Course Description(暫定)

Department of Mathematics

Nature of the course ☑ required ☐ elective	Area 麻煩老師勾選類別，或直接填寫＿＿＿＿＿＿＿＿＿＿。 ☐ Algebra ☐ Analysis ☐ Geometry ☐ Statistics ☐ Applied Mathematics ☐ Discrete Mathematics ☐ Others

Calculus ☑ Calculus A ☐ Calculus B

Course number	201 101A2	Section number	08-13	Number of credits	4
Course title	Calculus				
Instructor	張秋俊(08)、莊正良(09)、王偉仲(10)、蔡炅男(11)、黃漢水(12)、陳宏(13)				

I. Contents：

章節	週次	課程進度
11. Infinite Sequences and Series	第一週 (2/22~2/26)	11.1 Sequences 11.2 Series 11.3 The Integral Test and Estimates of Sums
	第二週 (2/29~3/5)	11.4 The Comparison Tests 11.5 Alternating Series 11.6 Absolute Convergence and the Ratio and Root Tests
	第三週 (3/8~3/12)	11.7 Strategy for Testing Series 11.8 Power Series 11.9 Representations of Functions as Power Series
	第四週 (3/15~3/19)	11.10 Taylor and Maclaurin Series 11.11 Applications of Taylor Polynomials 緩衝時間
13. Vector Functions	第五週 (3/22~3/26)	13.1 Vector Functions and Space Curves 13.2 Derivatives and Integrals of Vector Functions 13.3 Arc Length and Curvature 13.4 Motion in Space: Velocity and Acceleration
14. Partial Derivatives	第六週 (3/29~4/2)	14.1 Functions of Several Variables 14.2 Limits and Continuity 14.3 Partial Derivatives
	第七週 (4/5~4/9)	14.4 Tangent Planes and Linear Approximations 14.5 The Chain Rule　4/5(一)～4/7(三)放假
	第八週 (4/12~4/16)	14.6 Directional Derivatives and the Gradient Vector 14.7 Maximum and Minimum Values 14.8 Lagrange Multipliers
15. Multiple Integrals	第九週 (4/19~4/23)	緩衝時間 15.1 Double Integrals over Rectangles 15.2 Iterated Integrals
	期中考 4/24（六）9：00～11：30 考試範圍：11.1～14.8（英文命題）	
	第十週 (4/26~4/30)	15.3 Double Integrals over General Regions 15.4 Double Integrals in Polar Coordinates

	第十一週 (5/3~5/7)	15.5 Applications of Double Integrals 15.6 Triple Integrals 15.7 Triple Integrals in Cylindrical Coordinates
	第十二週 (5/10~5/14)	15.8 Triple Integrals in Spherical Coordinates 15.9 Change of Variables in Multiple Integrals
16. Vector Calculus	第十三週 (5/17~5/21)	緩衝時間 16.1 Vector Fields 16.2 Line Integrals
	第十四週 (5/24~5/28)	16.3 The Fundamental Theorem for Line Integrals 16.4 Green's Theorem
	第十五週 (5/31~6/4)	16.5 Curl and Divergence 16.6 Parametric Surfaces and Their Areas 16.7 Surface Integrals
	第十六週 (6/7~6/11)	16.8 Stokes' Theorem 16.9 The Divergence Theorem
	第十七週 (6/14~6/18)	16.10 Summary 緩衝時間 6/16(三)放假
	期末考 6/19（六）9：00～11：30 考試範圍：15.1～16.10（英文命題）	

II. Course prerequisite： High School Mathematics

III. Reference material (textbook(s))：James Stewart, Calculus, Early Transcendentals, 6th edition.

IV. Grading scheme：Midterm exam: 40%, Final exam: 40%, Quizzes and/or homework: 20%

V. Others：

☆08-12 班：上課時間：三 78 五 12 、 實習課時間：三 9

13 班：上課時間：二 78 四 56 、 實習課時間：二 9

☆各班實習課分組教室：公告於微積分甲統一教學網站公佈 http://www.math.ntu.edu.tw/~mathcal/a/。

☆各班助教 Office Hour 時間：公告於微積分甲統一教學網站公佈。

☆習題：習題繳交與否依各授課教師規定；習題解答公佈於微積分甲統一教學網站。

☆期中、期末考題目以英文命題。

VI. Course Goal：

Study sequences and series to understand the process of approximation; learn the skills estimate and control the errors of approximation; acquaint with the tools and techniques for analyzing regular multi-variable mappings and vector fields.