BRANCH: Industrial Engineering and Management
YEAR: II
THEORY   **SEMESTER: III**

S. No.	Code No.	Subject	L	T	MM	Ex. Hrs.
1.	3IEM1	Statistics and Probability	3	1	100	3
2.	3IEM2	Mechanics Of Solid	3	1	100	3
3.	3IEM3	Introduction to Industrial Management	3	0	100	3
4.	3IEM4	Manufacturing Processes and Materials	2	0	100	3
5.	3IEM5	Computer Programming	2	1	100	3
6.	3IEM6	Elective –1: (Any one of the Following)	3	0	100	3
	3IEM6.1	Engineering Mathematics and Numerical Analysis				
	3IEM6.2	Environmental Sciences				
	3IEM6.3	Entrepreneurship Development				
	3IEM6.4	Electrical and Electronics Engineering				
		Total	16	3	600	-

PRACTICALS AND SESSIONALS

S. No.	Code No.	Subject	T/S	P	MM
7.	3IEM7	Computer Lab -1	0	3	50
8.	3IEM8	Material Science Lab	0	2/2	50
9.	3IEM9	Industrial Engineering Lab - 1	0	3	75
10.	3IEM10	Production Practice -1	0	3	50
11.	3IEM11	Strength of Materials Lab	0	2/2	50
12	3IEM12	Statistics Lab - I	0	3	75
13.	3IEMDC	Discipline and Extra Curricular Activities	0	0	50
		Total	0	13	400
		Grand Total			1000

BRANCH: Industrial Engineering and Management
YEAR: II
THEORY   **SEMESTER: IV**

S. No.	Code No.	Subject	L	T	MM	Ex. Hrs.
1.	4IEM1	Engineering Thermodynamics	3	1	100	3
2.	4IEM2	Managerial Accounting, Finance and Economics	3	1	100	3
3.	4IEM3	Theory of Machines	3	1	100	3
4.	4IEM4	Methods Engineering and Work Measurement	3	0	100	3
5.	4IEM5	Communications Skill	2	1	100	3
6.	4IEM6	Elective –1: (Any one of the Following)	2	0	100	3
	4IEM6.1	Measurements of Metrelogy				
	4IEM6.2	Metallurgy and Heat Treatment				
	4IEM6.3	Machine Design				
	4IEM6.4	Advanced Mathematics				
		Total	16	3	600	-

PRACTICALS AND SESSIONALS

S. No.	Code No.	Subject	T/S	P	MM
7.	4IEM7	Computer Lab - II	0	3	50
8.	4IEM8	Thermal Engineering lab	0	3	50
9.	4IEM9	Industrial Engineering Lab - II	0	3	75
10.	4IEM10	Production Practice -II	0	3	75
11.	4IEM11	Theory of Machines Lab	0	2/2	50
12	4IEM12	Communication Lab	0	2/2	50
13.	4IEMDC	Discipline and Extra Curricular Activities	0	0	50
		Total	0	13	400
				Grand Total	1000

BRANCH: Industrial Engineering and Management
YEAR: III
THEORY   **SEMESTER: V**

S. No.	Code No.	Subject	L	T	MM	Ex. Hrs.
1.	5IEM1	Operations Research - I	3	1	100	3
2.	5IEM2	Management Information System	3	1	100	3
3.	5IEM3	Quality Engineering and Management	3	1	100	3
4.	5IEM4	Strategic Management	3	0	100	3
5.	5IEM5	Materials Management	3	0	100	3
6.	5IEM6	Reliability and Maintainability Engineering	3	1	100	3
		Total	18	4	600	-

PRACTICALS AND SESSIONALS

S. No.	Code No.	Subject	T/S	P	MM
7.	5IEM7	Operations Research Lab	0	2	75
8.	5IEM8	Industrial Engineering Lab - III	0	3	100
9.	5IEM9	Simulation Lab-1	0	3	100
10.	5IEM10	Practical Training - 1	0	2	75
11.	5IEMDC	Discipline and Extra Curricular Activities	0	0	50
		Total	0	10	400
		Grand Total			1000

BRANCH: Industrial Engineering and Management
YEAR: III
THEORY   **SEMESTER: VI**

S. No.	Code No.	Subject	L	T	MM	Ex. Hrs.
1.	6IEM1	Total Quality Management	3	1	100	3
2.	6IEM2	Network Flow Models and Applications	3	1	100	3
3.	6IEM3	Human Resource Management and Organizational Behaviour	3	0	100	3
4.	6IEM4	Marketing Management	3	0	100	3
5.	6IEM5	Design and Analysis of Experiments	2	1	100	3
6.	6IEM6	Working Capital Management	2	0	100	3
		Total	16	3	600	-

PRACTICALS AND SESSIONALS

S. No.	Code No.	Subject	T/S	P	MM
7.	6IEM7	Computer Lab –III	0	3	75
8.	6IEM8	SQC Lab	0	3	100
9.	6IEM9	DOE Lab	0	3	100
12	6IEM10	Statistics Lab -II	0	2	75
13.	6IEMDC	Discipline and Extra Curricular Activities	0	0	50
		Total	0	13	400
		Grand Total			1000

BRANCH: Industrial Engineering and Management
YEAR: IV
THEORY   **SEMESTER: VII**

S. No.	Code No.	Subject	L	T	MM	Ex. Hrs.
1.	7IEM1	Manufacturing Planning and Control	3	1	100	3
2.	7IEM2	Operations Research - II	3	1	100	3
3.	7IEM3	Computer Aided Manufacturing	3	0	100	3
4.	7IEM4	Supply-Chain Management	3	0	100	3
5.	7IEM5	Business Process Reengineering	2	1	100	3
6.	7IEM6	Elective: (Any one of the Following)	2	0	100	3
	7IEM6.1	System Design				
	7IEM6.2	Neural Nets, Fuzzy systems and Applications				
	7IEM6.3	Optimization Techniques				
		Total	16	3	600	-

PRACTICALS AND SESSIONALS

S. No.	Code No.	Subject	T/S	P	MM
7.	7IEM7	CAM Lab - I	0	3	100
8.	7IEM8	Simulation lab - II	0	3	100
9.	7IEM9	Minor Project	0	4	75
10	7IEM10	Practical Training -II	0	3	75
11.	7IEMDC	Discipline and Extra Curricular Activities	0	0	50
		Total	0	13	400
		Grand Total			1000

BRANCH: Industrial Engineering and Management
YEAR: IV
THEORY   **SEMESTER: VIII**

S. No.	Code No.	Subject	L	T	MM	Ex. Hrs.
1.	8IEM1	Modelling and Optimization in FMS	4	1	100	3
2.	8IEM2	Project Management	4	1	100	3
3.	8IEM3	Elective –1: i. World Class Manufacturing System ii. Research Methodology iii.Management of Intellectual Property Rights	4	0	100	3
4.	8IEM4	Elective –2: (Any one of the Following) Engineering Ethics and Leadership Artificial Intelligence Introduction to Stochastic Models	4	0	100	3
		Total	16	2	400	-

PRACTICALS AND SESSIONALS

S. No.	Code No.	Subject	T/S	P	MM
5.	8IEM5	CAM Lab -II	0	3	100
6.	8IEM6	System Modeling lab	0	3	100
7.	8IEM7	Project	0	2	200
8.	8IEM8	Seminar	0	4	200
9	8IEMDC	Discipline and Extra Curricular Activities	0	0	50
		Total	0	12	600
		Grand Total			1000

5IEM1: Operations Research - 1

3L + 1T   MM: 100   Ex. Hrs. 3

UNIT 1:-
Overview of Operations Research: Linear Programming: LP formulation, graphical method, simplex method, duality and Sensitivity analysis, Transportation Model, Assignment Model.

UNIT 2:-
Integer Linear Programming, Branch & Bound Algorithms zero one Implicit Enumeration cutting Plane Algorithms. Replacement Models: Capital equipment replacement with time, group replacement of items subjected to total failure.

UNIT 3:-
Queuing Theory: Analysis of the following queues with Poisson pattern of arrival and exponentially distributed service times, Single channel queue with infinite customer population, Multichannel queue with infinite customer population, Single channel queue with finite customer population, Multichannel queue with finite customer population, Analysis of the queue with unlimited and limited system capacity.

UNIT 4:-
Simulation: Need of simulation, advantages and disadvantages of simulation method of simulation. Generation of Random numbers, Generation of Normal Random numbers, Generation of random numbers with any given distribution. Use of random numbers for system simulation, Application of simulation for solving queuing Inventory Maintenance, Scheduling and other industrial problems.

UNIT 5:-
Competitive Situations and Solutions: Game theory, two person zero sum game, approximate solution, simplified analysis for other competitive situations. Theory of Decision-Making: Decision making under certainty, risk and uncertainty, decision trees.

5IEM2: Management Information System

3L + 1T   MM: 100   Ex. Hrs. 3

Unit 1:-
Introduction: MIS and information systems; Management support system and classifications

Unit 2:-
Role of MIS: Strategic advantage with MIS; Systems approach to problem solving; Business Process Reengineering (BPR); Internet worked enterprise in MIS: Internet, Intranet, Extranet; Enterprise communication and collaboration

Unit 3:-
Decision support systems: MIS support for decision making; Decision support systems; Tools of business support systems: what if analysis, sensitivity analysis, goal seek analysis, optimisation analysis, data mining for decision support

Unit 4:-
Developing MIS systems: System Development Cycle; System Analysis; System Design (DFD and ER diagrams)

Unit 5:-
Applications: Cross-functional MIS; ERP; CRM; SCM; Transaction processing; Artificial intelligent technologies in business: neural network, fuzzy logic, genetic algorithm, virtual reality; Executive Information System; Expert Support Systems; Security and Ethical challenges

5IEM3: Quality Engineering and Management
3L + 1T   MM: 100   Ex. Hrs. 3

Unit 1:-
Quality: Quality conception, quality of design quality of conformance, cost of quality and value of quality, quality objectives, role of Statistical Quality Control for fulfilment of quality objectives; organisation for quality factors influencing quality. Zero defects.

Control Chart philosophy: Statistical Concepts; frequency distributions: averages and measures of dispersion; statistics and parameters; normal curve; estimating parameters. Control-chart limit factors; Shewhart's normal bowl; lack of control; interpreting patterns of variation.

Unit 2:-
X bar and R control-chart : objectives; subgrouping; recording measurements; plotting control charts; drawing conclusions; revising control limits; use of computer software

The Control Chart for Faction Rejected p chart; trial limits; standard values; revising control limits; steps for control-chart set-up; np chart; interpretation of lack of control.

Unit 3:-
The control Chart for Nonconformity: c chart; u chart; probability limits; Demerit control chart. Pareto Analysis Cause and Effect Analysis; weighting non-conformities.

Cumulative Sum Control Charts, mask construction; Average Run Length, EWMA control charts, comparison of X bar, CUSUM and EWMA control charts.

Unit 4:-

Process Evaluation and Control by Designs of Experiment: Various basic designs; Special Methods like EVOP, RSM and ROBUST Designs

Other statistical process control techniques : SPC for short production run; X bar & R chart, attribute control chart for short production run; modified control limits for for x bar chart, acceptance control chart; group control charts for multiple-stream processes; precontrol.

Unit 5:-

Fundamental Concepts in Acceptance Sampling, operating characteristic curves; attribute and variable plans, design of sampling plans, single; double; and multilevel plans. BIS sampling standards IS 2500 Part I & II. Continuous Sampling plans, Sequential sampling plans.

5IEM4: Strategic Management

3L   MM: 100   Ex. Hrs. 3

Unit 1:-
Introduction: Strategic management (SM) , Business Policy (BP) and Business Plan; Basic concepts of SM; Impact of
Globalisation and e-Com; Theories of organisational adaptation; Creating a learning organisation; Basic model of SM; Strategic
decision making; Impact of Internet; Firm and its environment.

Unit 2:-
Scanning the environment: Environmental scanning; Industry analysis; Competitive intelligence; Forecasting; Synthesis of
external factors; ETOP Study.
Internal scanning: Organisational analysis; resource-based approach; value chain analysis; Scanning functional resources;
Strategic audit;

Unit 3:-
Strategy formulation: Situational analysis: SWOT analysis, TOWS Matrix; Corporate strategy; Strategies for growth and
diversification; Process of strategic planning; Stages of corporate development; Portfolio analysis; Corporate parenting;
Functional strategy; Core competencies; Strategic choice.

Unit 4:-
Strategy implementation and control: Organising for action; Developing programmes, budgets and procedures; How strategy to
be implemented? Strategy implementation through structure, values, and ideologies; McKinsey's 7s framework; Acquisition of
resources and competence; Organization life cycle; Management & Control, Activity-based costing; Strategic Information
Systems

Unit 5:-
Other strategic issues: Strategic issues in managing technology and innovation; Strategic issues in entrepreneurial ventures and
small businesses; Strategic issues in not-for-profit organisations

5IEM5: Materials Management

3L   **MM: 100**   **Ex. Hrs. 3**

Unit 1:-

Materials Management Concepts and objectives for material function, Administrative practices, Purchasing system, Purchasing cycle, Make or buy decisions, Vendor development and evaluation, Reciprocity and ethics in purchasing.

Unit 2:-

Inventory control and management, Purchase negotiations and pricing - purchase procedures, Policy and procedure manuals.

Unit 3:-

Demand Forecasting, Roles and Applications of management Science, Value analysis

Unit 4:-

Import and canalisation, Legal aspects and considerations, Technological developments.

Unit 5:-

Spare parts management, Store layout and management traffic and transportation, Physical distribution, Disposal of scrap, Standardisation, Computer applications in purchasing and Inventory control, Evaluating materials management function. MIS for materials management, Materials budgetory control.

5IEM6: Reliability and Maintainability Engineering

3L + 1T   MM: 100   Ex. Hrs. 3

Unit 1:-
Maintenance in context: maintenance and profitability, terro-technology, application of terro-technology. Principles: the structure of plant, reason for nature of maintenance work, the production maintenance system a dynamic model.

Unit 2:-
Establishing a maintenance plan-preliminary consideration: items, classification of items, maintenance procedure, guidelines for machine procedures to items.
 Maintenance planning and control: Basic requirements, Management information, labour costs, computer based Management information system, work planning and work control, basic rules for success.

Unit 3:-
Introduction: Reliability concepts and patterns of failure, reliability Management, reliability, for system effectiveness. Reliability and hazard rates: Failure data, reliability function, failure rate and hazard rate, common distributions in failure mechanisms – experimental, Welbull, gamma, Normal, log normal, extreme value, model selection for components failure, failure
analysis.

Unit 4:-
Reliability prediction and analysis: reliability prediction based on exponential distribution, system reliability analysis – block diagram method, fault tree and success tree methods, event tree method, failure model, failure mechanism.

Unit 5:-
Reliability design: Design for reliability, design process, assessment methodology, reliability allocation, reliability improvement, selection of components to improve system reliability.