

# MATH 3426 Sampling

## Course Outline – Spring 2025

### 1. Instructor

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### 2. Teaching Assistant

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### 3. Meeting Time and Venue

#### Lectures:

##### **L1**

**Date/Time:** 04:00pm-05:20pm (Mon), 12:00noon-01:20pm (Fri)

**Venue:** Room 5583

#### Tutorials:

##### **T1A**

**Date/Time:** 11:00am-11:50am (Tue)

**Venue:** LSK1032

##### **T1B**

**Date/Time:** 02:00pm-02:50pm (Tue)

**Venue:** Room 4502

### 4. Course Description

Credit Points: 3 units

Pre-requisite: MATH 2411

Brief information:

This course covers basic and standard sampling design and estimation methods. Implementation with R/Excel will also be discussed for survey data analysis. Topics include simple random sampling, stratified random sampling, systematical sampling, cluster sampling, etc.

## 5. Intended Learning Outcomes

On successful completion of this course, students are expected to be able to:

| No. | ILOs                                                                                    |
|-----|-----------------------------------------------------------------------------------------|
| 1   | Recognize and use appropriately important technical terms and definitions in sampling.  |
| 2   | Understand the estimators in different sampling schemes and apply them in concise form. |
| 3   | Apply sampling techniques in familiar situations.                                       |
| 4   | Analyze survey data using different statistical models with R/ Excel.                   |

## 6. Assessment Scheme

- Examination duration: 2 or 3 hrs for the final exam.
- Percentage of examination.

### Assessment

30% by assignments

70% by final exam

### Assessing Course ILOs

1, 2, 3, 4

1, 2, 3, 4

- This course will be assessed using criterion-referencing and grades will not be assigned using a curve.

## 7. Course AI policy

Students are permitted to consult any person—including the instructor, teaching assistants (TAs), and classmates—for ideas and hints while completing homework assignments. The use of ChatGPT and other generative AI tools is also allowed. However, students are required to write up the solutions independently and are responsible for ensuring that their submissions are correct and comply with University rules and laws, including those regarding plagiarism.

Students are particularly cautioned about the potential inaccuracies and fallacies that may arise from AI-generated answers. Additionally, all examinations are closed book, meaning that AI tools and resources will not be available during exams. This policy is in place to prevent overreliance on such tools and to ensure that assessments accurately reflect each student's individual understanding and capabilities.

## 8. Student Learning Resources

Lecture Notes:

The course notes are available online. These notes give a concise (to the point) presentation of the course material, usually enough for most students. Some supplementary material can also be found and downloaded on the course webpage.

Reference Books:

- “Elementary Survey Sampling” (Duxbury Press) by Richard L. Scheaffer, William Mendenhall, R. Lyman Ott, Kenneth G. Gerow.

## **9. Teaching**

Weekly schedule: 3 hrs for lecture and 1 hr for tutorial

## **10. Course Schedule**

Keyword Syllabus:

- Introduction to survey sampling
- Overview of the process of survey sampling
- Simple Random Sampling
- Stratified Simple Random Sampling
- Systematic Sampling
- Cluster Sampling
- Survey Data Analysis