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	01-05	Number of credits	4
Course title	Calculus				
Instructor	陳君明(01)、田光復(02)、張志中(03)、蔡雅如(04)、謝銘倫(05)				

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）13：30～16：00（暫定） 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）13：30～16：00（暫定）　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：

☆上課時間：三 56 五 56 、 實習課時間：一 9。

☆各班實習課分組教室：將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：將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；習題解答將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 practice the process of approximation, and the skills of estimation and error controls. Learn the tools and techniques for analyzing and utilizing regular multi-variable mappings and vector fields.