Course Name:

Structural Reliability & Probabilistic Modeling

Course Number: 20-130	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

The main objective of this course is to teach how to model and analyze engineering problems while accounting for uncertainties, reliability, and risk-based decision-making. Students will become familiar with the concepts and tools needed for probabilistic analysis and gain the ability to implement them in various engineering applications.

Course Content (outline):

- Chapter 1: Introduction and Background
- Chapter 2: Decision Analysis
- Chapter 3: Probabilistic Modeling
- Chapter 4: Reliability Analysis

References:

- Haldar and Mahadevan (1999), Probability, Reliability, and Statistical Methods in Engineering Design, Wiley.
- Der Kiureghian (2005), First- and Second-order Reliability Methods. Chapter 14 in Engineering Design Reliability Handbook, Edited by Nikolaidis, Ghiocel, and Singhal, CRC Press.
- Melchers (1999), Structural Reliability: Analysis and Prediction, Prentice Hall.
- Ditlevsen and Madesn (2007), Structural Reliability Methods, John Wiley & Sons, Chichester, UK.
- Ang and Tang (2007), Probability Concepts in Engineering: Emphasis on Applications in Civil and Environmental Engineering, Wiley.
- Madsen, Krenk, and Lind (1986), Methods of Structural Safety, Prentice-Hall.
- Benjamin & Cornell (1970), Probability, Statistics and Decision for Civil Engineers,McGraw-Hill.
- Ang and Tang (1984), Probability Concepts in Engineering Planning and Design, Volume II, Decision, Risk and Reliability, Wile.