

**COURSE TITLE : INDUSTRIAL MANAGEMENT & SAFETY**  
**COURSE CODE : 5001**  
**COURSE CATEGORY : C**  
**PERIODS/WEEK : 4**  
**PERIODS/SEMESTER : 52/5**  
**CREDITS : 4**

**TIME SCHEDULE**

Module	Topic	Periods
1	Principles of management Human resources management Wages and incentives	13
2	Quality planning and Development Material and sales management	13
3	Project management techniques and quantitative techniques	13
4	Industrial safety , entrepreneurship	13
TOTAL		52

**COURSE OUTCOME**

Sl.No.	Student will be able to
1	Understand the principles of management practices
2	Appreciate the significance of human resources management
3	Understand the principles of wage payment system and incentives
4	Appreciate the significance of quality planning and development
5	Understand the functions of material and sales management
6	Appreciate the role of project management techniques
7	Apply the principles of quantitative techniques in management
8	Understand the features of industrial safety
9	Appreciate the qualities of an entrepreneur

## **SPECIFIC OUTCOME**

### **MODULE I**

- 1.1.0 Understand the principles of management practices.
  - 1.1.1 Explain the meaning of Management.
  - 1.1.2 Explain the development of management theory of F.W.Taylor and Henry Foyal.
  - 1.1.3 State and explain the functions of management .
  - 1.1.4 State the forms of business organization.
  - 1.1.5 Explain different types of ownership .
  - 1.1.6 Explain different types of organizational structure .
- 1.2.0 Appreciate the significance of human resources management
  - 1.2.1 Outline the importance of HRM.
  - 1.2.2 State and explain the functions of HRM .
  - 1.2.3 Explain the process of man power planning.
  - 1.2.4 Explain Job analysis, job evaluation, merit rating, performance appraisal .
  - 1.2.5 Describe the steps in selection of workers.
  - 1.2.6 Explain the objectives of training.
  - 1.2.7 State and explain the methods of training.
  - 1.2.8 Define labour turn over.
- 1.3.0 Understand the principles of wage payment system and incentives
  - 1.3.1 Define different types of wages.
  - 1.3.2 Define incentives.
  - 1.3.2 Identify financial, non-financial and semi financial incentives.

List different types of financial incentive plans.

### **MODULE II**

- 2.1.0 Appreciate the significance of quality planning and development.
  - 2.1.1 List the dimensions (characteristics) of quality.
  - 2.1.2 List the objectives of quality planning.
  - 2.1.3 Describe Three prong approach to quality planning.
  - 2.1.4 List the developments in quality planning.
  - 2.1.5 Explain the concept and role of ISO standards.
  - 2.1.6 List the elements of ISO 9000 series.
  - 2.1.7 List the steps for ISO 9000 installation.
  - 2.1.8 List the objectives of quality audit.
  - 2.1.9 Describe the concept of Total Quality Management (TQM).
  - 2.1.10 Discuss the link between ISO and TQM.
  - 2.1.11 List the ten “manthras” of TQM.
  - 2.1.12 Explain mission, vision and quality policy.
- 2.2.0 Understand the functions of material and sales management.
  - 2.2.1 List the objectives of purchase department.

- 2.2.2 State the buying techniques.
- 2.2.3 Describe purchase procedure.
- 2.2.4 Define inventory.
- 2.2.5 Classify the inventory.
- 2.2.6 Explain inventory models such as EOQ and ABC.
- 2.2.7 List the objectives of stores management.
- 2.2.8 Explain the functions of store keeping.
- 2.2.9 Describe the store keeping records.
- 2.2.10 Explain the concept of store layout.
- 2.2.11 Describe the centralised and de-centralised store.
- 2.2.12 Outline the importance of sales department.
- 2.2.13 List the functions of sales department.
- 2.2.14 Explain the process of sales forecasting.

### **MODULE III**

#### **3.1.0 Appreciate the role of project management techniques**

- 3.1.1 Outline the network technique .
- 3.1.2 List different applications of CPM and PERT
- 3.1.3 Outline scope of PERT and CPM
- 3.1.4 Define the terms used in CPM .
- 3.1.5 Compute the project duration, slack and critical path by using AOA method only.
- 3.1.6 Distinguish between CPM and PERT.
- 3.1.7 Define the terms used in PERT .
- 3.1.8 Explain the terms pessimistic, optimistic and most likely time.
- 3.1.9 Calculate the expected time for each activity.
- 3.1.10 Compute the project duration ,slack and mark the critical path.

#### **3.2.0 Apply the principles of quantitative techniques in management.**

- 3.2.1 List different quantitative techniques.
- 3.2.2 Formulation of Linear Programming Problem (LPP).
- 3.2.3 Graphical solution of given LPP on maximization and minimization.
- 3.2.4 Explain the scope of transportation problem.
- 3.2.5 Compute the initial feasible solution of transportation problem by using Least cost method
- 3.2.6 Explain game theory.
- 3.2.7 Compute the saddle point, optimum strategy of the game, two - person - zero sum using max- min and min-max principle.

#### **4.1.0 Understand the features of industrial safety**

- 4.1.1 Explain the importance and need for safety measures in industries
- 4.1.2 Define the meaning of the terms - factory, accident, frequency rate, severity rate, incidence rate, performance index, accident proneness, unsafe acts, unsafe conditions, job safety analysis, plant safety inspections, industrial safety policy.
- 4.1.3 Identify the various accident factors, mechanical factors, environmental factors, and personal factors.
- 4.1.4 Discuss the 4 E's of accident prevention technique.

- 4.1.5 Discuss the role of safety council and safety officer.
- 4.1.6 Discuss emergency preparedness and response.
- 4.1.7 Discuss the precautions to be observed in preventing accident while working in hazardous environment.

#### **4.2.0 Appreciate the qualities of an entrepreneur**

- 4.2.1 Describe the profile of an entrepreneur
- 4.2.2 List the functions of an entrepreneur
- 4.2.3 Identify the risk taking qualities of an entrepreneur
- 4.2.4 Explain the concept of student entrepreneur.
- 4.2.5 List the different factors contributing to the failure of entrepreneurial ventures
- 4.2.6 Identify industrial support needed programs existing in India, Kerala
- 4.2.7 State the concept of DSIR,TBI, MSME.etc.
- 4.2.8 State the steps involved in starting small-scale industry
- 4.2.9 Describe the procedure for the registration of SSI
- 4.2.10 Identify the net work of financial assistances given to an entrepreneur
- 4.2.11 Identify the different constituents of feasibility study
- 4.2.12 Prepare the feasibility report / project report

### **CONTENT DETAILS**

#### **MODULE I**

##### **1. Principles of management**

Introduction - meaning of management - development of management theory: - Taylor's scientific management,- Modern approaches-compare F.W. Taylor and Henry Fayol's contributions  
 Functions of management- Different types of ownership: - Sole proprietorship, partnership, private Ltd company, public Ltd company, co-operative society-transnational organizations (brief description only)  
 Organizational structure: - Definition of organization-components of organizational structure- different types of organizational structure-line, functional, line & staff organization (brief description)

##### **2. Human Resource Management (HRM)**

Concept of HR Management - functions of HRM - requirements of manpower planning - factors affecting the manpower planning - job evaluation - steps required for job evaluation - methods for job evaluation - merit rating - objectives and methods - performance appraisal - training - importance of training - methods of training - advantages of training (brief description only) , labour turn over.

##### **3. The principles of a good wage payment system**

Importance of good wage plan-types of wages - nominal, real, living, fair, and minimum wages - requirement of a good wage payment system - Incentives - definitions, types of incentive plan for dire

## **MODULE II**

### **1. Quality Planning and its developments**

Definitions of quality- dimensions of quality- ISO 9000 & Installation -Concept and role of ISO 9000, elements of ISO 9000, steps for installation of ISO 9000 - preparatory step, implementation step, registration and certification step-Quality Audit - objectives

list the objectives of quality planning -three prong approach to quality planning-

Documentation-Quality management system.

TQM -Concept, ten mantras of TQM, the link between ISO 9000 and TQM -mission, vision and quality policy.

### **2. Materials and sales management.**

**objectives of purchase department.-State the buying techniques.-Describe purchase procedure.**

classification -spot quotation -floating the limited enquiry -tenders -single and open -earnest money - security deposit

Inventory management -definition and -inventory models -EOQ and ABC.

Stores management -introduction -store keeping functions -duties of store keeper -store layout - centralized and decentralized store -store records -indent forms -bincard -store ledger. Sales - importance -functions of sales department -sales forecasting

## **MODULE III**

### **1. Project Management Techniques .**

Introduction to Network analysis - application of CPM and PERT -scope of CPM and PERT -commonly used terms in CPM: - Operation, pre-operation, post operation, concurrent operation, earliest finish time (EFT), latest finish time (LFT), critical activities, critical path, event, slack or float, dummy activity - procedure for CPM -simple problems on CPM (by AOA method only).

PERT - comparison between CPM and PERT -procedure for PERT - calculation of expected time - commonly used terms in PERT, event, activity, successor event, predecessor event, Earliest expected time, Latest allowable time, slack - simple problems in PERT.

### **2. Quantitative techniques in management.**

Introduction -methods -Linear programming: - Formulation of LPP -solution of given LPP using graphical method -transportation problem -meaning -initial feasible solution of transportation

## **MODULE IV**

### **1. Industrial safety.**

Importance of safety in work place -increasing trends in industrial accidents -terminology -factory - accident -incident -severity rate -- frequency rate -incidence rate -safety performance index -accident proneness -unsafe acts

list the causes of accidents: - Mechanical, Environmental, personnel factors -accident prevention techniques - 4 E'S of accident prevention technique .

organizing safety -role of management -safety officers -government norms -factories act of 1948 - factories rule 1960 -emergency preparedness and response -precautions to be observed in hazardous situations like toxic „flammable „electrical shock and material handling.

**2. concept of entrepreneurship**- profile of an entrepreneur- functions-risk taking qualities-concept of student entrepreneur.- factors contributing to the failure of entrepreneurial ventures- industrial support needed programs existing in India, Kerala-concept of DSIR, TBI, MSME. etc.- steps involved in starting small-scale industry- registration of SSI-agencies for financial assistances - feasibility study - Preparation of feasibility report and project report.

### **TEXT BOOKS**

1. Industrial Engineering and management-O P Khanna. Dhanpat Rai and sons, New Delhi
2. Quantitative techniques in management.-N D Vohra, TMH, New Delhi

### **REFERENCE BOOKS**

1. PERT and CPM principles and applications -LS Srinath,East West Press Pvt Ltd. New Delhi
2. Industrial Management. Dr.Deepak Kumar Battachariya-Vikas Publishing
3. Production Management- S K Hajra Choudhury, Nir jhar Roy, A K Hajra Choudhury, Media Promoters and publishers pvt Ltd, Mumbai
4. Industrial safety management -L M Deshmukh. TMH New Delhi
5. Entrepreneurship Development and Management – Dr. A K Singh – Laxmi Publications

Financial and semi financial incentives - financial incentive plans –comparison( straight piece rate system, straight piece rate with guaranteed minimum wage, differential piece rate system, Halsey plan, Rowan plan, Gantt plan )