

School of Engineering and Computer Science
Mech 425: Introduction to Manufacturing Systems

Catalog Data:	Mech 425 Introduction to Manufacturing Systems; 3 credits Study of traditional and contemporary tools used to support direct manufacturing processes in a manufacturing enterprise.
Class Schedule:	Three 50-minute lecture sessions per week, for one semester.
Laboratory Schedule:	None
Prerequisites by Course:	Mech 310 or consent of instructor
Prerequisites by Topic:	Manufacturing processes Fundamental statistics
Required Texts:	Operational Management, Russell Taylor, 2 nd Ed., Prentice Hall
Course Coordinator:	Dr. Dave Kim
Course Objectives:	<ol style="list-style-type: none"> 1. Familiarity with the discipline of production and operations management (POM) as it pertains to the manufacturing industry and with the array of analytical and decision-making tools in the POM tool chest. 2. Ability to identify POM problems and solve those problems using one or more of these tools. 3. Knowledge of the distinctions among project, batch, mass, and continuous production processes and the organizational and efficiency measures for each. 4. Ability to make reasonable simplifying assumptions for analysis of production and apply “what-if” evaluations for different inputs. 5. Understanding of the logistics of manufacturing operations.
Topics Covered:	<ol style="list-style-type: none"> 1. Intro and Corp. Strategy 2. Decision Analysis Tools 3. Quality Management & 6 Sigma 4. DFM 5. SPC 6. Planning Productions Processes 7. Project Management 8. Facilities Planning 9. Production Planning 10. Inventory Management 11. Resource Planning (MRP, etc.) 12. Scheduling 13. Queuing Theory 14. Just-in-Time 15. Lean Manufacturing
Lab Experiments and Activities:	None

Course Outcomes:	<p>Students will be able to:</p> <p>A-3. Demonstrate knowledge of engineering principles (operations management) in manufacturing systems.</p> <p>A-4. Apply engineering principles (operations management) toward solving engineering problems in manufacturing systems.</p> <p>A-5. Demonstrate knowledge of basic principles of statistics.</p> <p>A-6. Apply statistical methods in analyzing data.</p> <p>E-1. Classify information to identify engineering problems in manufacturing systems.</p> <p>E-2. Use various techniques including decision making tools, Economic Order Quantity techniques, CPM/PERT methods to conduct manufacturing layout planning, inventory control, project management.</p> <p>E-3. Formulate control limits for SPC from operational data for attributes and variables, identify trends, and separate random from assignable causes.</p> <p>F-1. Recognize situations involving ethical considerations and be able to use reason to evaluate decisions.</p> <p>H-1. Describe how global commerce influences and is influenced by manufacturing.</p> <p>H-2. Explain how engineering decisions made about manufacturing impact society.</p> <p>H-4. Be aware of the impact of engineering solutions in an economic context.</p> <p>J-1. Identify contemporary issues in manufacturing systems and project management and describe their impacts.</p>		
Required or Elective Course:	Elective		
Contribution to Professional Component:	Engineering Topics		
Relationship of Course to Program:	Meets: Educational Objectives <u>1, 2, 3, 4</u> Program Outcomes <u>A, E, F, H, J</u>		
Prepared by:	Dr. Dave Kim	Date:	November 1, 2006
Approved by CAC:			