

## Course Syllabus

<b>Program of Study</b>	Bachelor of Science (Computer Science)
<b>Faculty/Institute/College</b>	Mahidol University International College
<b>Course Code</b> ICCS 306	<b>Course Title</b> Numerical Methods 1
<b>Number of Credits</b>	4 ( <b>Lecture / Lab</b> ) (4-0)
<b>Prerequisite (s)</b>	none
<b>Type of Course</b>	Required Major courses
<b>Trimester / Academic Year</b>	2 Trimesters each year
<b>Course Description</b>	

Computational methods, solution of non-linear equations and systems of linear equations, approximated differentiation and integrating, numerical solution of ordinary differential equations, curve fitting.

### Course Objective (s)

The course is designed to introduce the concept of numerical analysis.

### Course Outline

Week	Topic		Instructor
	Lecture	Hour	
1	Round-off errors, computer arithmetic, convergence	4	
2	Bisection method, Newton method	4	
3	Error analysis, accelerating convergence	4	
4	Interpolation, Lagrange polynomial	4	
5	Hermite Interpolation	4	
6	Splines	4	
7	Numerical differentiation	4	
8	Numerical integration, approximation theory	4	
9	Initial-value problems for ODE	4	
10	Numerical solutions of nonlinear systems of equations: Newton's method, Quasi-Newton methods, Steepest descent	4	
11	Numerical solutions of PDE	4	
	Total	44	

### Teaching Method (s)

Lectures

**Teaching Media**

Transparencies, handouts and lecturing from boards

**Measurement and evaluation of student achievement**

Assessment made from the set-forward criteria: student who gets 85% and above will have Grade A.

**Course evaluation**

A suggestive minimum of;

Midterm examination	40%
Final examination	50%
Quizzes	10%

**Reference (s)**

Numerical Analysis. 5<sup>th</sup> Edition. Richard L. Burden, J. Douglas Faires. PWS Publishing.

**Instructor (s)**

TBA

**Course Coordinator**

TBA