



**School of Engineering and Computer Science**  
**Independent University, Bangladesh**  
**Course No: MAT 410**  
**Course Title: Numerical Method**  
**Autumn 2013, Sec 1**

**Instructor: K.M Ariful Kabir**  
**Office: BC5010B, email: k.ariful@yahoo.com**

**Class times:**  
**Sec 1: MW 17:00-18:30p.m.**  
**Class Room: BC6007**

**Tutorials:**  
**Sec 1: Thursday 09:40a.m. – 11:10a.m.**  
**Class Room: BC4010**

**Text Book:** Numerical Analysis, By- Richard L.Burden, J douglas Faires, 9<sup>th</sup> Edition.

**Reference Book:** 1) Introductory Methods of Numerical Analysis, By- S.S. Sastry  
2) Numerical Analysis, By Balagurushuamy

**Grading Policy:**

A 85% above	C+ 60-64
A- 80-84	C 55-59
B+ 75-79	C- 50-54
B 70-74	D 40-50
B- 65-69	F less than 40%

***Pre-requisite: CSC 305, MAT 303***

**Mark Distribution:**

3 Class Tests (Best 2)	: 20%
Midterm	: 30%
Attendance	: 5%
Lab Work/Assignment	: 10%
Final Exam	: 35%
<b>Total</b>	<b>: 100%</b>

**Important notes:** *No one will be allowed to enter the class after 10 minutes of the teacher's entrance in the class room (the door will be locked). Late attendance will be given only if a student enters the class after 5 minutes but before 10 minutes. Three (3) late absences would be equivalent to one (1) absence. There will be no make up of the quiz tests, mid term examination and the Final examination.*

## Course Content

No.	Chapter	Topics	Number of Class, Chapter No & Assignment
1.	Numbers and Errors	i) Floating point number representation inside a Computer ii) Floating point Computation iii) Accuracy and Precision iv) Round of Errors and truncation Errors v) Error Propagation vi) Algorithm and convergence	Number of Class is 2(two) Chapter No: Hand note Or books S.S Sastry chap- 1 <b>Assignment-I</b> (Write the definition with relevant Example)
2.	Roots of Equations	i) Bracketing Method*** ii) Bisection Method iii) False Position method iv) Newton-Raphson Method	Number of Class is 3(three) Chapter No: Chapter-1 <b>Assignment-II</b> (MATLab, C++ or Mathematica)
<b>CLASS TEST-1</b>			
3.	System of linear Equations Chapter-6 & 7(6.1, 6.2, 6.4, 7.1)	i) Gaussian Elimination ii) Partial and Complete Pivoting iii) LU decomposition Method iv) Iterative Techniques v) Tridiagonal and sparse systems***	Number of Class is 5(Five) Chapter No: Chapter-6 &7 (6.1, 6.2, 6.4, 7.1) <b>Assignment-III</b> (MATLab, C++ or Mathematica)
<b>Midterm Exam</b>			
4.	Interpolation Chapter-3 (3.3,3.5)	i) Newton's divided difference technique ii) Spline interpolation iii) Fourier Approximation***	Number of Class is 3(three) Chapter No: Chapter-3 (3.3,3.5) <b>Assignment-IV</b> (MATLab, C++ or Mathematica)
<b>CLASS TEST-2</b>			
5.	Numerical Integration Chapter-4 (4.3, 4.4,4.6,)	i) Rectangular*** and trapezoidal rule ii) Simpson's rule with equal and unequal segments iii) Spline quadrature iv) Adaptive quadrature routines***	Number of Class is 4(four) Chapter No: Chapter-4(4.3, 4.4,4.6,) <b>Assignment-V</b> (MATLab, C++ or Mathematica)
<b>CLASS TEST-3</b>			
6.	Ordinary Differential Equation Chapter-5(5.2, 5.4,)	i) Solution of first order differential equations ii) Euler Method iii) Runge- Kutta Method iv) Adaptive Runge- Kutta Method v) General Method for system of initial value problem***	Number of Class is 3(three) Chapter No: Chapter-5(5.2, 5.4,) <b>Assignment-VI</b> (MATLab, C++ or Mathematica)
<b>Final Exam</b>			