



Bachelor of Science Program
Undergraduate

Department of Applied Statistics
Faculty of Applied Science

Course Code 040513112 Sampling Techniques

Name of Institution King Mongkut's University of Technology North Bangkok

Campus/Faculty/Dept/Division Bangkok/Applied Science/Applied Statistics/Applied Statistics

Section 1: General Information

1. Course code and course title

040513112 Sampling Techniques

2. Total credits

3 credits (3-0-6)

3. Curriculum and course category:

Curriculum: Bachelor of Science in Business Statistics and Actuarial Science

Course category: Core Course

4. Course coordinator/ Instructors

Assoc. Prof. Dr. Nuanpan Lawson

5. Semester/ year of study

1/2026

6. Pre-requisite (if any)

None

7. Co-requisites (if any)

None

8. Venue of study

Faculty of Engineering, KMUTNB

9. Information for quality assurance in education

This course shows evidence of:

- ☒ Development of implementation from previous practices, e.g. the improvement of class teaching, course content, content classification and methods used for learning assessment
- ☐ Involvement from professional bodies/ external agencies in instruction; thus enhancing student academic and professional experiences
- ☒ Integration of research or creative activities with instruction; use of research-based learning management; knowledge management practices for learning improvement



- ☐ Integration of academic services and course implementation
- ☐ Combination of cultural heritage preservation efforts into instruction or student activities

10. Date of latest revision:

May 3, 2026

Section 2: Course Description and Implementation**1. Course Description**

Non-probability sampling; Convenience sampling, Purposive sampling, Quota sampling, Snowball sampling, Probability sampling; Simple random sampling, Stratified sampling, Systematic sampling, Cluster sampling, Multi-stage cluster sampling, Ratio and Regression estimation

2. Number of hours per semester

Lecture	Practice	Self-study
45 hours/semester (3 hours/week)	---	90 hours/semester (6 hours/week)

Course Category ☒ Lecture ☐ Practice

Course Evaluation ☒ A-F ☐ S/U ☐ P

3. Number of hours per week for academic guidance to individual students

1. Giving academic advice (minimally 6 hours per week)
2. Giving academic advice through the email and Google Classroom

4. Course Learning Outcomes (CLOs): Students should be able to:

- CLO 1. Explain the statistical process for organizing and analyzing data
- CLO 2. Understanding of statistical tools to analyze data
- CLO 3. Analyze statistical data and interpret the results accurately
- CLO 4. Apply statistical tools appropriately
- CLO 5. Apply statistical program for selected statistical tools appropriately

5. The mapping between Expected Learning Outcomes (ELOs) from the curriculum and Course Learning Outcomes (CLOs)



Table 5.1 Mapping desirable characteristics of ELOs and CLOs (for specific courses designed for a specific curriculum)

ELOs/CLOs	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
ELO 1 Honest, responsible, and ethical	✓	✓			
ELO 2 Can manage data and choose appropriate statistical methods	✓	✓			
ELO 3 Can analyze data and apply appropriate statistical tools		✓	✓		
ELO 5 Can cooperate with others				✓	
ELO 6 Can process data using statistical programs					✓

Section 3: Student Improvement in relation to Course Learning Outcomes (CLOs)

Organizing learning to develop skills/ knowledge; evaluation of CLOs in accordance with the ones identified in Section 2.4

Course Learning Outcomes (CLOs)	Teaching Methods compliant with CLOs	Evaluation Methods compliant with CLOs
CLO 1	Lecture with examples using PowerPoint, assignment	- Midterm examination - Assignment evaluation
CLO 2	Lecture with examples using PowerPoint, assignment	- Midterm examination - Assignment evaluation
CLO 3	Lecture with examples using PowerPoint, assignment	- Midterm and final examinations - Assignment evaluation
CLO 4	Lecture with examples using PowerPoint, case studies, assignment	- Final examination - Assignment evaluation
CLO 5	Lecture with examples of the using of statistical program for analyzing data, assignment	- Assignment evaluation



Section 4: Lesson Plan and Evaluation

1. Lesson Plan

Week	Topics/ Details	CLOs	Hours	Learning and teaching activities; teaching media (if any)	Lecturer
1	Explain the learning objectives, the importance of sampling, and the necessity of using sampling techniques	1	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
2	Chapter 1 Introduction - Definitions - Type of samplings	1, 2	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
3	Chapter 2 Simple random sampling - Simple random sampling with replacement - Simple random sampling without replacement - Estimating population mean and population total	2, 3	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
4	Chapter 2 Simple random sampling - Estimating population mean proportion - Calculation of sample size	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
5-6	Chapter 3 Stratified sampling - Estimating population mean and population total - Estimating population mean proportion	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson



Week	Topics/ Details	CLOs	Hours	Learning and teaching activities; teaching media (if any)	Lecturer
7	Chapter 3 Stratified sampling - Calculation of sample size - Efficacy comparison of estimation of population proportion	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
8	Chapter 4 Systematic sampling -Estimating population mean and population total - Estimating population mean proportion - Calculation of sample size	2,3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
9	Midterm exam				
10	Chapter 5 Ratio and regression estimators -Estimating population mean and population total under SRS - Estimating population mean proportion under SRS - Calculation of sample size	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
11	Chapter 5 Ratio and regression estimators -Estimating population mean and population total under stratified random sampling - Regression estimator	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson



Week	Topics/ Details	CLOs	Hours	Learning and teaching activities; teaching media (if any)	Lecturer
12	Chapter 6 Cluster sampling - Introduction -Estimating population mean and population total	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
13-14	Chapter 6 Cluster sampling - Estimating population mean proportion - Calculation of sample size	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
15	Chapter 7 Multi- stage cluster sampling -Estimating population mean and population total - Estimating population mean proportion	2, 3, 5	3	Lecture/Examples	Assoc. Prof. Dr. Nuanpan Lawson
16	Report and presentation	2, 4	3	Report and presentation	Assoc. Prof. Dr. Nuanpan Lawson
17-18	Final exam				
		Total	45		

2. Evaluation Plan (in accordance with OBE 2 mapping framework)

Course Learning Outcomes (CLOs)	Evaluation Methods	Week of Evaluation	Percentage of Evaluation
CLO 1, 2, 3, 5	Midterm examination	9	30%
CLO 1, 2, 3, 5	Final examination	17-18	30%
CLO 4	Report and Presentation	16	40%



Section 5 Teaching/Learning Resources

Textbooks and materials

- Lawson, N. (2026) Sampling Techniques. Bangkok: King Mongkut's University of Technology North Bangkok Publisher
- Cochran, W. G. (1977) Sampling Tehniques. 3rd Edition, John Wiley & Sons. New York.
- Lohr, S. L. (2021) Sampling: Design and Analysis. 3rd Edition, Chapman and Hall/CRC, New York.

Section 6 Course Evaluation and Improvement

1. Course evaluation by students

- ☒ Course evaluation form
- ☐ Group discussions, collaborative exchange of ideas among a teacher and students
- ☒ Behavior reflections
- ☐ Online suggestion, a communication channel set up by instructors
- ☐ Other (specify).....

2. Strategies for assessing learning management

- ☒ Assessment form to evaluate instructors
- ☒ Exam results
- ☐ Review/ verification of student academic performance and learning outcomes
- ☒ Assessment by the Examination Committee
- ☐ Observation by teaching team members
- ☐ Other (specify).....

3. Improvement schemes of course implementation

- ☒ Seminars and workshops on teaching and learning
- ☐ Conducting research on learning pragmatics, both inside and outside classroom contexts
- ☐ Other (specify).....

4. Verification of students' learning outcomes, referred to OBE 2 and 3

- ☒ Setting up a committee to inspect results of learning outcomes assessment, e.g. investigation of examination, grading and performance appraisal
- ☐ Review of scoring and evaluation by the Faculty/ Department academic committee



- ☐ Grading verification by random check from faculty members/ experts who are not in Charge of the curriculum
- ☐ Other (specify).....
- 5. Course review and improvement plans
 - ☒ Annual course revision along with the reviewer suggestions in item 4
 - ☐ Annual course revision in consideration of student assessment and comments
 - ☒ Other (specify) Updating course content every 5 years