Mahidol University International College

ICMA 336 (4-0) Numerical Methods

First Trimester, Academic Year 2011–2012

Midterm Exam:	Will be announced	**Time:**	Will be announced
Final Exam:	Will be announced	**Time:**	Will be announced
Instructor :	Dr. Pallop Huabsomboon		
Day/time :	Tuesday and Thursday from 10:00 to 11:50		
Room :	1406 (Tuesday) and 3407 (Thursday)		
Office :	Math Clinic (1309)		
Office Hours:	Tuesday 9:00 to 10:00 (at Math Clinic).		
e-mail:	scphc@mahidol.ac.th		
Website:	http://mucc.mahidol.ac.th/~scphc		

Textbook (Not required):

An Introduction to Numerical Analysis, by Atkinson K. E. Paul.

Course Description
Introduction to the use of computers to solve scientific problems, numerical solution of nonlinear equations, linear algebra systems, the interpolation and approximation of functions, differentiation and integration, and differential equations.

Course Objectives
After studying this course, the student is able to:

1. Describe the essential idean, concepts and theories of numerical method.
2. Describe the basic idea, concepts and theries of numercal solution of differential equations.
3. Apply knowledge in numerical method to related disciplines.

Schedule :

Week	Topics
1	Introduction to the use of computers to solve scientific problems: Taylor series Trucation Error.
2	Round-off error, Introduction to Matlab.
3	Numerical solution of nonlinear equations: Graphing method, Bisection method
4	Newton's method, Secant method, Iterative method.
5	Linear algebra systems: Gaussian Elimination, Gauss-Jordan's method, LU decomposition
6	Cholesky factorization. **Midterm Exam.**
7	Interpolation and approximation of functions: Polynomial interpolation, Lagrange's interpolation.
8	Newton's interpolation, Hermite's Interpolation, Least-square approximation.
9	Differentiation and integration: Forward difference, Backward difference, Central difference, Trapezoidal rule, Simpson's rule, Newton-Cotes formulas
10	Gaussian quadrature. Differential equations: Euler's method
11	Runge-Kutta method, Multi-step method
	Final Exam

Grading :

Midterm Exam	40%
Final Exam	40%
Assignment	20%

Grading scale

Score	Grade
80-100	A
75-79	B+
70-74	B
65-69	C+
60-64	C
55-59	D+
50-54	D
0-49	F

Note :

I. Students should attend every class. Students arriving up to five minutes late after the roll has been taken will receive a late mark. Students arriving more than five minutes after the roll has been taken will receive an absence. **Three late marks is equivalent to one absent mark**.

II. Students must have an attendance record of **80% for the whole course** otherwise students will not be allowed to sit for the final examination.

III. Breaks during class time are given at the discretion of the instructor. The 5 minute-late policy also applies to breaks.

IV. Students who have difficulty with a specific topic or have any problem are invited to seek special counseling.