# Lesson Plan: Operation Planning & Control – VIII Mechanical (MEC 801)

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|  | **1.1 INTRODUCTION (06)** | **03** |  |
| **MODUL - 01** | * What is Production and Operations? * What are the Functions of Production & Operations? * What is Production systems? | L1 |  |
| * What is Make to stock, Make to order? * What is Assemble to order and Engineer to order? | L2 |  |
| * What is layout and its importance? * What are different type of layouts? * Phases in Operation Planning & Control like Preplanning, Planning, Action & Control. | L3 |  |
| **1.2 Strategic Planning for Operations and Services:** | **03** |  |
| * Approaches like Forced Choice model and Operations Model * Quality and Productivity strategy * Technology strategy | L4 |  |
| Operations Strategies for Services  ***Types or Service Operations:***   * Quasi manufacturing * Customer as participants * Customer as product | L5 |  |
| * Classification of Services * Service capacity | L6 |  |
|  | **2.1 Forecasting: (08)** | **03** |  |
| **MODULE - 02** | * What is Forecasting? * What’s the need of Forecasting? * Operation Planning & Control and dimensions of Forecasting * Methods of forecasting * Qualitative methods and Quantitative methods | L7 |  |
| * Time series analysis * Least square method * Moving average method | L8 |  |
| * Exponential smoothing method * Forecasting Error | L9 |  |
| * Mean Absolute Deviation * Forecasting Bias | L10 |  |
| **2.2 Capacity Planning:** | **02** |  |
| * Measurement of capacity * Measures of operating capacity * Factors influencing effective capacity | L11, L12 |  |
| * Factors favouring over capacity and under capacity * Short range, medium range and long range capacity planning. | L13, L14 |  |
| * Capacity requirement Planning (CRP) | L15 |  |
|  | **2.3 Aggregate planning:** | **03** |  |
|  | * Concept of aggregate planning * Pure Strategy * Mixed Strategy * Level Strategy | L17 |  |
|  | * Rough cut capacity planning * Aggregate planning for Services; * Optimal Models for Aggregate Planning | L18 |  |
|  | * Linear Programming * Linear Decision Rules * Master Production Schedule |  |  |
|  | **3.1 Job shop/Intermittent Manufacturing Scheduling: (08)** | **05** |  |
| **Module - 03** | * Factors influencing scheduling * Inputs for scheduling * Forward Scheduling * Backward Scheduling * Product sequencing | L16 |  |
| * Stages in Scheduling * Loading and Dispatching * Dispatching * Progress report & expediting and control | L17 |  |
| * Basic scheduling problems * Priority Sequencing * Gantt Charts * Johnson’s Rule for optimal sequence of N jobs on 2 machine * Process N Jobs on 3 Machines (N/3 problem) and Jackson Algorithm * Processing of 2 Jobs on M Machine (2/M) problem, | L18  L19  L20 |  |
| **3.2 Project scheduling:** | **03** |  |
| * Network analysis - PERT & CPM | L21 |  |
| * Cost analysis & crashing | L22 |  |
| * Resource leveling and smoothening | L23 |  |
|  | **4.1 Material Requirement Planning: (08)** | **04** |  |
| **Module - 04** | * Introduction * Limitations of conventional EOQ * Objectives of MRP * Inputs of MRP-I * Outputs of MRP * MRP lot sizing and Estimation of planned order releases * Manufacturing resource planning (MRP-II) | L24  L25  L26  L27 |  |
| **4.2 Enterprise Resource Planning (ERP):** | **02** |  |
| * Evolution * Features * purpose of modeling an enterprise * ERP model for OPC * Modules in ERP * ERP Implementation Life Cycle * ERP packages like SAP-R3/Baan/PeopleSoft, | L28  L29 |  |
|  | **5.1 Facility layout planning: (06)** | **01** |  |
| **Module - 05** | * Factors influencing Plant Layout * Material Flow Patterns * Tools and Techniques used for Plant Layout Planning. | L30 |  |
| **5.2 Line Balancing:** | **05** |  |
| * Objectives * Constraints * terminology in assembly line * heuristic methods like * Kilbridge-Wester * Largest Candidate rule * Rank positional weight | L31  L32  L33  L34  L35 |  |
|  | **Module - 05** | **05** |  |
| **Module - 06** | * Introduction to JIT system * Lean, Agile and Synchronous manufacturing: * Concept * Characteristics * Components and Implementation. | L36  L37  L38  L39  L40 |  |