



Course Syllabus

Name of Curriculum	Bachelor of Science, Mahidol University International College
Course Code	ICMA216
Course Title	Calculus IIIA/ Multivariable Calculus
Number of Credits	2 (Lecture/Lab) (2-0)
Prerequisites	ICMA106 Calculus I & ICMA213 Calculus II
Type of Course	Core Course
Academic Year	Second trimester/ 2019 - 2020
Course Description	Vectors in three dimensional space, functions of several variables, partial derivatives, calculus of vector-valued functions.
Course Objective	<p>This course introduces the mathematics crucial to mechanics, dynamics, electromagnetism, fluid flow, financial modeling, and many areas of pure and applied mathematics.</p> <p>The course combines and extends the ideas from one-variable calculus to develop the calculus of functions in multidimensional Euclidean spaces.</p>

Tentative Course Outline

Class/Week	Topics	Lecture
1	Review Calculus; Differentiation, Integration 11.1 Rectangular Coordinates in 3-spaces; Spheres; Cylindrical Surfaces	2
2	11.2 Vectors 11.3 Dot Product; Projections	2
3	11.4 Cross Product 11.5 Parametric Equations of Lines	2
4	11.6 Planes 11.7 Quadric Surfaces	2
5	12.1 Introduction to Vector-Valued Functions 12.2 Calculus of Vector-Valued Functions 12.3 Change of Parameter; Arc Length	2
6	13.1 Functions of Two or More Variables 13.2 Limits and Continuity	2
7	(One hour) Midterm Exam. 13.3 Partial Derivatives	2
8	13.4 Differentiability, Differentials, and Local Linearity	2
9	13.5 The Chain Rule 13.6 Directional Derivative and Gradients	2
10	13.7 Tangent Planes and Normal Vectors	2
11	13.8 Maxima and Minima of Functions of Two Variables	2
12	13.9 Lagrange Multipliers	2
*	Final Exam.	

Teaching method

1. Lecture
2. Assignments

Measurement and Evaluation

Quiz	15%
Homework	25%
Midterm Exam.	25%
Final Exam.	35%

Remark:

- Homeworks will be assigned on a biweekly (every other week) basis.
- There will be a total of 2 quizzes on Wednesday of the 4rd, 10th week. The quiz will cover the material from the previous weeks.

Course Evaluation

Grading Scale	Grade
90 - 100	A
85 - 89	B+
80 - 84	B
75 - 79	C+
70 - 74	C
65 - 69	D+
60 - 64	D
Below 60	F

References

Calculus: Late Transcendentals, 10th edition, New York; Wiley, 2013,
Howard Anton, Irl Bivens and Stephen Davis.
Calculus Early Transcendentals, 6th edition, James Stewart.

Instructor

Thotsaporn “Aek” Thanatipanonda
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Office Hours: 12-1pm Monday or by appointment

Class Schedule

10:00 - 11:50am Monday, Lecture room 1314