

Tamkang University Academic Year 101, 2nd Semester Course Syllabus

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| Course Title | Introduction to Mathematical Economics | Instructor | Kau, Chin-Mei | |
| Department/Year/Class | Course Details | | | |
| Department of International Business / First year / Class B | <input checked="" type="checkbox"/> Required <input type="checkbox"/> Selective | <input checked="" type="checkbox"/> 0 (One Semester) <input type="checkbox"/> 1 (1st Semester) <input type="checkbox"/> 2 (2nd Semester) <input type="checkbox"/> 3 (3rd Semester) | Credits | 3 |
| Aim of Education | | Core Competences | | |
| <p style="color: red;">Departmental Educational Objectives:</p> <p style="color: red;">1.To instill the university motto of "Simplicity, Firmness, Perseverance, and Fulfillment" into students.</p> <p style="color: red;">2.By integrating the "Five Disciplines" of education, the qualities of conduct, intelligence, physical education, teamwork, and beauty into the professional, core, and extracurricular curriculum, the department helps to produce well-rounded students skilled in identifying and solving problems.</p> <p style="color: red;">3.To oversee the trend and foresee the development of global economy, the department aims to produce the graduates with expertise in the fields of International Business and Trade.</p> | | <p style="color: red;">Departmental Core Capabilities</p> <p style="color: red;">A. Breeding professionals with expertise in general International Trade and International Business</p> <p style="color: red;">B. Consisting of Globalization, Information-Oriented and Future-Oriented education.</p> <p style="color: red;">C. Producing graduates with capability of foreseeing and analyzing the development of Global Economy.</p> <p style="color: red;">D. Breeding professionals with expertise in Marketing and Financial Management.</p> | | |
| Course Introduction (50 to 100 words) | Mathematics is unquestionably the single most important tool of the modern economist. In this course, we will pay more attention to the development of the ideas of limits and continuity, moving then to the calculus of functions of one variable, multivariate calculus, and finally dynamics. We believe an understanding of the mathematical concepts is required if he or she is to develop the ability and confidence to tackle problems in economic analysis. | | | |

The Relevance among Teaching Objectives, Objective Levels and Core Competences

I. Objective Levels (select applicable ones) :

(I) Cognitive Domain : C1 Remembering · C2 Understanding · C3 Applying · C4 Analyzing · C5 Evaluating · C6 Creating

(II) Psychomotor Domain : P1 Imitation · P2 Mechanism · P3 Independent Operation · P4 Linked Operation · P5 Automation · P6 Origination

(III) Affective Domain : A1 Receiving · A2 Responding · A3 Valuing · A4 Organizing · A5 Charaterizing · A6 Implementing

II. The Relevance among Teaching Objectives, Objective Levels and Core Competences :

- (I) Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objectives. Each objective should correspond to the objective level(s) of ONLY ONE of the three domains.
- (II) If more than one objective levels are applicable for each learning domain, select the highest one only. (For example, if the objective levels for Cognitive Domain include C3, C5, and C6, select C6 only and fill it in the boxes below. The same rule applies to Psychomotor Domain and Affective Domain.)
- (III) Determine the core competences that correspond to each teaching objective. Each objective may correspond to one or more core competences at a time. (For example, if one objective corresponds to three core competences: A, AD, and BEF, list all of the three in the box.)

| Teaching objectives | Relevance | |
|--|------------------|------------------|
| | Objective Levels | Core Competences |
| 1 Limits | C5 | |
| 2 Univariate Calculus and Optimization | C5 | |
| 3 Multivariate Calculus | C5 | |
| 4 Integration and Dynamic Methods | C5 | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

Teaching Objectives, Teaching Methods and Assessment

| Teaching Objectives | Teaching Methods | Assessment |
|--|----------------------------|-----------------------------|
| 1 Limits | Explanation and discussion | Practice sheet and Homework |
| 2 Univariate Calculus and Optimization | Explanation and discussion | Practice sheet and Homework |
| 3 Multivariate Calculus | Explanation and discussion | Practice sheet and Homework |
| 4 Integration and Dynamic Methods | Explanation and discussion | Practice sheet and Homework |
| 5 | | |
| 6 | | |
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| 8 | | |

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| This course has been designed to cultivate the following essential qualities in TKU students. | | | |
| Essential Qualities of TKU Students | | Description | |
| <input checked="" type="checkbox"/> global perspectives | | 翻譯建構中 | |
| <input checked="" type="checkbox"/> a vision for the future | | | |
| <input type="checkbox"/> information literacy | | | |
| <input type="checkbox"/> ethical and moral principles | | | |
| <input checked="" type="checkbox"/> independent thinking | | | |
| <input checked="" type="checkbox"/> an awareness of healthy living | | | |
| <input type="checkbox"/> effective teamwork | | | |
| <input type="checkbox"/> an appreciation of the arts | | | |
| Course Schedule | | | |
| Week | Date | Subject/Topics | Note |
| 1 | 2/18 | Introduction to the course | |
| 2 | 2/25 | Continuity of Functions | |
| 3 | 3/4 | What is the Derivative | |
| 4 | 3/11 | The Derivative and Differential for Functions of One Variable | |
| 5 | 3/18 | The Derivative and Differential for Functions of One Variable | |
| 6 | 3/25 | The Derivative and Differential for Functions of One Variable | |
| 7 | 4/1 | Special week | |
| 8 | 4/8 | Optimization of Functions of One Variable | |
| 9 | 4/15 | Optimization of Functions of One Variable | |
| 10 | 4/22 | Midterm Exam Week | |
| 11 | 4/29 | Calculus for Functions of n-Variables | |
| 12 | 5/6 | Calculus for Functions of n-Variables | |
| 13 | 5/13 | Optimization of Functions of n-Variables | |
| 14 | 5/20 | Optimization of Functions of n-Variables | |
| 15 | 5/27 | Integration | |
| 16 | 6/3 | Integration | |
| 17 | 6/10 | Integration | |
| 18 | 6/17 | Final Exam Week | |
| Requirement | High School Mathematics | | |
| Teaching Facility | <input type="checkbox"/> Computer <input checked="" type="checkbox"/> Overhead Projector <input checked="" type="checkbox"/> Other (<u> Black board </u>) | | |
| Textbook(s) | Michael Hoy, John Livernois, Chris McKenna, Ray Rees, and Thanasis Stengos,(2001) Mathematics for Economics, 2 nd Ed. The MIT Press. | | |

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| Suggested Readings | Edward T. Dowling, Schaum's outline of theory and problems of introduction to mathematical economics . Carl P. Simon and Lawrence Blume, Mathematics for economists |
| Number of Assignment(s) | (Filled in only for those courses that apply) |
| Grading Policy | Attendance 15%, Homework 15%, and two tests 10%, Midterm Exam 30%, Final Exam 30%, |
| Note | This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/index.asp . ※Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications. |

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