

# Mahidol University International College

## ICMA 106 Calculus I

Trimester 1, Academic Year 2019-2020

<b>Instructors:</b>	Chatchawan Panraksa, Ph.D. Sections 1 & 2 Pornrat Ruengrot, Ph.D. Section 3
<b>Office Hours:</b>	Math Clinic 1309, Monday 3–4 PM (Chatchawan) Science Division 3501, Tuesday 11-12:00 AM, Thursday 10-12:00 AM Math Clinic 1309, Wednesday 10–11 AM (Pornrat) Science Division 3501, Monday 10-12:00 AM, Wednesday 11-12:00 AM
<b>E-mails:</b>	chatchawan.pan@mahidol.edu, pornrat.rue@mahidol.edu
<b>Midterm Exam:</b>	Saturday, 19 October 2019, Time: 12:00 - 13:50 AM
<b>Final Exam:</b>	Saturday, 7 December 2019, Time: 12:00 - 13:50 AM

### Required Textbook

H. Anton, *Calculus: Late Transcendentals*, 10th edition, John Wiley & Sons, New York.

### Course Description

Functions, limits and continuity, derivatives, techniques of differentiation and applications, antiderivatives, definite integrals and area.

### Course Objectives

The objective of the course is to introduce students to the single variable calculus. Students will learn limits, continuity, differentiation, an introduction to the Riemann integral, and the Fundamental Theorem of Calculus. They are expected to apply these topics to a rate of change, local linear approximation, related rates, curve sketching and area between curves. Another objective is to prepare students for higher level education in mathematics.

### Grade Distribution

<b>Six Quizzes (5% each)</b>	30 %
<b>Midterm</b>	35 %
<b>Final</b>	35 %

### Letter Grade Distribution

90-100 %	<b>A</b>
85-89 %	<b>B+</b>
80-84 %	<b>B</b>
75-79 %	<b>C+</b>
70-74 %	<b>C</b>
65-69 %	<b>D+</b>
60-64 %	<b>D</b>
0-59 %	<b>F</b>

**\*Note:** According to the classroom policies, students are required to have at least 80 % class attendance to be eligible to take the final exam. Three late attendances (each of 15 minutes or more) are considered equal to one absence.

<b>DATES</b>	<b>TOPICS [Recommended Exercises]</b>
Week 1	<b>Chapter 2 Derivatives (1);</b> The tangent to a curve, Instantaneous velocity, Rates of change
Week 2	<b>Quiz 1 (5 %)</b> <b>Chapter 3 Limits;</b> Informal definition of limit, Formal definition of limit, Properties of the limit
Week 3	<b>Quiz 2 (5 %)</b> Infinite limit Continuity
Week 4	Substitution in limits <b>Chapter 4 Derivatives (2);</b> Direct computation of derivatives The product and quotient rules
Week 5	<b>Quiz 3 (5 %)</b> Derivatives of trigonometric functions The chain rule Implicit differentiation
Week 6	Related rates Review
<b>19 October 2019</b> 12:00 - 13:50 AM	<b>Midterm Exam (35 %)</b> (covering topics from weeks 1-6)
Week 7	<b>Chapter 5 Graph sketching;</b> Intervals of increase and decrease, and concavity [1-26] Relative extrema, First and second derivative tests Graph sketching
Week 8	Optimization problems <b>Quiz 4 (5%)</b>
Week 9	<b>Chapter 7 Integration;</b> Area under a graph The Fundamental Theorem of Calculus The summation notation
Week 10	<b>Quiz 5 (5 %)</b> The indefinite integral Properties of the integral
Week 11	The definite integral Integration by substitution <b>Quiz 6 (5 %)</b>
Week 12	<b>Chapter 8 Applications of integrals</b> Area between graphs Review
<b>7 December 2019</b> 12:00 - 13:50 AM	<b>Final Exam (35 %)</b> (covering topics from weeks 7-12)

**Canvas self-enrollment:** <https://canvas.instructure.com/enroll/GGE73K>.  
Alternatively, students can sign up at <https://canvas.instructure.com/register> and use the following join code: **GGE73K** .

ICMA106 Canvas QR Code

