COURSE NUMBER: IE 4551 (cross listed with IE 5551) 4 credits	**COURSE TITLE:** Production and Inventory Control
TERMS OFFERED: Spring	**PREREQUISITES:** Math 1371, 1372, 2372, 2374, ISyE 2010, and ISyE 3010 or instructor consent
TEXTBOOKS/REQUIRED MATERIAL: Hopp, W. and M. Spearman, *Factory Physics*, McGraw-Hill, Third Edition, 2008.	**PREPARED BY:** Saif Benjaafar **DATE OF PREPARATION:** October 20, 2011
COURSE LEADER(S): Saif Benjaafar	**CLASS/LABORATORY SCHEDULE:** **CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES:**
CATALOG DESCRIPTION: 1. Introduction to methods for managing production, inventory, and supply chain operations. Topics covered include demand forecasting, inventory control, production planning and scheduling, supply chain coordination, and manufacturing flow analysis. Implications of emerging technologies, business practices, and government regulations.	**COURSE TOPICS:** 2. Demand forecasting 3. Inventory control; deterministic and stochastic 4. Supply chain coordination 5. Production planning; material requirement planning 6. Operations scheduling 7. Manufacturing flow analysis
COURSE OBJECTIVES The objective of the course is to familiarize with quantitative models that can be used to support decisions in the areas of production and inventory control. Special emphasis will be given to the link between operational issues and strategic objectives regarding cost, responsiveness, flexibility, product variety, and customer differentiation, among others. Additional emphasis on implications of various	1. To introduce students the basic models in optimization; 2. To help students understand the optimality conditions for an optimization model; 3. To train students to use Excel and Matlab to solve linear and quadratic models. 4. To introduce students basic solution

emerging technologies, business practices, and government regulations.	methods, such as the simplex method for linear programming and the gradient method for nonlinear optimization. 5. To help students develop a systematic approach to optimization, including the modeling and the solution methods, and the interpretation of the solutions.
COURSE OUTCOMES	1. Students learn to apply quantitative models to make decisions in managing production and inventory systems 2. Students develop an understanding of interactions between different levels of the supply chain. 3. Students learn how to build decision support tools to design, optimize and simulate production inventory processes.
ASSESSMENT TOOLS:	1. 2-in class exams 2. 7 homework assignments 3. 1 final project 4. 1 paper presentation per week, lead each week by a group of 2 students