Operations and Supply Chain Management

Swayam Prabha Course Code – G10

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COURSE OUTLINE	This course introduces the viewer to the basics of Operations and Supply Chain Management. The concepts in Operations Management are restricted to the planning and operational decisions within an organization while the supply chain concepts are for a network of organizations. The main emphasis of the course is on the basic concepts and on quantitative modeling of the various decision problems.

COURSE DETAILS

S. No	Module ID/ Lecture ID	Lecture Title/Topic
1	M1L1	Introduction – (Challenges, Methodologies)
2	M2L1	Forecasting – Time series models – Simple Exponential smoothing
3	M2L2	Forecasting – Linear Models, Regression, Holt's , seasonality
4	M2L3	Forecasting – Winter's model, causal models, Goodness of forecast, Aggregate Planning, Tabular method
5	M3L1	Aggregate Planning, Tabular method, Linear Programming
6	M3L2	Aggregate Planning, Transportation model
7	M3L3	Aggregate Planning, Dynamic Programming, backordering
8	M3L4	Aggregate Planning, Quadratic model, Demand and capacity planning

9	M4L1	Inventory Models – Costs, EOQ model
10	M4L2	Inventory – EOQ model graphs, with backordering
11	M4L3	Inventory – Models for all quantity and marginal quantity Discount
12	M4L4	Multiple Quantity Discount, Multiple item inventory- Constraint on numbers of orders
13	M4L5	Multiple item inventory – Constraint on money value, space, equal number of orders
14	M4L6	Multiple item inventory –combining orders,production consumption model
15	M4L7	Inventory – Production consumption model with backordering, Economic lot scheduling problem
16	M4L8	Economic lot scheduling problem, Supply Chain inventory
17	M5L1	Lot sizing
18	M5L2	Lot sizing – heuristics
19	M5L3	Disaggregation
20	M5L4	Disaggregation – time varying demand, Safety stock – ROL for discrete demand distribution
21	M5L5	Safety stock – ROL for normal distribution of lead time demand
22	M6L1	Integrated model, ROL for normal distribution of LTD and given mean
23	M6L2	Safety stock reduction – delayed Product differentiation, substitution. MOM
24	M6L3	Sequencing and scheduling – Assumptions, objectives and shop settings
25	M7L1	Single machine sequencing. Two machine flow shop – Johnson's algorithm
26	M7L2	Flow shop scheduling – Three machines, Johnson's algorithm and Branch and bound algorithm
27	M7L3	Flow shop scheduling – heuristics – Palmer, Campbell Dudek Smith algorithm
28	M7L4	Job shop scheduling – Gantt chart, Different dispatching rules

29	M7L5	Job shop scheduling – Shifting bottleneck heuristic
30	M7L6	Job shop scheduling – Shifting bottleneck heuristic. Line Balancing
31	M7L7	Line Balancing
32	M8L1	Location problems – p median problem, Fixed charge problem
33	M8L2	Location allocation problems in supply chain. Layout
34	M8L3	Quantitative models for layout, Summary
35	M9L1	Introduction to Supply Chain Management
36	M9L2	Location Problems
37	M9L3	Transportation and Distribution Models
38	M9L4	Transportation and Distribution Models(continued)
39	M9L5	Bin Packing and Travelling Salesman Problems
40	M9L6	Vehicle Routeing Problems
41	M9L7	Value of Information
42	M9L8	Introduction to Supply Chain Management