***SUBJECT NO-IM31010, SUBJECT NAME- MANAGEMENT OF INVENTORY SYSTEMS***

***LTP- 3-1-0,CRD- 4***

**SYLLABUS :-**

**Prerequisites: IM31007 Production Planning and Control Introduction to Inventory and Materials Management: Definitions, Need for inventory, Structure of inventory models, Nature of analysis, Relationships with other functions, Inventory costs and their measurement, Types of inventory, Importance and areas of materials management, Selective inventory management techniques, Classification of inventory problems.Static Inventory Problems under Risk: General characteristics, Opportunity cost matrix and cost structure, Mathematical formulations (discrete and continuous cases), Imputation of costs, Problem solving and case studies.Static Inventory Problems under Uncertainty: General characteristics, Decision criteria for uncertainty and inventory problems, Distribution-free analysis (Tchebycheff and other inequalities), Comparison of analyses with full and partial information, Problem solving and case studies.Dynamic Inventory Problems under Certainty: General characteristics, Optimal lot size model (with constant and varying demand), Quantity discounts, Optimal policy curve for more than one item, Solution techniques for multiple items, Inventory problem formulation and solution under several types of constraints, Problem solving and case studies.Dynamic Inventory Problems under Risk: General characteristics, Types of inventory control systems, Switching matrices, Optimal selling policy with fluctuating prices, Queuing model for varying lead time, Problem solving and case studies.Dynamic Inventory Problems under Uncertainty: General characteristics, Moments of convolutions, Design of Q- and P-system of inventory control, Use of central warehouses, Problem solving and case studies.Design of Inventory Study and Decision Procedures: Elements of inventory study, Approaches available, Size of inventory investment and number of items carried, System analysis with many items carried, many locations, and many departments, System design by simulation, Problem solving and case studies.Current Approaches: Concepts of MRP and JIT-based production systems, Concept of zero inventory, Computerization of inventory and production management systems, Other issues.Other Areas of Materials Management: Fundamental concepts of and related techniques (quantitative and non-quantitative) in purchasing, storing, distribution, and value analysis and engineering, Problem solving and case studies. Textbooks Ã¢ÂÂ¢Starr, K. K. and D. W. Miller, Inventory Control: Theory and Practice, Prentice HallÃ¢ÂÂ¢Silver, E. A., D. F. Pyke and R. Peterson, Inventory Management and Production Planning and Scheduling, John Wiley, 3rd ed., 1998.ReferencesÃ¢ÂÂ¢Buchan, J.and E. Koenisberg, Scientific Inventory Management, Prentice HallÃ¢ÂÂ¢Orlicky, Material Requirements Planning, McGraw HillÃ¢ÂÂ¢Perlman, K.L., Handbook of Purchasing and Materials ManagementÃ¢ÂÂ¢Gopalakrishnan, P. and M. Sunderesan, Materials Management: An Integrated ApproachÃ¢ÂÂ¢Tersine, R. J., Principles of Inventory and Materials Management, PTR Prentice Hall, 4th ed., 1994Ã¢ÂÂ¢Hadley, G. and T. M. Whitin, Analysis of Inventory Systems, Prentice Hall.Ã¢ÂÂ¢Heinritz, S. F., P. V.**

**Farrell and C. L. Smith, Purchasing: Principles and Applications, Prentice Hall, 7th ed., 1986.**