

## Industrial Engineering Program

<b>1. COURSE NUMBER AND NAME</b>	<b>IE 331 - Applied Statistical Methods</b>
<b>2. CREDITS AND CONTACT HOURS</b>	3 Credits. 3 Contact Hours
<b>3. COURSE INSTRUCTOR</b>	Golgen Bengu
<b>4. TEXT BOOK</b>	Ross, Sheldon, Introductory Statistics, McGraw-Hill Publishing, 1996
<b>4A. OTHER MATERIAL</b>	.
<b>5A. CATALOG DESCRIPTION</b>	A presentation of statistical analysis techniques and their applications. Topics include the statistical measures describing data, frequency distributions, probability distributions, sampling parameter estimation, hypothesis testing, regression analyses, and analyses of variance. Special emphasis on their application to industrial fields.
<b>5B. PREREQUISITES</b>	Math 211
<b>5C. REQUIRED, ELECTIVE OR SELECTED ELECTIVE</b>	Required
<b>6A. SPECIFIC OUTCOMES OF INSTRUCTION</b>	<p>The students will:</p> <ol style="list-style-type: none"> <li>1 Use computer graphics and object oriented interactive multimedia development and application methods in the industrial and systems engineering context (a, e).</li> <li>2 Be able to create new ideas and turn them into a working prototype (c, d).</li> <li>3 Learn procedures, tools and software programs, as validation tools for the methods (k).</li> <li>4 Create and use process, analytical requirements analysis, and process risk analysis models (c, d).</li> <li>5 Learn the evaluation/validation process, as well as gain practical COTS skills as they apply the learned methods and tools to real-world IE challenges (e, f, g, k).</li> </ol>
<b>6B. CRITERION 3 OUTCOMES ADDRESSED</b>	<p>The mapping of the five (5) outcomes of instruction of item 6A to the Criterion 3 outcomes (a-k) is as follows:</p> <ol style="list-style-type: none"> <li>1. Satisfies Criterion 3 outcomes a and e.</li> <li>2. Satisfies Criterion 3 outcomes c and d.</li> <li>3. Satisfies Criterion 3 outcome k.</li> <li>4. Satisfies Criterion 3 outcomes c and d.</li> <li>5. Satisfies Criterion 3 outcomes e, f, g and k.</li> </ol>

<b>7. TOPICS COVERED</b>	<ol style="list-style-type: none"><li>1. Introduction to statistics and data analysis</li><li>2. Describing data sets</li><li>3. Using statistics to summarize data sets</li><li>4. Probability</li><li>5. Discrete random variables, normal random variable</li><li>6. Distribution of sampling statistics</li><li>7. Estimation</li><li>8. Testing statistical hypotheses</li><li>9. Hypothesis tests concerning two populations</li><li>10. Analysis of variance</li><li>11. Linear Regression</li><li>12. Chi-square goodness of fit test</li><li>13. Nonparametric hypothesis test</li><li>14. Quality control</li></ol>
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