# 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,
 | L18L19L20 |  |
| **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)
 | L24L25L26L27 |  |
| **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,
 | L28L29 |  |
|  | **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
 | L31L32L33L34L35 |  |
|  | **Module - 05** | **05** |  |
| **Module - 06** | * Introduction to JIT system
* Lean, Agile and Synchronous manufacturing:
* Concept
* Characteristics
* Components and Implementation.
 | L36L37L38L39L40 |  |