Course Name:
Fundamentals of Risk Management

<table>
<thead>
<tr>
<th>Course Number: 20-501</th>
<th>Credit: 3</th>
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<tr>
<td>Program: Undergraduate</td>
<td>Course Type: Technical elective</td>
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<tr>
<td>Prerequisite: Engineering Probability and Statistics</td>
<td>Corequisite: -</td>
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Course Description (Objectives):
This course examines the importance of system reliability in uncertain conditions and risk management. Also, issues such as assessing risk in decision making, modeling engineering problems, simulation and cost-benefit evaluation of options are discussed.

Course Content (outline):

- Introduction and background
  - Basic Probability Concepts
  - Uncertainty Modeling
  - Probability Distributions
  - Random Sampling and Simulation
- Statistical Analysis
  - Distribution Selection and Goodness of Fit
  - Parameter Estimation
  - Sampling Uncertainty
- Simulation and Analytical Methods for Analytical Reliability Analysis
  - Reliability Index and Failure Probability
  - Limit State Functions and Solving Methods
- Survival Analysis
  - Failure and Hazard Rate
  - Mean Time to Failure
- Decision Analysis
  - Fault Tree Analysis
  - Importance Measures
  - Event Tree Analysis
- Life Cycle Management
  - Risk Analysis Methods
  - Cost-Benefit Analysis
References: