CM 2110 Calculus and Statistical Distributions

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Contents

Course Syllabus

Pre-requisites

None

Learning Outcomes

On successful completion of this module, students will be able to plan more carefully the design of experiment in advance which provide evidence for or against theories of cause and effect and make inferences about population characteristics based on sample information and thereby solve data analysis problems in different application domains.

Outline Syllabus

- Functions of Several Variables
- Linear Algebra
- Coordinate Systems & Vectors
- Differential Equations
- **Statistical Distributions**
- **Estimation**
- **Hypothesis Testing**
- **Design of Experiments**

Remark:

This course module contains two main sections: (1) mathematics and (2) statistics. This syllabus is designed for the statistics section. Lectures for mathematics section and statistics section are conducted by two lecturers as two separate sub modules (1.5 hour lectures/Week). End Semester Examination is conducted as a single examination.

Method of Assessment

- Mid-semester examination
- End-semester examination

0.1 Recommended Texts

- Mood, A.M., Graybill, F.A. and Boes, D.C. (2007): Introduction to the Theory of Statistics, 3rd Edn. (Reprint). Tata McGraw-Hill Pub. Co. Ltd.
- Montgomery, D. C. (2017). Design and analysis of experiments. John wiley & sons.

Lecturer

Dr. Priyanga D. Talagala

Schedule

Lectures:

- Monday [1.15 pm - 4.30 pm]

Tutorial:

- Thursday [1.15 pm - 4.30 pm]

Consultation time:

- Tuesday [11.30 am to 12.30 pm]

Chapter 1

Statistical Distributions

Chapter 2

Estimations

2.1 Point Estimation

2.1.1 Methods of finding point estimators

2.1.2 Methods of evaluating point estimators

2.2 Interval Estimation

2.2.1 Interpretation of confidence intervals

2.2.2 Methods of finding interval estimators

2.2.3 Methods of evaluating interval estimators

Chapter 3

Hypothesis Testing

3.1 Null and alternative hypotheses

3.2 Errors in testing hypotheses-type I and type II error

3.3 Significance level, size, power of a test

3.4 Formulation of hypotheses

3.5 Methods of testing hypotheses

Chapter 4

Design of Experiments

4.1 ntroduction to experimental design

4.2 Basic principles of experimental design

4.3 Completely randomized design