

FAME	ENSEA	
	Probability and Statistics	
US Credits : 3	Lecture; Tutorials : 45h	Language : English

Summary

This course allows students to understand the basis principles in Probability and Statistics. The first three chapters cover basics of probability and introduce many fundamentals that are later necessary in statistical inference studies. Chapter 4 define the mathematical expectation. Chapters 5 and 6 introduce some discrete and continuous distributions. Chapter 5, 6 and 7 represent the central core of statistical inference, estimation (point and interval) and hypothesis testing. A major feature of these chapters is the division into methods of finding appropriate statistical techniques and methods of evaluating these techniques. Chapter 8 treats the theory of linear regression; the major purpose of regression is to explore the dependence of one variable on others.

Prerequisites

- Calculus and analytical geometry (including vector analysis)
- Usual functions. Euclidian space. Partial differentiation. Multiple integrals. Line and surface integrals. Integral theorems of vector calculus

Contents

- Elementary Probability Theory including discrete and continuous distributions:
 - Discrete Uniform Distribution, Hyper geometric Distribution, Binomial Distribution, Poisson Distribution.
 - Continuous Uniform Distribution, Exponential Distribution, Normal Distribution
- Multiple Random Variables.
- Properties of a Random Sample:
 - Strong Law of Large Numbers.
 - Central Limit Theorem.
 - Slutsky's Theorem.
- Estimation: the Likelihood Principle, Maximum Likelihood Estimators, Methods of Evaluating Estimators.
- Confidence intervals: Methods of finding interval estimators, Methods of evaluating interval estimators.
- Hypothesis Testing: Methods of finding tests, Methods of evaluating tests.
- Simple Linear Regression.
- Applications.

Organization

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Textbook

Walpole, Meyers, Meyers, Ye, *Probability and Statistics for Engineers and Scientists*, 9th ed., Prentice Hall

Similar to the following courses

- IIT Chicago MATH 374/ 474/ 475
- University at Buffalo STA 301 & 302
- University of Pittsburgh ENGR 20
- University of Illinois at Urbana-Champaign
- Mississippi State University IE 4613
- University of Michigan at AA STAT 412
- Michigan Tech MA 4760