Industrial Automation

VOC-105: Occupational Practice Essentials

(2 Credits: 50 Marks)

Learning Objective:

1. Understand the role of Inventory management in organizations
2. Describe the key operations management decisions faced by managers
3. Understand practices like Quality Management, and Just-in-Time/Lean Operations
4. Understand the quantitative analysis of critical path method and review technique.

Learning Outcomes:

On completion of the course, students should be able to –

1	State the Inventory Management, quality management, recognize Manufacturing practices, Define of Project, Jobs, Events - Arrow Diagrams - Time Analysis and Derivation of the Critical Path.
2	Explain the effect of demand uncertainty, Risk pooling, A single warehouse inventory example
3	Apply Kaizen, T.P.M., S.M.E.D., 5-S Principles, Housekeeping, Kanban, Poka -Yoke, JIT as tools for better productivity
4	Compare centralized versus decentralized systems, plan JIT manufacturing and Lean manufacturing through waste elimination.
5	Test Problem solving tools such as- seven Tools for quality control such as Pareto charts, Check sheets, Cause and effect diagram, Scatter diagrams, Histogram, Graphs or flow charts, Control charts
6	Prepare Shortest Route Problem, develop Project Planning & Control by use of CPM/PERT Concepts

Course Contents:

Module 1 - Inventory Management **(8 Hrs)**

Introduction, A single warehouse inventory example, The economic lot size model, The effect of demand uncertainty, Risk pooling, Centralized versus decentralized systems, Managing inventory in the supply chain.

Module 2 – Manufacturing Tools **(6 Hrs)**

Total productivity through such practices- Kaizen, T.P.M., S.M.E.D., 5-S Principles, Housekeeping, Kanban, Poka -Yoke, JIT, JIT manufacturing and Lean manufacturing through waste elimination.

Module 3 – Quality Management **(6 Hrs)**

Introduction and evolution of quality movement, Problem solving tools such as- TQC Tools – problem solving, TQC Tools – Management, Quality Improvement and Total Employee Involvement

Module 4 - Network Analysis **(8 Hrs)**

Minimal Spanning Tree Problem - Shortest Route Problem, Maximal Flow in Capacitated Network - Concepts and Solution Algorithm as Applied to Problem, Project Planning & Control by use of CPM/PERT Concepts. Definitions of Project, Jobs, Events - Arrow Diagrams - Time Analysis and Derivation of the Critical Path.

Module V-

Presentation's, case studies, Assignments, Tutorials based on Module I to IV

References :

1 Toyota Production Systems - Taichi Ohno, Kaizen , Masaki Imai
2 Chronicles of a Quality Detective - Dr Shrinivas Gondhalekar, Payal Sheth
3 Beyond T.Q.M - By Robert L. Flood
4 T.Q.M Process - By Gopal Kanji, Mike Asher
5 Operation Research - Taha
6 Quantitative Techniques in Management – N.D.Vohra
7 Quantitative Techniques in Management – J.K.Sharma