks**

Planning and Development Framework of India, Industrial Regulations and Controls, Law and Legislation, Indian Industry Productivity Scenario and Bottlenecks, Resource endowment, Technology Environment, Socio-economic Environment, Industrial Relations Environment, Institutional Financing-International Environment of Business Trade and Balance of Payments, Study of Corporate Policy as an integrative exercise.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 505 (c) –PERSONNEL MANAGEMENT & INDUSTRIAL RELATIONS (ELECTIVE I)

4L, 2T **3 hours, 100 Marks**

Personnel Function: Its Evaluation, Objectives Principles, Philosophies, Duties and Responsibilities of the Personnel Management in India. Manpower Planning: Its uses and benefits; problems and limitations; Manpower Inventory; Manpower Forecasting; Manpower skills: Analysis and Practices in the Indian Industry. Recruitment: Selection Process, Psychological Testing; Interviewing Techniques, Transfer, promotion and its Policies; Induction placement and exit Interview Wage and salary Administration.

Training and Development: Its objective and Policy Planning and organising the training department, Training manager and his job, on and off the job Training, Techniques, Career Planning; Objective of Performance Appraisal and its Methods.

Industrial Relations: Problems of labour Management Relations; Causes for poor Industrial Relations; conditions of good Industrial Relations; Trade Union Act; Objectives and Advantages of Trade Unions; Collective Bargaining; Industrial Disputes Act, Disciplinary Action and Domestic Enquiries; Machinery for Settlement of Dispute; Grievance Procedure and its Handling; Counselling; Lay-off, Lockouts, Strikes, Retrenchment; Labour Participation in Management, Joint Management Councils, Factories Act and other Social Security Acts relevant to the course.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 505 (d) –COSTING & FINANCE (ELECTIVE I)

4L, 2T **3 hours, 100 Marks**

Analysis and interpretation of Final Accounts, Ration Analysis and interfirm comparison, Cost Accounting, Human resource accounting, Fixed and Variable costs, Process costs, Standard Costs, Cost Estimation and Cost Control, corporate Finance; Cost of Capital and Sources of Funds, Working Capital Management.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 505 (e) –MAINTENANCE MANAGEMENT (ELECTIVE I)

4L, 2T **3 hours, 100 Marks**

Characteristics, benefits, objectives and policies of maintenance, Organisation and structure of maintenance system; Mechanics of maintenance system; Planning and Scheduling maintenance activities, Types of maintenance, preventive maintenance, development of preventive maintenance schedule; planned prevention of breakdowns; predictive maintenance, condition monitoring, Equipment codification and classification, maintenance budgeting and cost control; Production Maintenance integration; Replacement; policies and models. Relevant Costs of Maintenance: spare parts management, Spare parts Inventory Control. Management Information Systems for Maintenance.

Concepts of Reliability: Queue theoretic and Reliability theoretical approach to maintenance planning. Maintenance strategies, Maintainability and availability, Maintenance manpower planning, Maintenance downtime analysis, computerised maintenance system, application of simulation technique, design, implementation and operation of an integrated maintenance system.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 505 (f) - ADVANCE OPERATIONS RESEARCH (ELECTIVE I)

4L, 2T **3 hours, 100 Marks**

Introduction to Operations Research and Modelling, Role of Operations Research in Problem Solving and Decision Making, Formulation of Decision Problems as LP, Revised Simplex Methods, Computer Applications, Duality, Post Optimality Analysis and their Applications, Dual simplex method Transportation and Assignments Models, Game Theory, Queuing Theory, Dynamic Programming and Applications, Integer Programming, Introduction to Heuristics, Decision Trees, Network Flows, Simulation.

SEMESTER-II

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 506 –MATERIALS MANAGEMENT

4L, 2T **3 hours, 100 Marks**

Concept of Classification and Inventory Analysis, Codification, Standardization and variety Reduction, Make or Buy Decisions, Inventory Control Techniques, Inventory Control Techniques, Inventory Systems, Forecasting Techniques, Material Requirements, Explosion and Levels, Material Requirement Planning, Phasing, Materials Functions including Budgeting, Purchasing and Vendor Development, Spare Parts Management, Stores and Material Accounting, Import export policies, Legal aspects of purchasing, Evaluation of Materials Management Performance.

ME (P&I) SEMESTER I EXAMINATION SCHEME

PI 507 –MARKETING & FINANCIAL MANAGEMENT

4L, 2T **3 hours, 100 Marks**

Marketing philosophy of business, Monitoring the Environment, Analysing Influences on Consumer Behaviour, Understanding Consumer's Decision Processes, Analysing Organizational Markets, Gathering Marketing Information, Segmenting markets and positioning products, Formulating Marketing Strategies, Planning Marketing Programmes, Managing Products, Developing New Products, Marketing Intermediaries, Managing Market Logistics, Price Theory, Establishing and Managing Prices, Designing the Promotion Mix, Managing the Advertising Programme, Managing the Sales Force, Managing the Sales Territory, Controlling the Marketing Function, Service Marketing, Marketing in Non-Profit Organization and Social Marketing, Global Marketing, Marketing and Technological Innovations, Efficiency and Effectiveness in Marketing.

Concepts of Financial Accounting in Industries, Principle of Double Entry Book Keeping, Preparation of Ledger Accounts, Coding and Classification or Accounts, Revenue, Deferred and Capital Expenditure, Trial Balance, Profit and Loss Account, Balance Sheet, Income and Expenditure Account, Fund Flow Analysis.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 508 –OPERATIONS MANAGEMENT

4L, 2T **3 hours, 100 Marks**

Operations Strategy: Concept of Operation Planning and Control of various operational systems in manufacturing and non-manufacturing sector. Operations Planning and Control as an Integrated System, Aggregate Planning and master Production Scheduling, Hierarchical Productions Planning, Material Requirement Planning; Lot Sizing; MRPII, Capacity Requirement planning, LOB, Scheduling.

Emerging Trends in Planning & Scheduling; Concepts of Just-in-Time, Pull and Push System of Workflow, OPT etc. Project Planning, Monitoring and Control Logistics, Distribution Planning and Control, Maintenance Planning & Control.

Implementation and Evaluation of Operations Planning and Control System.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 509 – ENGINEERING & MANAGEMENT ECONOMICS

4L, 2T **3 hours, 100 Marks**

The Principle and use of Economic Analysis in Engineering Practice, Discounted Cash-flow Analysis, Corporate Tax and Investment, Depreciation & Economic Studies, Replacement Analysis, Valuation of Assets, Economic Analysis for Projects, Analysis of risk & Uncertainty, Elements of Demand Analysis & Forecasting, Theory of Firm as an owner and as a producer, Economic of Scale, Market Models, Production Function, Output and Pricing Decision, Long Run & Short Run Cost Curves.

Introduction to Econometrics, Concept of economic variables, Estimation of parameters. Introduction to Economic Analysis for management corporate planning, econometric modelling for urban/regional planning and analysis of socio-economic systems.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 510 (a) – DATA BASE MANAGEMENT SYSTEMS & MANAGEMENT INFORMATION SYSTEMS (ELECTIVE II)

4L, 2T **3 hours, 100 Marks**

Introduction to DBMS, Models of DBMS- Hierarchical, Network, Relational, Normalization- 1NF, 2NF, 3NF, 4NF, 5NF, File Design- Determinaly diagrams, Entity-Relationship Modelling, Relational Model, SQL and introduction to ORACLE or INGRESS, CODASYL Model, Concepts and Principles of MIS- Evolution of MIS in an organisation, System development life cycle model, Pitfalls in MIS development, Long term MIS planning, Case Studies- Custom order processing and invoicing system, Production Information System, Information based manufacturing, Financial Accounting System, Distributed Data Base, Introduction to Decision Support systems.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 510 (b) – COMPUTER INTEGRATED MANUFACTURING SYSTEMS (ELECTIVE II)

4L, 2T **3 hours, 100 Marks**

Microprocessor applications, Local area network software, Computer aided design, Two dimensional drafting, Three dimensional modelling, Computer aided manufacturing, Robotics and their applications, Computer controlled material transport system (AGVS-Auto motive Guided Vehicle System), CNC & NC Part Programming, Flexible manufacturing systems; design & operations problems, office automation, Applications of Computer Networking and Communication in production and service industries.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 510 (c) –ADVANCES IN MANAGEMENT PROBLEM SOLVING

(ELECTIVE II)

4L, 2T **3 hours, 100 Marks**

Identification of complexities in Managerial Problems, Concept of problems hitherto unsolved, up-hard problems, emphasis on specific problems, Travelling sales man problem, Introduction to various advanced problem solving techniques such as AI, Graph Theory, Fuzzy logic, Neural Networks, Genetic Algorithms their combinations etc. Their genesis & development, Comparative techniques and their suitability to management problems.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 510 (d) –FACILITIES PLANNING (ELECTIVE II)

4L, 2T **3 hours, 100 Marks**

Facilities Location, Facilities Sizing, Facilities Layout including office Layout, land scaping etc. Facilities Design, Automated Storage and Retrieval System, Material handling, Automated Guided Vehicles, Group Layout, Line Balancing, Quantitative Methods in Location Layouts, Materials Handling, Computerisation in Location, Layout Planning and Facilities Design.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 510 (e) – PRODUCT DESIGN MANAGEMENT (ELECTIVE II)

4L, 2T **3 hours, 100 Marks**

Introduction to Design, Product Design, Design Management, Product Management.
Traditional & Modern Design, Design Process, Organizational Objectives.

Need related intelligence, Identification of latent needs, Technology related intelligence, Development of technological competence.

Organizational Strength & Weakness, Criteria for a new Product, Product Design and design methods, selection or methods appropriate to Design Stage. New Product Management, Forward Planning, Coordination and Communication.

Innovation, Creativity and diffusion, Techniques for creative idea generation.

Evaluation of New Products Ideas, Functions-technological, Ecological, Legal.

Investigating User Behaviour – User Habits, Expectations, Perception, and Techniques for Investigating User Behaviour.

Design Evaluation- Analysis for maintenance and useful life.

Market preparation vendor search, Sales promotion, Test marketing product & introduction strategy. Value Engineering concepts, Principles, Methodologies and Standards, Methods of Functional Analysis.

Organizational Structure for effective product innovation and Role of Product Manager.

ME (P&I) SEMESTER II EXAMINATION SCHEME

PI 510 (f) –SOFTWARE ENGINEERING (ELECTIVE II)

4L, 2T **3 hours, 100 Marks**

Data Structures: Primitive Data Structures, Classification of data structures into static and dynamic structures, Arrays, Queues, Linked Lists, Trees.

File Organization: Sequential files, Indexed sequential files, Relative Files.

Structured Systems Analysis and Design: Tools for Analysis: DFD, DD, Decision Tree, Decision Table, Structured design: Structured Chart, Transaction and Transform Analysis, Coupling and Cohesion.