Calculus（II）（College of Engineering） Spring, 2021

Course No.(Sec.)：2101020(04)

Class Meeting：M. W. 10:15 - 11:45 Th. 12:10 – 13:00

Classroom：Math 201

Instructor：紀美秀 (Mei-Hsiu Chi)

Office：Math 445 Phone：66119 E-mail: meichi@ccu.edu.tw

TA: 簡暐勳 陳品翰

Textbook：Calculus, Early Transcendentals, International Metric Edition, 8th Ed.

WEBASSIGN from Cengage:

https://www.cengage.com/login

Course Objectives:

During the course:

1. Understanding the concepts related to Calculus intuitively and intrinsically.
2. Learning the techniques of differentiation and integration about multiple variable functions.
3. Studying the applications of calculus in physics, engineering, economics, and the life sciences.

After completing the course:

1. Being well-prepared for further study in sciences or engineering.
2. Being able to apply calculus to solve real life problems
3. Considering things intrinsically, reasonably, logically, and completely

Grading Policy:

1. **Class Participation (20%)**
2. **Assignment (20%)**
3. **Exam I (20%)**
4. **Exam II (20%)**
5. **Final Exam (20%)**

Course Contents：

1. **Infinite sequences and series (4 wks.)**
   Sequences, Series, The integral test and estimates of sums, The comparison tests, Alternating series, Absolute convergence and the ratio and root tests, Strategy for testing series, Power series, Representations of functions as power series, Taylor and Maclaurin series, Applications of Taylor polynomials

2. **Parametric equations and polar coordinates (1~2 wks.)**
   Curves defined by parametric equations, Calculus with parametric curves, Polar Coordinates, Areas and lengths in polar coordinates

3. **Vector functions (4~5 wks.)**
   Vector functions and space curves, Derivative and integrals of vector functions, Arc length and curvature, Partial derivatives, Functions of several variables, Limits and continuity, Partial derivatives, Tangent planes and linear approximations, The chain rule, Directional derivatives and the gradient vector, Maximum and minimum values, Lagrange multipliers

4. **Multiple integrals (4 wks.)**
   Double integral over rectangles, Double integrals over general regions, Double integrals in polar coordinates, Applications of double integrals, Surface area, Change of variables in multiple integrals,

5. **Vector Calculus* (1~2 wks)**
   Vector fields, Line integrals, The fundamental theorem for line integrals, Green's theorem