 IIPM SCHOOL OF ENGINEERIN AND TECHNOLOGY

**LESSON PLAN: 2022-2023**

**INDUSTRIAL ENGINEERING & MANAGEMENT**

**Branch : Mechanical Semester: 6th**

**Duration : 60**

**Faculty name : Saritprava Sahoo**

**SYLLABUS**

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| **Unit – I** | **1. PLANT ENGINEERING:**  1.1 Selection of Site of Industry.  1.2 Define plant layout.  1.3 Describe the objective and principles of plant layout.  1.4 Explain Process Layout, Product Layout and Combination Layout.  1.5 Techniques to improve layout.  1.6 Principles of material handling equipment.  1.7 Plant maintenance.  1.7.1 Importance of plant maintenance.  1.7.2 Break down maintenance.  1.7.3 Preventive maintenance.  1.7.4 Scheduled maintenance.  **Self Study:** **Concepts to set up a good plant.** |
| **Unit – II** | **2. OPERATIONS RESEARCH:**  2.1 Introduction to Operations Research and its applications.  2.2 Define Linear Programming Problem,  2.3Solution of L.P.P. by graphical method.  2.4 Evaluation of Project completion time by Critical Path Method and PERT  (Simple problems)-  2.5Explain distinct features of PERT with respect to CPM.  **Self Study:** Concept of Linear Programming Problem |
| **Unit – III** | **INVENTORY CONTROL:**  3.1 Classification of inventory.  3.2 Objective of inventory control.  3.3 Describe the functions of inventories.  3.4 Benefits of inventory control.  3.5 Costs associated with inventory.  3.6 Terminology in inventory control  3.7 Explain and Derive economic order quantity for Basic model. (Solve  numerical)  3.8 Define and Explain ABC analysis. |
| **Unit – IV** | **INSPECTION AND QUALITY CONTROL:**  4.1Define Inspection and Quality control.  4.2Describe planning of inspection.  4.3 Describe types of inspection.  4.4 Advantages and disadvantages of quality control.  4.5 Study of factors influencing the quality of manufacture.  4.6 Explain the Concept of statistical quality control, Control charts (X, R,  P and C - charts).  4.7 Methods of attributes.  4.8 Concept of ISO 9001-2008.  4.9.1 Quality management system, Registration /certification procedure.  4.9.2 Benefits of ISO to the organization.  4.9.3 JIT, Six sigma,7S, Lean manufacturing  4.9.4 Solve related problems. |
| **Unit – V** | **PRODUCTION PLANNING AND CONTROL**  5.1 Introduction  5.2 Major functions of production planning and control  5.3 Methods of forecasting  5.3.1 Routing  5.3.2Scheduling  5.3.3 Dispatching  5.3.4 Controlling  5.4 Types of production  5.4.1 Mass production  5.4.2 Batch production  5.4.3 Job order production  5.5 Principles of product and process planning. |

**TEXT BOOKS& OTHER REFERENCES BOOKS**

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| **Text Books** | |
| 1. | **“INDUSTRIAL ENGINEERING & MANAGEMENT”, O.P.KHANNA, DHANPAT RAI & SONS.** |
| **2.** | **“INDUSTRIAL ENGG & PRODUCTION MANAGEMENT”, MARTAND TELSANG, S.CHAND.** |
| **Suggested / Reference Books** | |
| 1. | **“STATISTICAL QUALITY CONTROL” M.MAHAJAN, DHANPAT RAI & SONS** |

**Objective :** to produce goods and services for benefit to mankind. Such productions are done utilizing various resources like Men, Materials, machines and Money. Industrial engineering and quality control is the subject which allows optimized use of such resources and hence very important for a mechanical engineer.

**Learning Outcome :** After undergoing this course, the students will be able to:

1. Identify the place for a new plant set up and systematic arrangement of machinery and shop for smooth production.

2. Take right decisions to optimize resources utilizations by improving productivity of the lands , buildings, people, material, machines, money, methods and management effectively.

3. Understanding of stock management and maintenance to reduce plant ideal time.

4. To use the charts to record the quality of products.

5. To eliminate unproductive activities under the control of the management.

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| **Sl.No** | **Chapter** | **Proposed Week for Teaching** | **Period**  **No.** | **Subject Name** | **Important Teaching Points** | **Content Source** |
| 1 | **I** | 1st | 1 | **PLANT ENGINEERING** | * Introduction ofIndustrial Engineering & Management | Industrial Engineering & Management O.P.KHANNA |
| 2 | 2 | * Selection of Site of Industry. * Define plant layout. |
| 3 | 3 | * Describe the objective and * Principles of plant layout. |
| 4 | 4 | * Explain Process Layout, |
| 5 | 2nd | 1 | * Product Layout. |
| 6 | 2 | * Combination Layout. |
| 7 | 3 | * Techniques to improve layout. |
| 8 | 4 | * Principles of material handling equipment. |
| 9 | 3rd | 1 | * Plant maintenance. Importance of plant maintenance. |
| 10 | 2 | * Break down maintenance. * Preventive maintenance. * Scheduled maintenance. |
| 11 | **II** | 3 | **OPERATIONS RESEARCH** | * Introduction to Operations Research and its applications. |
| 12 | 4 | * Define Linear Programming Problem |
| Industrial Engineering & Management O.P.KHANNA |
| 13 | 4th | 1 | * Solution of L.P.P. by graphical method. |
| 14 | 2 | * Critical Path |
| 15 | 3 | * Evaluation of Project completion time by Critical Path |
| 16 | 4 | * Method and PERT |
| 17 | 5th | 1 | * (Simple problems) |
| 18 | 2 | * Explain distinct features of PERT with respect to CPM. |
| 19 | 3 | * ASSIGNMENT |
| 20 | 4 | * CLASS TEST |
| 21 | **III** | 6th | 1 | **INVENTORY CONTROL** | * Introduction of Inventory | Industrial Engineering & Management O.P.KHANNA |
| 22 | 2 | * Classification of Inventory |
| 23 | 3 | * Objective of inventory control. |
| 24 | 4 | * Describe the functions of   Inventories. |
| 25 |  | 7th | 1 | Benefits of inventory control. |
| 26 | 2 | Costs associated with inventory. |
| 27 | 3 | Terminology in inventory control |
| 28 | 4 | Explain and Derive economic order quantity for Basic model. |
| 29 | 8th | 1 | Solve numerical |
| 30 | 2 | Define and Explain ABC analysis |
| 31 | 3 | * ASSIGNMENT |
| 32 | 4 | * CLASS TEST |
| 33 | **IV** | 9th | 1 | **INSPECTION AND QUALITY CONTROL** | * Define Inspection and Quality control. |
| 34 | 2 | * Describe planning of inspection. |
| 35 | 3 | * Describe types of inspection. | Industrial Engineering & Management O.P.KHANNA |
| 36 | 4 | * Advantages and disadvantages of quality control. |
| 37 | 10th | 1 | * Study of factors influencing the quality of manufacture. |
| 38 | 2 | * Explain the Concept of statistical quality control, Control charts (X, R, * P and C - charts). |
| 39 | 3 | * Methods of attributes. |
| 40 | 4 | * Concept of ISO 9001-2008. |
| 41 | 11th | 1 | * Quality management system, Registration /certification procedure. |
| 42 |  | 2 | * Benefits of ISO to the organization. |
| 43 | 3 | * JIT, Six sigma, |
| 44 | 4 | * 7S, Lean manufacturing |
| 45 | 12th | 1 | * Solve related problems. |
| 46 | 2 | * ASSIGNMENT |
| 47 | 3 | * CLASS TEST | Industrial Engineering & Management O.P.KHANNA |
| 48 | **V** | 4 | **PRODUCTION PLANNING AND CONTROL** | * Introduction |
| 49 | 13th | 1 | * Major functions of production * planning and control |
| 50 | 2 | * Methods of forecasting * Routing * Scheduling |
| 51 | 3 | * Dispatching * Controlling |
| 52 | 4 | * Types of production * Mass production |
| 53 | 14th | 1 | * Batch production * Job order production |
| 54 | 2 | * Principles of product and process planning. |
| 55 | 3 | * ASSIGNMENT |
| 56 | 4 | * CLASS TEST |

Faculty Member HOD Principal/ Director