

# Mahidol University International College

|   |
|---|
| <p style="text-align: center;"><b>ICNS 103 – Fundamental Mathematics</b><br/><b>2nd Trimester (February-May 2012) Academic Year 2011-12</b></p> |
|---|

**Class Time:** Section 4 Monday/Wednesday 16.00-17.50 Room 1306

**Midterm Exam:** Saturday, March 24, 2012 **Time:** 10.00-11.50

**Final Exam:** Friday, May 4, 2012 **Time:** 10.00-11.50

**Instructor:** Wiroonsak Santipach, Ph.D.

**Office:** Math Clinic

**Office Hours:** Monday/Wednesday 13.00-14.00

**www:** <http://pirun.ku.ac.th/~fengwrs/icns103.htm>

**Email:** [wiroonsak.s@ku.ac.th](mailto:wiroonsak.s@ku.ac.th)

---

## Required Textbook:

*Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences*, 13<sup>th</sup> (or 12<sup>th</sup>) edition by Ernest F. Haeussler, Jr., Richard S. Paul, and Richard J. Wood

---

## Course Description

Single variable calculus; limits and continuity, differentiation, curve sketching, applied maxima and minima, integration, area between curves, multivariable functions; partial differentiation.

## Course Objectives

After studying this course, student should be able to:

1. solve algebraic problems involving limits and continuity, differentiation, relative extrema, integration, and partial derivatives;
2. explain how the techniques of derivatives, integrals, and partial derivatives can be applied to business and economics.

## Course Schedule

| DATES                       | TOPICS  |
|-----------------------------|---|
| Week 1: 13 –17 Feb          | Limits (10.1)   |
| Week 2: 20 – 24 Feb         | Limits (cont.); Continuity; (10.2-10.3)   |
| Week 3: 27 Feb – 2 Mar      | Definition and basic rules of differentiation; Rate of change (11.1-11.3)   |
| <b>Week 4: 5 – 9 Mar</b>    | <b>Quiz 1 (10 %)</b><br>More rules of differentiation (Product rule, Quotient rule, Chain rule; 11.4-11.5)        |
| Week 5: 12-16 Mar           | Derivatives of logarithmic and exponential functions; Implicit differentiation (12.1-12.2,12.4)                   |
| Week 6: 19 -23 Mar          | Higher-order derivatives; Partial derivatives (12.7,17.1, 17.2)   |
| <b>24 Mar (10.00-11.50)</b> | <b>Midterm Exam (35 %)</b>  |
| Week 7: 26 – 30 Mar         | Relative extrema ; Absolute extrema on a closed interval; Concavity; 2 <sup>nd</sup> -derivative test (13.1-13.4) |
| Week 8: 2 – 6 Apr           | Vertical and horizontal asymptotes; Curve sketching; Applied maxima and minima (13.5-13.6)                        |
| <b>Week 9: 9 – 13 Apr</b>   | <b>Quiz 2 (10 %)</b><br>Antiderivative; Indefinite and definite integrals; Basic rules of integration (14.2-14.4) |
| Week 10: 16 – 20 Apr        | Techniques of Integration: basic rules, substitution, long division (14.5)  |
| Week 11: 23 Apr – 1 May     | Integration by parts; Area between curves (15.1, 14.7, 14.9)  |
| <b>4 May (10.00-11.50)</b>  | <b>Final Exam (35 %)</b>  |

### Grading

### Evaluation

|                      |             |          |    |
|----------------------|-------------|----------|----|
| Quiz 1               | 10%         | 80-100 % | A  |
| Midterm              | 35%         | 75-79 %  | B+ |
| Quiz 2               | 10%         | 70-74 %  | B  |
| Final                | 35%         | 65-69 %  | C+ |
| Homework+Attendance* | 10% (5%+5%) | 60-64 %  | C  |
|                      |             | 55-59 %  | D+ |
|                      |             | 45-54 %  | D  |
|                      |             | 0-44 %   | F  |

**\*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.