Course Title Numerical Techniques in Electrical Engineering

Course Number LE230

Credit Hours 45 hours/ 1 semester

Prerequisites MA111 (Fundamentals of Calculus)

Instructor Dr. Pongsak Mahachoklertwattana
Title Lecturer
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Course Descriptions Graph theory and applications. Introduction to numerical techniques: solutions of equations and system of equations, method of least squares, eigenvalue problem, numerical differentiation and integration, methods for solving differential equations.

Tentative Course Schedule Overview of numerical techniques and introduction to numerical computing (1 week) Solution of Non-linear Equations (1) System of Linear Equations (2) Curve Fitting (Regression and Interpolation) (2) Lab test & Review (1) —**MIDTERM EXAM**— Numerical Differentiation (1) Numerical Integration (1) Ordinary Differential Equations (2) Partial Differential Equations (1) Eigenvalue Problem (1) Graph theory and applications (1) Lab test & Review (1)

Textbook and Reference

[1] E. Kreyszig, *Advanced Engineering Mathematics 9th*, John Wiley & Sons, 2006. (Chapters 19-21)
[2] R. D. Choudhury, *Networks and Systems 2nd*, New Age International, 2010
[3] S. C. Chapra, R. P. Canale, *Numerical Methods for Engineers and Scientists 6th*, McGraw-Hill, 2010.
[4] A. Gilat, V. Subramaniam, *Numerical Methods for Engineers and Scientists 3rd*, John Wiley & Sons, 2011.
[5] W.-K. Chen, *Graph Theory and its Engineering Applications*, World Scientific, 1997.
[6] Lecture notes and class slides

Grading

Attendance & Assignments	10%
Midterm	30%
Comprehensive Final	40%
Programming	20%
Total	100%