

CE 392: Stochastic Concepts and Methods in Civil Engineering

COURSE OUTLINE

PART 1: PROBABILITY

Systems and Models in Civil Engineering

The Basics of Probability

Random Variables

Development of Probability Distributions from Raw Data

Parameters and Shapes of Probability Distributions

Mathematical Expectation

Continuous Probability Distributions (Uniform, Standard, Standard Normal, Gamma, Beta, Chi)

Discrete Probability Distributions (Bernoulli, Binomial, Geometric, Poisson)

PART 2: STATISTICS

Graphical Descriptive Statistics

Numerical Descriptive Statistics

Population and Sampling

Sampling Distributions

Point Estimation

Interval Estimation

Hypothesis Testing

Risk Analysis and Decision Theory

Development of Statistical Regression Model