# Tamkang University Academic Year 106, 2nd Semester Course Syllabus

| Course Title | CALCULUS | Instructor | LIN CHIEN-TAI |
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| Course Class | TLWXB1A<br>BACHELOR'S PROGRAM IN GLOBAL FINANCIAL MANAGEMENT (ENGLISH-TAUGHT PROGRAM), 1A | Details | ◆ Required<br>◆ 2nd Semester<br>◆ 2 Credits |

## Departmental Aim of Education

Ⅰ. Acquisition of professional knowledge.

Ⅱ. Learning effective self-planning.

Ⅲ. Theoretical application of practical matters.

Ⅳ. Interpersonal communication and teamwork.

Ⅴ. Analysis of problems and recommendations.

Ⅵ. Awareness of Ethics as a global citizen.

## Departmental core competences

A. Financial accounting professional skills.

B. To understand basic knowledge of business administration.

C. To communicate, negotiate, and collaborate to acomplish business projects by team work.

D. Knowledge of basic statistical theory.

E. Application of profession knowledge.

F. Have a firm grasp of the fundamental concepts in economics.

G. Have the ability to apply basic analytical tools to economic issues.

H. Students are equipped with professional knowledge of core courses.

I. Students can apply their profession to practice matters.

| Course Introduction | This course introduces the theory of the Calculus, the calculation approaches and its applications. The contents include (1) the integration techniques, (2) the Fundamental Theorem of Calculus, (3) improper Integration and (4) functions of several variables. We aim to improve the students' interests in learning and to develop their thinking and computing abilities. |
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# The Relevance among Teaching Objectives, Objective Levels and Departmental 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 Departmental core competences :
 (i) Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objective. 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 Departmental core competences that correspond to each teaching objective. Each objective may correspond to one or more Departmental core competences at a time. (For example, if one objective corresponds to three Departmental core competences: A,AD, and BEF, list all of the three in the box.)

| No. | Teaching Objectives | Relevance | |
| --- | --- | --- | --- |
| | | Objective Levels | Departmental core competences |
| 1 | Students will be able to understand the various integration techniques, Fundamental Theorem of Calculus and able to use it to do the calculation, the partial derivatives and double integrals for multiple variables and able to use it to solve the optimization problems. | C2 | HI |

## Teaching Objectives, Teaching Methods and Assessment

| No. | Teaching Objectives | Teaching Methods | Assessment |
| --- | --- | --- | --- |
| 1 | Students will be able to understand the various integration techniques, Fundamental Theorem of Calculus and able to use it to do the calculation, the partial derivatives and double integrals for multiple variables and able to use it to solve the optimization problems. | Lecture | Written test |
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| This course has been designed to cultivate the following essential qualities in TKU students | |
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| **Essential Qualities of TKU Students** | **Description** |
| ◇ A global perspective | Helping students develop a broader perspective from which to understand international affairs and global development. |
| ◆ Information literacy | Becoming adept at using information technology and learning the proper way to process information. |
| ◇ A vision for the future | Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision. |
| ◇ Moral integrity | Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems. |
| ◆ Independent thinking | Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically. |
| ◇ A cheerful attitude and healthy lifestyle | Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life. |
| ◇ A spirit of teamwork and dedication | Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems. |
| ◇ A sense of aesthetic appreciation | Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process. |

## Course Schedule

| Week | Date | Subject/Topics | Note |
|---|---|---|---|
| 1 | 107/02/26 ~ 107/03/04 | 5.1 Antiderivatives and Indefinite Integrals | |
| 2 | 107/03/05 ~ 107/03/11 | 5.2 Integration by Substitution | |
| 3 | 107/03/12 ~ 107/03/18 | 5.3 The Definite Integral and the Fundamental Theorem of Calculus | |
| 4 | 107/03/19 ~ 107/03/25 | 5.4 Applying Definite Integration | |
| 5 | 107/03/26 ~ 107/04/01 | 5.5: Additional Applications of Integration to Business and Economics | |
| 6 | 107/04/02 ~ 107/04/08 | Spring break | |
| 7 | 107/04/09 ~ 107/04/15 | 6.1 Integration by Parts; Integral Tables | |
| 8 | 107/04/16 ~ 107/04/22 | 6.2 Numerical Integration | |
| 9 | 107/04/23 ~ 107/04/29 | 6.3 Improper Integrals | |
| 10 | 107/04/30 ~ 107/05/06 | Midterm Exam Week | |
| 11 | 107/05/07 ~ 107/05/13 | 7.1 Functions of Several Variables | |
| 12 | 107/05/14 ~ 107/05/20 | 7.2 Partial Derivatives | |

| 13 | 107/05/21～107/05/27 | 7.3 Optimizing Functions of Two Variables | |
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| 14 | 107/05/28～107/06/03 | 7.5 Constrained Optimization: The Method of Lagrange Multipliers | |
| 15 | 107/06/04～107/06/10 | 7.6 Double Integrals | |
| 16 | 107/06/11～107/06/17 | 7.6 Double Integrals | |
| 17 | 107/06/18～107/06/24 | Review | |
| 18 | 107/06/25～107/07/01 | Final Exam Week | |

| Requirement | 1. No food, no chatting, and no phone call in class.<br>2. If you have a cold, please take a day off or wear a mask all time in class.<br>3. Check all your grades including scores from Teaching Assistant and midterm before the final examination. It is your responsibility to make sure your grades are recorded correctly in the computer of Teaching Assistant. All grades after the final exam will not be corrected.<br>4. Homework Assignment<br>Chapter 5<br>§5.1: 16, 21, 25, 26, 27, 30, 34, 40, 45, 46, 52<br>§5.2: 12, 25, 26, 27, 29, 30, 31, 34, 35, 36, 57<br>§5.3: 3, 6, 13, 24, 35, 36, 39, 41, 42, 44, 66<br>§5.4: 5, 9, 10, 13, 18, 21, 23, 40<br>§5.5: 15, 19, 33, 41<br>§5.6*: 7, 13, 45, 49<br>Chapter 6<br>§6.1: 6, 9, 12, 13, 18, 22, 24, 26<br>§6.2: 5, 10, 20, 23,<br>§6.3: 4, 7, 15, 22, 26, 27, 29, 30<br>Chapter 7<br>§7.1: 7, 10, 19, 20, 24<br>§7.2: 12, 16, 18, 20, 24, 27, 31, 39, 40, 49<br>§7.3: 1, 5, 13, 16, 21, 26, 28, 36<br>§7.5: 3, 7, 9, 11, 12, 20<br>§7.6: 5, 13, 16, 17, 20, 23, 26, 32, 33, 34, 40, 42, 44, 53, 63, 69 |
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| Teaching Facility | Projector |
| Textbook(s) | Laurence Hoffmann, Gerald Bradley, David Sobecki, and Michael Price, Calculus for Business, Economics and the Social and Life Sciences, Brief Edition 11/e. McGraw-Hill Science. |
| Reference(s) | Other Calculus books in the library. |
| Number of Assignment(s) | (Filled in by assignment instructor only) |
| Grading Policy | ◆ Attendance： 5.0 % ◆ Mark of Usual：15.0 % ◆ Midterm Exam： 35.0 %<br>◆ Final Exam： 45.0 %<br>◆ Other〈 〉： % |

| 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/CS/main.php . |
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