19BSM702T - Operations Research										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		TotalMarks
					MS	ES	IA	LW	LE/Viva	
3	1	--	4	4	25	50	25	--	--	100

OBJECTIVES

1. To make students understand about basics non - linear programming.
2. To make students understand about dynamic programming and its application is real world problems.
3. To introduce basic concepts and principles of inventory management
4. To make students aware about planning and scheduling issues and their solutions.

SYLLABUS

UNIT I	**09**

Non-Linear Programming: Convex function and its properties, basics of NLP, Method of Lagrange multiplier, Karush-Kuhn-Tucker optimality conditions, Quadratic Programming: Basic Concepts, Wolfe's method, Beale's method.

UNIT II	**10**

Dynamic Programming: Multistage decision processes, Recursive nature of computations, Forward and Backward recursion, Bellman's principle of optimality, Selective dynamic programming applications involving additive and multiplicative separable returns for objective as well as constraint functions, Problem of dimensionality.

UNIT III	**10**

Introduction to inventory systems, inventory classification and its use in controlling inventory. Deterministic inventory models: Economic order quantity (EOQ) model, EOQ with finite supply, EOQ with backorders, EOQ with constraints, All-units quantity discounts model.

UNIT IV	**10**

Single period probabilistic inventory models with discrete and continuous demand, determination of reorder point for deterministic and probabilistic Inventory System. Introduction to Production Planning and Scheduling, Aggregate production plan, Formulation of lot size production problem: Wagner and Whitin algorithm. Basic concepts of Just-in-Time (JIT) and Material Requirement Planning (MRP). Introduction to ERP – I & II.

UNIT-V	**13**

Useful NPTEL Lectures Link:

https://nptel.ac.in/courses/111105100/31
https://www.youtube.com/watch?v=ug7O1lSZyg0
https://nptel.ac.in/courses/110105067/42
https://nptel.ac.in/courses/110105067/43
https://nptel.ac.in/courses/112107238/58

https://nptel.ac.in/courses/112107238/60

APPROXIMATE TOTAL	52 Hours

OUTCOMES

1. Enable to optimize non - linear problems with or without constraints.
2. Enable to understand basics of dynamic programming and recursive nature of its computation.
3. Enable to solve deterministic and probabilistic EOQ model for optimal cycle time.
4. Enable to understand material requirement planning and enterprise resource planning.

TEXTS AND REFERENCES

1. Hamdy A. Taha: Operations Research-An Introduction, Prentice Hall, 9th Edition, - 2010.
2. S. Chandra, Jayadeva, AparnaMehra: Numerical Optimization with Application, Narosa Publishing House, 2009.
3. V. V. Sople: Supply Chain Management: Text and Cases. Pearson Education India, 2011.
4. A. R. Ravindran, and D.P. Warsing Jr.: Supply Chain Engineering: Models and Applications. CRC Press, 2012.
5. Gopalkrishanan P: Handbook of material management. Prentice Hall India Learning Private Limited; Second edition (2015).