

<b>COURSE NUMBER:</b> IE 1001	<b>COURSE TITLE:</b> Introduction to Industrial and Systems Engineering
<b>TERMS OFFERED:</b> Spring	<b>PREREQUISITES:</b> None
<b>TEXTBOOKS/REQUIRED MATERIAL:</b> Introduction to Industrial and Systems Engineering, by Turner, Third Edition, Prentice-Hall, Inc.	<b>PREPARED BY:</b> John Gunnar Carlsson  <b>DATE OF PREPARATION:</b> October 19, 2011
<b>COURSE LEADER(S):</b> John Gunnar Carlsson	<b>CLASS/LABORATORY SCHEDULE:</b> Two 115-minute lectures per week  <b>CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES: 100%</b> Engineering Topics
<b>CATALOG DESCRIPTION:</b> History and development of industrial and systems engineering, operations planning, quality control, human factors, resource management, financial engineering, facility location and layout, optimization, probabilistic/stochastic models, simulation, project management, management systems design, computer and information systems management	<b>COURSE TOPICS:</b> 1. History and major developments in industrial and systems engineering in the last 100 years, and relevant current examples of successful ISyE practices and principles in use. 2. Operations and production planning, operations and resource management, logistics, and quality control. 3. Human factors: equipment design, task design, and environmental design. 4. Optimization: linear, nonlinear, integer, and mixed-integer programming. 5. Probabilistic and stochastic models: modelling, understanding, and simulating uncertainty in engineering practice.
<b>COURSE OBJECTIVES</b> 1. To give students an overview of what industrial and systems engineering is, and what industrial and systems engineers do. 2. To help students learn to analyze real-life problems encountered in industrial and systems engineering scenarios and use the appropriate methods to solve them and present solutions. 3. To introduce students to modern techniques, algorithms, and software for modelling, analyzing, and solving real-life	

<p>problems in industrial and systems engineering, including but not limited to Excel, MATLAB, CVX, CPLEX, and AMPL.</p> <p>4. To engage students in interactive sessions with with practitioners of industrial and systems engineering in the private and public sectors.</p> <p>5. To enable students to communicate and present their results effectively.</p>	
<p><b>COURSE OUTCOMES</b></p> <p>1. Students will learn the fundamental principles of industrial and systems engineering and understand the abilities and responsibilities of an industrial and systems engineer.</p> <p>2. Students will learn how to analyze and identify instances of industrial and systems engineering problems in real-life examples.</p> <p>3. Students will learn how to use modern software tools for solving industrial and systems engineering problems.</p> <p>4. Students will interact with industrial and systems engineering practitioners in the private and public sector to understand how ISyE techniques are adapted and utilized outside of the classroom.</p>	
<p><b>ASSESSMENT TOOLS:</b></p> <p>Weekly assignments organized by topic, a final project, one midterm examination, and one final examination.</p>	