TQF 3 Course Specifications

Section 1 General Information

1. Course code and course title

Thai สถิติจำเป็น

English ICGEXXX Essential Statistics

2. Number of credits 4 (4-0-8)

3. Program and type of subject

3.1 Program Undergraduate Degree (International Program)

3.2 Type of Subject General Education

4. Course Responsible Lecturer and Course Lecturer

4.1 Course Coordinator:

Thotsaporn Thanatipanonda, Science Division, Mahidol University International College, thotsaporn.tha@mahidol.ac.th

4.2 Course Lecturer(s):

Thotsaporn Thanatipanonda (THT), thotsaporn.tha@mahidol.ac.th

5. Trimester/ Year of Study

5.1 Trimester All trimesters (including summer session) / for all students in all International College Undergraduate Programs

5.2 Course Capacity Approximately 30 students

6. Pre-requisite N/A

7. Co-requisites N/A

8. Venue of Study Mahidol University International College

9. Date of Latest Revision

20 February 2018

Section 2 Goals and Objectives

1. Course Goals
   To make students well-rounded by combining statistical methods with meaningful real-life activities

2. Objectives of Course Development/Revision

2.1 Course Objectives

To provide students with knowledge of basic probability and statistical method which can also be adapted to their everyday life. To enable students to read and understand graphical method used in statistics. To apply basic probability. To set up and test the hypothesis.

2.2 Course-level Learning Outcomes: CLOs

By the end of the course, students will be able to

1. CLO1 Identify basic statistical methods related to making decisions
2. CLO2 Deliver a logical solution to statistical problems that one could encounter in life science by extending on his/her statistical understanding of the problem
3. CLO3 Judge efficiency of decision making processes
4. CLO4 Execute statistical decisions with the awareness of real world situation

Section 3 Course Management

1. Course Description

ความคิดเห็นและแนวคิดทางสถิติ ความน่าจะเป็น และความน่าจะเป็นเชิงเงื่อนไข ฟังก์ชันการแจกแจง ค่าคาดหวัง ตัวประมาณค่า การทดสอบสมมุติฐาน การวิเคราะห์การถดถอยเชิงเส้น

Statistical ideas and concepts; probability and conditional probability; distribution functions; expected value; estimators; hypothesis testing; linear regression analysis

2. Credit hours per trimester

Lecture (Hour(s))	Laboratory/field trip/internship (Hour(s))	Self-study (Hour(s))	
48	0	96	

3. Number of hours that the lecturer provides individual counseling and guidance.

1 hour/week

Section 4 Development of Students' Learning Outcome

1. Short summary on the knowledge or skills that the course intends to develop in students. (CLOs)

By the end of the course, students will be able to

5. CLO1 Identify basic statistical methods related to making decisions
6. CLO2 Deliver a logical solution to statistical problems that one could encounter in life science by extending on his/her statistical understanding of the problem
7. CLO3 Judge efficiency of decision making processes
8. CLO4 Execute statistical decisions with the awareness of real world situation

2. Teaching methods for developing the knowledge or skills specified in item 1 and measuring the course learning outcomes

CLOs	Teaching methods	Evaluation Methods
CLO1	Self-study, quiz, situated learning, team discussion	Word problems, class discussion, exam
CLO2	Self-study, quiz, situated learning, team discussion	Word problems, class discussion, exam
CLO3	Self-study, quiz, situated learning, team discussion	Word problems, class discussion, exam
CLO4	Situated learning activities	Word problems, class discussion

Section 5 Teaching and Evaluation Plans

1. Teaching plan

Week	Topic	Number of Hours		Teaching Activities/ Media	Lecturer
		Lecture Hours	Lab/Field Trip/Internship Hours		
1	Data and Presentation	4	0	Lecture, Power Point	THT
2	Basic counting, probability	4	0	Lecture, Power Point	THT
3	Conditional probability, independent events	4	0	Lecture, Power Point	THT
4	Confidence intervals	4	0	Lecture, Power Point	THT
5	Hypotheses testing	4	0	Lecture, Power Point	THT
6	Hypotheses testing	4	0	Lecture, Power Point	THT
7	Chi Square Test	4	0	Lecture, Power Point	THT
8	Chi Square Test	4	0	Lecture, Power Point	THT
9	Chi Square Test	4	0	Lecture, Power Point	THT
10	Simple Linear Regression	4	0	Lecture, Power Point	THT
11	Simple Linear Regression	4	0	Lecture, Power Point	THT
12	Simple Linear Regression	4	0	Lecture, Power Point	THT
	Total	48	0		

2. Plan for Assessing Course Learning Outcomes

2.1 Assessing and Evaluating Learning Achievement

a. Formative Assessment

Homework 25%

In-class work	15%
Midterm exam	30%
Final exam	30%

b. Summative Assessment

(1) Tools and Percentage Weight in Assessment and Evaluation

Learning Outcomes	Assessment Methods	Assessment Ratio (Percentage)	
CLO1 Identify basic statistical methods related to making decisions	Written Examination - MCQ	10	25
	Individual Report	15	
CLO2 Deliver a logical solution to statistical problems that one could encounter in life science by extending on his/her statistical understanding of the problem	Written Examination - MCQ	10	25
	Individual Report	15	
CLO3 Judge efficiency of decision making processes	Written Examination - MCQ	10	25
	Individual Report	15	
CLO4 Execute statistical decisions with the awareness of real world situation	Written Examination - MCQ	10	25
	Individual Report	15	
Total			100

(2) Grading System

Grade	Achievement	Final Score (% range)	GPA
A	Excellent	90-100	4.0
B+	Very good	85-89	3.5
B	Good	80-84	3.0

C+	Fairly good	75-79	2.5
C	Fair	70-74	2.0
D+	Poor	65-69	1.5
D	Very poor	60-64	1.0
F	Fail	Less than 60	0.0

(3) Re-examination (If course lecturer allows to have re-examination)

Re-examination is not allowed.

3. Student Appeals

Discuss with the lecturer verbally or through email.

Section 6 Teaching Materials and Resources

1. Main texts and documents (Required Texts)

1) J. Buglear. *Stats means business: Statistics with Excel for business, hospitality and tourism*. 2nd ed. Oxford. Elsevier; 2010.

2. Recommended documents and information (Suggested Materials)

1) C. H. Brase, C. P. Brase. *Understanding basic statistics*. 7th ed. Boston. Brooks Cole; 2016.
2) B. L. Bowerman, R. T. O'Connell, E. S. Murphree, J. B. Orris. *Essentials of Business Statistics*. 5th ed. New York. McGraw-Hill Education; 2014.
3) R. Johnson, P. Kuby. *Elementary Statistics*. 11th ed. Duxbury Press; 2011.

3. Other Resources (If any)

None

Section 7 Evaluation and Improvement of Course Management

1. Strategies for evaluating course effectiveness by students

1.1 Student feedback of instructors, teaching methods and materials, and course content through MUIC student evaluation forms

2. Strategies for evaluating teaching methods

2.1 Evaluation of effectiveness based on student evaluation scores and comments

2.2 Evaluation through peer observations by co-instructor or other Division faculty

3. Improvement of teaching methods

3.1 Adjustments based on student feedback, personal observations, comments from peer observations and discussions with supervisor and/or other Division faculty in one-on-one and/or group meetings as specified by MUIC guidelines

4. Verification process for evaluating students' standard achievement outcomes in the course

4.1 Verification through student performance on assessments based on MUIC/Division standards

5. Review and plan for improving the effectiveness of the course

5.1 Course instructors (and coordinator/supervisor) will meet to discuss results of student evaluations and student performance based on learning outcomes in order to identify point for improvement

5.2 Strategy for improvement set according to MUIC/Division guidelines

Appendix

Alignment between Courses and General Education courses

Table 1 The relationship between CLOs and MU-GE Module LOs (Number in table = Sub LOs)

CLOs	Learning Outcomes in General Education (MU-GE LOs)								
	MLO 1	MLO 2	MLO 3	MLO 4	MLO 5	MLO 6	MLO 7	MLO 8	MLO 9
CLO1 Identify basic statistical methods related to making decisions	1.1			4.2					
CLO2 Deliver a logical solution to statistical problems that one could encounter in life science by extending on his/her statistical understanding of the problem			3.1	4.1 4.2					
CLO3 Judge efficiency of decision making processes	1.3								
CLO4 Execute statistical decisions with the awareness of real world situation	1.4						7.2		

Table 2 The description of MU-GE Los and Sub Los of the course

General Education course | Undergraduate Program
Course Title Essential Statistics | Mahidol University International College
Course Code: ICGE XXX | Division: Science

MU-GE Los	Sub Los
MLO1 Create & construct an argument effectively as well as identify, critique and evaluate the logic & validity of arguments	1.1 identify concepts related to the context of learned issues/topics
	1.3 collect, analyse, synthesize data, & evaluate information and ideas from multiple sources relevant to issues/problems
	1.4 synthesize information to arrive at logical reasoning
MLO3 Acquire specific strategies & skills within a particular discipline and adapt them to a new problem or situation	3.1 connect, synthesize and/or transform ideas or solutions within a particular framework
MLO4 Create a novel or unique ideas, question, format, or product within a particular framework	4.1 create an original explanation or solution to the issues/problems 4.2 articulate the rationale for & consequences of his/her solution-identify opportunities and risk
MLO7 Apply ethical frameworks or principles and consider their implications in his/her decision-making and interacting with others	7.2 guide & lead others