



**Rajasthan Technical University (RTU)**  
**Mechanical**  
**(Industrial Management and Engineering)**

**M. Tech Program in Mechanical Engineering with specialization in  
Industrial and Management Engineering (IME)**

**Courses**

The theory subjects will be of maximum 125 Marks each having 25 Marks as course work and 100 Marks for University examination.

**First Semester**

S. No.	Code No.	Subject	L	T	P	Max. Marks	Ex. Hrs.
1.	1MEIME1	Probability and statistics	3	1	0	125	3
2.	1MEIME2	Design of Organizations	3	1	0	125	3
3.	1MEIME3	Managerial accounting finance and economics	3	1	0	125	3
4.	1MEIME4	Operations research for management	3	1	0	125	3
5.	1MEIME5	Computer Lab	0	0	3	100	3
<b>Total</b>			12	4	3	600	

**Second Semester**

S. No.	Code No.	Subject	L	T	P	Max. Marks	Ex. Hrs.
6.	2MEIME6	Computer Aided Decision Systems	3	1	0	125	3
7.	2MEIME7	Design of Production Systems	3	1	0	125	3
8.	2MEIME8	Industrial Laws	3	1	0	125	3
9.	2MEIME9	Business Policy	3	1	0	125	3
10.	2MEIME10	Industrial Engg. Lab	0	0	3	100	3
<b>Total</b>			12	4	3	600	



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**Third Semester**

S. No.	Code No.	Subject	L	T	Max. Marks	Ex. Hrs.
11	3MEIME11	Elective 1	3	1	125	3
12	3MEIME12	Elective 2	3	1	125	3
13	3MEIME13	Seminar			150	
14	3MEIME14	Dissertation –I			100	
<b>Total</b>			6	2	500	

**Fourth Semester**

S. No.	Code No.	Subject	L	T	Max. Marks	Ex. Hrs.
15	4MEIME15	Dissertation- II			500	
<b>Total</b>					500	

**List of elective courses (For 3MEIME11 & 3MEIME12):**

Choose any two out of six given below.

**NETWORK FLOWS ALGORITHMS**

**COMBINATORIAL OPTIMIZATION**

**QUALITY ASSURANCE AND TAGUCHI METHODS**

**COMPUTER - INTEGRATED MANUFACTURING SYSTEMS**

**MANUFACTURING POLICY**

**INTELLIGENT MANUFACTURING SYSTEMS**



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## Mechanical

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#### **1MEIME1: PROBABILITY AND STATISTICS**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

Axioms of probability, Conditional probability, Discrete and continuous random variables, functions of random variables, Expectations of random variables. Jointly distributed random variable. Descriptive and inferential Statistics, Estimation of parameters, Test of hypothesis, Analysis of variance, Regression analysis, Introduction to statistical Packages.

#### **1MEIME2: DESIGN OF ORGANIZATIONS**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

Introduction to organizations and evolution of organization theory, Organization structure, Organization environment and culture, values and organizations as institutions Power and politics in organizations, organization conflict and change, organizational restrictions, Learning organizations and organization effectiveness.

#### **1MEIME3: MANAGERIAL ACCOUNTING FINANCE AND ECONOMICS**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

Financial Accounting, conventions, Balance sheet concepts, profit and Loss account, Accounting mechanics, Basic records, Preparing financial statements, Adjustment entries, Inventory valuation financial ratios, Sources of funds, Cost of capital, Cash Flow statements, Simulation of cash flow, Cost accounting, Cost classification, Allocation and absorption of cost, Relevant costs, Allocation joint costs, Design of historical and standard costing systems, Overhead cost control, Managerial Economics concept, Demand theory and demand assessment, Cost functions, Effect of plant size on cost, Production Functions and their estimation, Market structure and price, Capital budgeting.



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**1MEIME4: OPERATIONS RESEARCH FOR MANAGEMENT**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

Introduction Mathematical Modeling, Linear programming -  
Formulation, solution procedures, Duality, Sensitivity, Applications, Network methods -  
Max Flow, Min cost, Shortest path, Dynamic programming - Sequential decisions,  
Principle of optimality Applications Integer programming - Formulation,  
Nonlinear Programming - Applications and solution methods.

**1MEIME5: COMPUTER LAB**

**3P**

**MM:100**

**Ex.Hrs. 3**

Problem Formulation and software using OR packages such as LINDO/LINGO;  
Exposure to statistical packages such as Statistica /SPSS.



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#### **2MEIME6: COMPUTER AIDED DECISION SYSTEMS**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

System Analysis : Information System Analysis and Design, Decision Support System, Database Management Systems, Query Languages, Emerging Areas like communication network distributed systems and knowledge based systems, Simulation; Methodology Approaches, Programming Considerations, Languages and Data Structures, Statistical Considerations, Validation, Simulation Languages, Applications.

#### **2MEIME7: DESIGN OF PRODUCTION SYSTEMS**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

Production systems : concepts and integrated view, Policy Decisions, Capacity planning, Product development, Plant location, Plant layout, Materials handling, Assembly line balancing, Work design, Methods engineering, Human Factors engineering, Project Management and Network models, Total productivity Management

#### **2MEIME8: INDUSTRIAL LAWS**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

##### **Industries Development and Regulation**

Objects and definitions - an overview of current Industrial Policy; regulatory mechanism under the Industries (Development and Regulation) Law - registration and licensing of industrial undertakings, government agencies exemption from licensing provisions; substantial expansion; investigation; offences and penalties; miscellaneous provisions.

Small scale and ancillary units - policy and procedure for setting up Small Scale Industrial units; an overview of infrastructure, fiscal and other support schemes for Small Scale Industrial sector. Setting up units in Free Trade Zones and 100 per cent Export Oriented Units – policy and procedure. Procedure for obtaining industrial licenses - substantial expansion, manufacture of new products, change of location, etc; exemption from industrial licensing- role of various government agencies in matters relating to industrial licensing, investigation; offences and penalties.



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#### **Pollution Control and Environmental Protection**

Concept of sustainable development, Government policy regarding environment, salient features of the Air (Prevention and Control of Pollution) Law, Water and Environment (Protection) Law - various Boards and their functions and powers; duties of occupier of specified industries to ensure adherence to standards; offences by companies.

Legal and regulatory framework, procedures for obtaining various environment clearances; role and functions of Environment Tribunal/Authority; appearance before Environment Tribunal/Authority; environment audit.

#### **Consumer Protection and Corporate Responsibility**

Genesis of the law; objects and definitions; rights of consumers under the Consumer Protection Act; nature and scope of remedies. Consumer protection – appearance before Consumer Dispute Redressal forums.

#### **An Overview of Law relating to**

Factories; industrial disputes/relations; contract labour (regulation and abolition); employees' State insurance; employees' provident funds; payment of bonus; workmen's compensation; recruitment and related aspects; payment of wages; gratuity and trade unions.

#### **Intellectual Property Laws**

An overview of law and procedure relating to patents, trade marks and copy rights, etc.

### **2MEIME9: BUSINESS POLICY**

**3L+1T**

**MM:125**

**Ex.Hrs. 3**

Management Performance, the General Management Function, Corporate Strategy, Analysis of Strengths and Weaknesses, Opportunities and Threats, Strategic choices, Organizational Processes in Strategy Implementation, Individual group and structural issues, the Control Systems, Culture, Management Style