# Tamkang University Academic Year 111, 1st Semester Course Syllabus

| Course Title | CALCULUS | Instructor | HSIAO-FAN LIU |
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| Course Class | TLBAB1A<br>DEPARTMENT OF BANKING AND FINANCE<br>DIVISION OF GLOBAL FINANCIAL<br>MANAGEMENT (ENGLISH-TAUGHT PROGRAM), | Details | ◆ General Course<br>◆ Required<br>◆ 1st Semester |
| Relevance to SDGs | 1A<br> SDG4 Quality education | | |

## 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.

## Subject Departmental core competences

A. Students can demonstrate that they have program basic knowledge of business and management.(ratio:40.00)

B. Students can demonstrate that they have capability in professional knowledge expression. (ratio:10.00)

C. Students can demonstrate that they have capability in using information technology. (ratio:10.00)

D. Students can demonstrate that they are critical thinkers.(ratio:40.00)

## Subject Schoolwide essential virtues

1. A global perspective. (ratio:5.00)

2. Information literacy. (ratio:20.00)

3. A vision for the future. (ratio:10.00)

4. Moral integrity. (ratio:15.00)

5. Independent thinking. (ratio:30.00)

6. A cheerful attitude and healthy lifestyle. (ratio:5.00)

| | 7. A spirit of teamwork and dedication. (ratio:10.00) 8. A sense of aesthetic appreciation. (ratio:5.00) |
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| Course Introduction | This course introduces Calculus with applications in business, economics, and the social and life sciences. We will focus on functions, differentiation, applications of the derivative, and exponential and logarithmic functions. |

**The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.**

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

 I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of
          the course's veracity, conception, procedures, outcomes, etc.
II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal,
          morals, attitude, conviction, values, etc.
III.Psychomotor: Emphasis upon the study of the course's physical activity and technical
          manipulation.

| No. | Teaching Objectives | objective methods |
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| 1 | Students are expected to understand the concepts and theory of limit, continuity, and derivative of a function, and to solve practical problems with these techniques. | Cognitive |

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

| No. | Core Competences | Essential Virtues | Teaching Methods | Assessment |
| --- | --- | --- | --- | --- |
| 1 | ABCD | 12345678 | Lecture, Discussion | Testing, Discussion(including classroom and online), Activity Participation |

## Course Schedule

| Week | Date | Course Contents | Note |
| --- | --- | --- | --- |
| 1 | 111/09/05 ~ 111/09/11 | 1.1 Functions, 1.2 The Graph of a Function | |
| 2 | 111/09/12 ~ 111/09/18 | 1.3 Lines and Linear Functions, 1.4 Functional Models | |
| 3 | 111/09/19 ~ 111/09/25 | 1.5 Limits, 1.6 One-Sided Limits and Continuity | |

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| 4 | 111/09/26 ~ 111/10/02 | 2.1 The Derivative | |
| 5 | 111/10/03 ~ 111/10/09 | 2.2 Techniques of Differentiation | |
| 6 | 111/10/10 ~ 111/10/16 | 2.3 Product and Quotient Rules; Higher-Order Derivatives | |
| 7 | 111/10/17 ~ 111/10/23 | 2.4 The Chain Rule | |
| 8 | 111/10/24 ~ 111/10/30 | 2.5 Marginal Analysis and Approximations Using Increments | |
| 9 | 111/10/31 ~ 111/11/06 | 2.6 Implicit Differentiation and Related Rates | |
| 10 | 111/11/07 ~ 111/11/13 | Midterm Exam Week | |
| 11 | 111/11/14 ~ 111/11/20 | 3.1 Increasing and Decreasing Functions; Relative Extrema, 3.2 Concavity and Points of Inflection | |
| 12 | 111/11/21 ~ 111/11/27 | 3.3 Curve Sketching, 3.4 Optimization; Elasticity of Demand | |
| 13 | 111/11/28 ~ 111/12/04 | 3.5 Additional Applied Optimization | |
| 14 | 111/12/05 ~ 111/12/11 | 4.1 Exponential Functions; Continuous Compounding, 4.2 Logarithmic Functions | |
| 15 | 111/12/12 ~ 111/12/18 | 4.3 Differentiation of Exponential and Logarithmic Functions | |
| 16 | 111/12/19 ~ 111/12/25 | 4.4 Additional Applications; Exponential Models | |
| 17 | 111/12/26 ~ 112/01/01 | Review | |
| 18 | 112/01/02 ~ 112/01/08 | Final Exam Week | |

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| Requirement | |
| Teaching Facility | Computer, Other (Blackboard/whiteboard) |
| Textbooks and Teaching Materials | Calculus for Business, Economics, and the Social and Life Sciences, Brief edition by Hoffmann, Bradley, Sobecki, Price, 11th edition |
| References | |
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| Number of Assignment(s) | (Filled in by assignment instructor only) |
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| Grading Policy | ◆ Attendance： %　◆ Mark of Usual： %　◆ Midterm Exam： 40.0 %<br><br>◆ Final Exam： 40.0 %<br><br>◆ Other〈Quizzes & Discussion〉：20.0 % |
| 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 .<br><br>※ **Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.** |