STAT20060 - Statistics and Probability
Handout 1 - Introduction

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Introduction

About me:

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Office Hours: Wednesdays, 10:00–12:00.

About the course:

Text Books:
- Statistics by McClave and Sincich.
- ... any introductory statistics text.

Assesment:
- Mid-term Multiple Choice Exam (10%).
  – Tuesday 24th February, 7pm in Blackrock.
- Computer lab exam (20%).
  – Tuesday April 21st, 6pm.
- End of semester exam (70 %).

Introduction

Lectures:

- Monday 9:00 – 10:00 (H2.18 – Accenture Theatre)
- Wednesday 9:00 – 10:00 (H2.18 – Accenture Theatre)

Tutorials:

- Friday 10:00 – 11:00 (H2.18 – Accenture Theatre)
- Begin in week 3, timetable on blackboard.
- Alternate between 2 groups.
- Group 1: Surnames A-L.
- Group 2: Surnames M-Z.

Practicals:

- Begin week 3, timetable on blackboard.
- 7 offerings. Register to one online.
- 4 software classes over the semester.

Lecturing format

- Lecture notes on blackboard.
- Best to print out slides, have notes in front of you.
- Please write additional notes.
- **Note:** I will frequently use the overhead projector for worked examples!
- Mixture of theory and practical examples.
- Always have a calculator ready.
- Always bring the notes for the relevant class and the classes before.
- **Please** ask questions.

Module overview

The course has six main (partially overlapping) parts:

- Descriptive Statistics
- Probability Theory
- Random Variables and Probability Distributions.
- Statistical Inference.
- Regression Analysis
- Quality Control

Module overview

In more detail:

- Descriptive Statistics:
  - Numerical and graphical methods for summarising data.
- Probability Theory:
  - Elementary probability.
  - Events; Independence; Mutually exclusivity.
  - Additive rule; Multiplicative rule; Conditional probability.
  - Expected value; Variance.
- Discrete Probability Distributions
  - Probability mass functions
  - Binomial.
  - Poisson.
  - Hypergeometric.

Module overview

- Continuous Probability Distributions:
  - Probability density functions.
  - Uniform.
  - Exponential.
  - Weibull.
  - Normal.
- Statistical Inference:
  - Estimation.
  - Confidence Intervals.
  - Testing.
- Regression Analysis:
  - Correlation.
  - Simple linear regression.
- Quality Control
  - $\bar{X}$ - chart
  - R chart