Department of Mathematics, Faculty of Applied Science
King Mongkut's University of Technology North Bangkok (KMUTNB)
Course Syllabus: 040203213 Numerical Method
Semester 2, Academic Year 2024

Course Title: 040203213 Numerical Method **Credits:** 3(3-0-6)

Prerequisite: 040203211 Engineering Mathematics III

Course Learning Outcomes (CLOs) :

Students should be able to :

CLO 1 Recognize and understand the concept of error.

CLO 2 Find roots of nonlinear equations.

CLO 3 Understand matrix computation and find numerical solution of linear and nonlinear systems.

CLO 4 Understand and apply the idea of interpolation.

CLO 5 Find numerical differentiation and integration.

CLO 6 Apply the idea of numerical differentiation to find numerical solution of differential equation.

CLO 7 Use software for solving numerical problems.

Course Description:

Error; finding root of nonlinear equation; matrix computation; numerical solution of linear and nonlinear systems; interpolation; numerical differentiation and integration; numerical solution of differential equation; software usage for solving numerical problem.

Lecturer	Time	Room	Office Hours	Office
Asst. Prof. Dr. Khomsan Neamprem (KNP)	M 09.00 – 12.00	89 – 503	M 13.00 – 16.00 F 09.00 – 12.00	78 – 1004

Reading List

Core reading book:

1. Chapra, Steven C., Applied Numerical Methods with MATLAB for Engineers and Scientists 3rd Edition, McGraw-Hill International Edition 2012.
2. Gilat, Amos and Subramaniam, Vish, Numerical Methods for Engineers and Scientists: An Introduction with Applications Using MATLAB.

Supplementary reading and study material:

1. Gerald, Wheatley., Applied Numerical Analysis 6th Edition, Addison-Wesley Publishers, 1999.
2. Burden, Richard L. and Faires, Souglas J., Numerical Analysis 6th Edition, Brooks/Cole Publishing Company, CA, 1997.

Note: Students can use other textbooks which include topics of numerical method as similar to the topics in the teaching outline for each week.

Assessments:

Midterm examination	45 %
Final examination	40 %
Homework and class attention	15 %

Teaching / Learning Activities:

Week No.	*Learning Topics*
1	Introduction to concept of numerical methods and error
2	Finding root of nonlinear equation
3	Finding root of nonlinear equation (Cont.)
4	Matrix computation
5	Numerical solution of linear system
6	Numerical solution of linear system (Cont.)
7	Numerical solution of nonlinear systems
8	Interpolation
Midterm Examination (Date: 20 January 2025; Time 09.00 – 12.00)	
9	Numerical differentiation
10	Numerical differentiation (Cont.)
11	Numerical integration
12	Numerical integration (Cont.)
13	Numerical solution of ordinary differential equation
14	Numerical solution of ordinary differential equation (Cont.)
15	Software usage for solving numerical problem
Final Examination (Date: 21 March 2025; Time 09.00 – 12.00)	

Note : Some changes may be made to this syllabus during the semester.

040203213 Numerical Method (English Programme)

Semester 2, Academic Year 2024

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Contact Info.

Line	Or Click https://line.me/ti/g/6Ec8ssdBdA
Google Classroom	Code adtpybh Or Click https://classroom.google.com/c/NzM0Njk4OTU1OTQx?cjc=adtpybh