# MA2501: Numerical Methods

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January 11, 2016

- https://wiki.math.ntnu.no/ma2501

# About Me

- Researcher, IMF, NTNU (September, 2014 – Present)
- Ph.D. (Mathematical Sciences), IMF, NTNU (November, 2014)
  Specialization: Differential Equations and Numerical Analysis
- M.Phil (Applied Mathematics), GCU Lahore, Pakistan
- M.Sc. (Computational Mathematics), PU, Lahore Pakistan
- B.Sc. (Mathematics & Statistics), PU, Lahore Pakistan

www.asifmq.com (Personal-webpage)

# Practical Information

- Time Table:

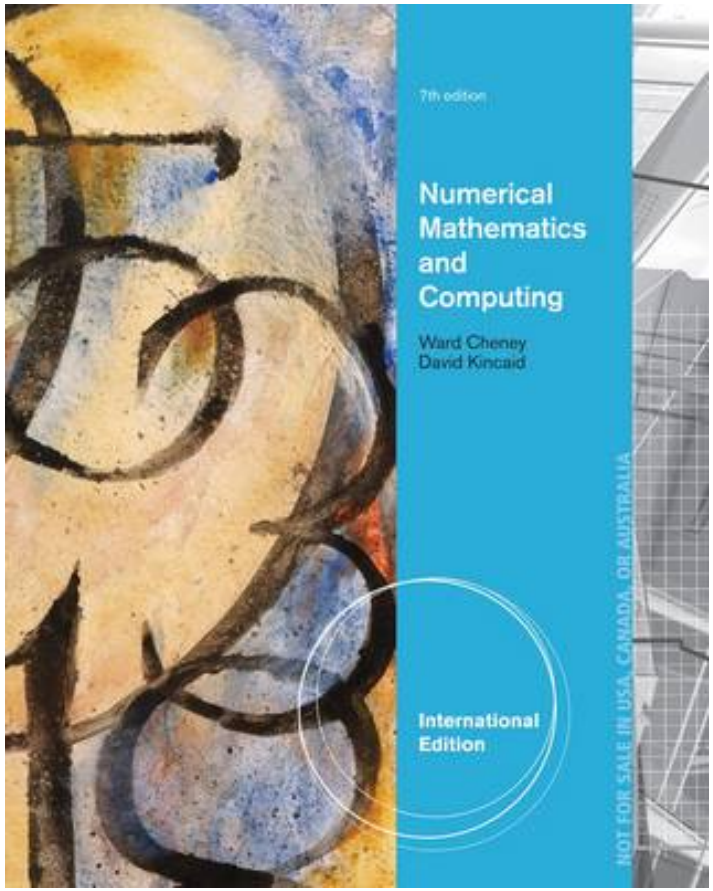
  **Lecture hours:**
  Monday: 14:15–15:00,EL4 (Week 2–11, 14–18)
  Wednesday: 12:15–14:00, F6 (Week 2–11, 13–18)

  **Exercise hours:**
  Wednesday: 14:15–16:00, F6 (Week 2–11, 13–18)

- Reference group: (Three meetings: Start-Mid-End)

# Textbook

Numerical Mathematics and Computing
(Seventh edition)
Ward Cheney & David Kincaid



# Course Breakdown:

**Examination will consist of two parts:**

- Written Exam (70/100)
  Permitted aids:
  - The textbook: Cheney & Kincaid, Numerical Mathematics and Computing, 6. or 7. edition
  - Rottmann, Mathematical formulae
  - Approved calculator
  - No handwritten material is allowed.
  - You are not allowed to write anything other than your name anywhere in the book
- Programming Project (30/100)
  If the project is not handed in, you may still take the final exam for a maximum of 70% of the total score

# Course contents:

- Solution of linear systems of equations.
- Non-linear equation and systems of equations.
- Interpolation and Numerical differentiation.
- Numerical integration.
- Numerical solution of differential equations.
- Programming projects.

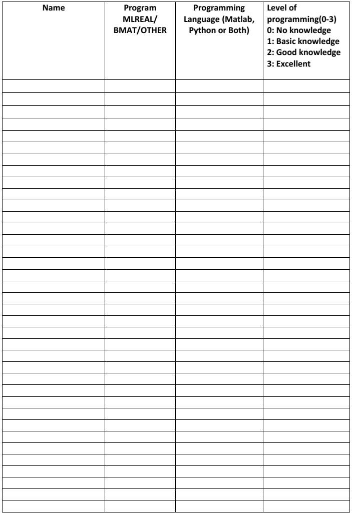
# Objective of the course

Given a class of problems (linear or nonlinear equations, integrals, differential equations), you will learn how to

- develop a numerical algorithm
- implement it (computer program)
- do verification (testing, testing, testing)

The focus is on ideas and principles.

# Information sheet:



| Name | Program MLREAL/ BMAT/OTHER | Programming Language (Matlab, Python or Both) | Level of programming(0-3)<br>0: No knowledge<br>1: Basic knowledge<br>2: Good knowledge<br>3: Excellent |
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