

Numerical Methods

by

Norhayati Rosli, Rozieana Khairuddin, Noraziah Adzhar, Mohd Zuki Salleh, Nadirah Mohd Nasir & Nurfatihah Mohd Hanafi Faculty of Industrial Sciences & Technology norhayati@ump.edu.my



Numerical Methods by Norhayati Rosli <u>http://ocw.ump.edu.my/course/view.php?id=449</u>

Course Description

COURSE SYNOPSIS

This course introduces basic concepts of round-off and truncation errors, roots of equations, linear algebraic equations and matrices, curve fitting, numerical integration and ordinary differential equations of initial and boundary value problems.

COURSE OUTCOMES

CO1: Acquire fundamental principles of numerical methods CO2: Analyse mathematical and engineering problems by using numerical methods

REFERENCES

- 1. Norhayati Rosli, Nadirah Mohd Nasir, Mohd Zuki Salleh, Rozieana Khairuddin, Nurfatihah Mohamad Hanafi, Noraziah Adzhar. *Numerical Methods,* Second Edition, UMP, 2017 (Internal use)
- 2. Chapra, C. S. & Canale, R. P. *Numerical Methods for Engineers*, Sixth Edition, McGraw– Hill, 2010.



Numerical Methods by Norhayati Rosli <u>http://ocw.ump.edu.my/course/view.php?id=449</u>

Content

- **1** Introduction to Numerical Methods
- 2 Roots of Equations
- **3** Solving Small Numbers of Linear Algebraic Equations
- **4** Solving Linear Algebraic Equations: Direct Methods
- **5** Solving Linear Algebraic Equations: Iterative Methods
- 6 Nonlinear System
- 7 Curve Fitting
- ⁸ Numerical Integration
- **9** Ordinary Differential Equations (Initial Value Problems)
- **10** Ordinary Differential Equations (Boundary Value Problems)



Numerical Methods by Norhayati Rosli http://ocw.ump.edu.my/course/view.php?id=449