

## 淡江大學 109 學年度第 1 學期課程教學計畫表

|   |  |          |                       |
|---|--|----------|-----------------------|
| 課程名稱  | 微積分  | 授課<br>教師 | 張玉坤<br>YUE-CUNE CHANG |
|   | CALCULUS   |          |                       |
| 開課系級  | 統計一 A  | 開課<br>資料 | 實體課程<br>必修 單學期 4學分    |
|   | TLSXB1A  |          |                       |
| 系 ( 所 ) 教育目標  |  |          |                       |
| <p>一、習得瞭解專業知識。</p> <p>二、有效學習自我規劃。</p> <p>三、植基理論契合實務。</p> <p>四、人際溝通團隊合作。</p> <p>五、分析問題提供建議。</p> <p>六、道德知覺全球公民。</p> |  |          |                       |
| 本課程對應院、系(所)核心能力之項目與比重   |  |          |                       |
| <p>A. 熟悉商管專業的基本知識。(比重：50.00)</p> <p>D. 具體審辨分析的思考能力。(比重：50.00)</p>   |  |          |                       |
| 本課程對應校級基本素養之項目與比重   |  |          |                       |
| <p>2. 資訊運用。(比重：20.00)</p> <p>5. 獨立思考。(比重：80.00)</p>   |  |          |                       |
| 課程簡介  | <p>本課程主要介紹微積分的理論、計算方法及應用。上學期內容包括(1)函數、圖形及極限, (2)微分概念及其應用, (3)指數、對數函數之微分等等。在提昇學生學習興趣的同時, 也培養學生推理思考及數理運算能力。</p>  |          |                       |
|   | <p>This course introduces the theory of the Calculus, the calculation approaches and its applications. The contents include the (1) functions, graph of function, and limit, (2) differentiation and its applications, (3) exponential and logarithmic functions and their derivatives and so on. We aim to improve students' interests in learning and to develop their thinking and computing abilities.</p> |          |                       |

本課程教學目標與認知、情意、技能目標之對應

將課程教學目標分別對應「認知 (Cognitive)」、「情意 (Affective)」與「技能(Psychomotor)」的各目標類型。

- 一、認知(Cognitive)：著重在該科目的事實、概念、程序、後設認知等各類知識之學習。
- 二、情意(Affective)：著重在該科目的興趣、倫理、態度、信念、價值觀等之學習。
- 三、技能(Psychomotor)：著重在該科目的肢體動作或技術操作之學習。

| 序號 | 教學目標(中文)                          | 教學目標(英文)   |
|----|-----------------------------------|--|
| 1  | 理解課程中所介紹到的函數之極限與連續的概念。            | Understand the concepts of the limits and the continuity of a function.  |
| 2  | 理解微分與積分理論的運算與應用的概念，並實際動手運算及繪製曲線圖。 | Understand the theory and applications of the derivatives & integration and be able to do the calculation and curves graphing in practice. |
| 3  | 理解指數函數及對數函數之微分與積分的應用。             | Understand the differentiation & integration of exponential and logarithmic functions and their applications.                              |

教學目標之目標類型、核心能力、基本素養教學方法與評量方式

| 序號 | 目標類型 | 院、系(所)核心能力 | 校級基本素養 | 教學方法 | 評量方式  |
|----|------|------------|--------|------|-------|
| 1  | 認知   | AD         | 25     | 講述   | 測驗、作業 |
| 2  | 認知   | AD         | 25     | 講述   | 測驗、作業 |
| 3  | 認知   | AD         | 25     | 講述   | 測驗、作業 |

授課進度表

| 週次 | 日期起訖                    | 內容 (Subject/Topics)  | 備註 |
|----|-------------------------|--|----|
| 1  | 109/09/14~<br>109/09/20 | 1.1~1.8 Functions and Graphs   |    |
| 2  | 109/09/21~<br>109/09/27 | 2.1~2.3 Limits and Continuity  |    |
| 3  | 109/09/28~<br>109/10/04 | 2.4~2.7 The Derivative, Differentials and Marginal Analysis                  |    |
| 4  | 109/10/05~<br>109/10/11 | 3.1~3.4 Derivatives of Exponential, Logarithmic, and Trigonometric Functions |    |
| 5  | 109/10/12~<br>109/10/18 | 3.5~3.7 Chain Rule, Implicit Differentiation, and Related Rates              |    |
| 6  | 109/10/19~<br>109/10/25 | 4.1~4.2 First and Second Derivative and Graphs                               |    |
| 7  | 109/10/26~<br>109/11/01 | 4.3 L'Hôpital's Rule   |    |
| 8  | 109/11/02~<br>109/11/08 | 4.4 Curve-Sketching Techniques   |    |
| 9  | 109/11/09~<br>109/11/15 | 4.5~4.6 Absolute Maxima and Minima and Optimization                          |    |

|              |  |  |  |
|--------------|--|--|--|
| 10           | 109/11/16~<br>109/11/22  | 期中考試週  |  |
| 11           | 109/11/23~<br>109/11/29  | 5.1~5.3 Indefinite Integrals and Integration by Substitution |  |
| 12           | 109/11/30~<br>109/12/06  | 5.4~5.6 Definite Integral and Area Between Curves            |  |
| 13           | 109/12/07~<br>109/12/13  | 6.1~6.4 Additional Integration Topics                        |  |
| 14           | 109/12/14~<br>109/12/20  | 7.1~7.4 Partial Derivatives, Maxima, Minima, Lagrange Method |  |
| 15           | 109/12/21~<br>109/12/27  | 7.6~7.7 Double Integrals                                     |  |
| 16           | 109/12/28~<br>110/01/03  | 8.1~8.3 Differential Equations                               |  |
| 17           | 110/01/04~<br>110/01/10  | 9.1~9.4 Taylor Polynomials and Infinite Series               |  |
| 18           | 110/01/11~<br>110/01/17  | 期末考試週  |  |
| 修課應<br>注意事項  | 不得影響其他同學上課   |  |  |
| 教學設備         | (無)  |  |  |
| 教科書與<br>教材   | Calculus: for Business, Economics, Life Science, and Social Sciences by RA Barnett et al   |  |  |
| 參考文獻         |  |  |  |
| 批改作業<br>篇數   | 篇 (本欄位僅適用於所授課程需批改作業之課程教師填寫)  |  |  |
| 學期成績<br>計算方式 | ◆出席率： 10.0 %    ◆平時評量：20.0 %    ◆期中評量：35.0 %<br>◆期末評量：35.0 %<br>◆其他〈 〉：        %   |  |  |
| 備考           | 「教學計畫表管理系統」網址： <a href="https://info.ais.tku.edu.tw/csp">https://info.ais.tku.edu.tw/csp</a> 或由教務處<br>首頁→教務資訊「教學計畫表管理系統」進入。<br><b>※不法影印是違法的行為。請使用正版教科書，勿不法影印他人著作，以免觸法。</b> |  |  |