

# Computeroriented Methods for Solving Differential- and Integralequations (CMDIE)

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## Contents

- Basic Definitions and Terminology, Floating Point Systems, Programming Tools - MatLab
- Linear Systems of Equations and Linear Least-square
- Eigenvalue and Singular values
- Nonlinear Equations and Interpolation,
- Numeric Integration and Differentiation,
- Simple Integral Equations,
- Introduction to Differential Equations.

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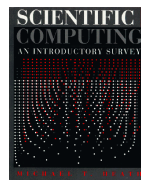
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## Reference Book

- M.T.Heath: *Scientific Computing: An Introductory Survey, Second Edition*, McGraw Hill, New York 2001, (SC);
- *First Edition* from 1997;
- Lecture notes accessible on:  
<http://www.cse.uiuc.edu/heath/scicomp/notes>
- and also on Class-Web



2<sup>nd</sup> ed.



1<sup>st</sup> ed.

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## Supplementary Material

- W.H.Press at all.: *Numerical Recipes in C*, Cambridge University Press.
- On-Line version:  
[http://www.ulib.org/webRoot/Books/Numerical\\_Recipes/](http://www.ulib.org/webRoot/Books/Numerical_Recipes/)
- Scientific Journals

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## Scheduling

- **Lecturing:** In four blocks, monthly on two consecutive days, during winter semester 03/04: Tuesday and Wednesday, 10-11:45 a.m. and 14-15:45 p.m. (including 15" break) Room T05.
- **Labs:** After lectures, 12-12:45 a.m. and 16-16:45 p.m., Small Computer Room, (see syllabus for details)
- **Homework and projects** posting:  
Class-Web page:  
[http://www-e6.ijs.si/~roman/usalz/cmdie03\\_04](http://www-e6.ijs.si/~roman/usalz/cmdie03_04)
- **Office hours:** During Labs
- E-mail: [roman.trobec@ijs.si](mailto:roman.trobec@ijs.si)

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## Course Organisation

- Teaching
  - Lessons: reading of the textbook, slides and notes available on Class Web,
  - Labs: practical examples from the textbook implemented in MatLab, solution of the review questions, presentations of solved homework,
  - Homework and project made individually and the solutions posted on the Class-Web page
- Examination and Grading
  - Solution of problems - 7 homeworks: 30%
  - Class Project: 20%
  - Final exam(review questions and assigned homework): 50%
- Personal communication
  - During Labs, E-mail, ...

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## Homework

- Self initiative work is expected here
- Students will be given to solve either exercises from the textbooks or problems defined by themselves,
- It is expected that one homework assignment for each lesson (in total 7) will be finished individually,
- The problem and results should be posted on the Class-Web page and discussed later in the class if necessary.

## Project

- Up to two students can work together on an applied project,
- They have to involve a practical component– i.e. it is not a paper and pencil exercise, some working program is expected,
- Prepare the project proposal, either your own topic or a suggested one. Start thinking about potential project ideas soon!
- A written report including overview, methods, and results, should be posted on the Class-Web.

## Final Exam

- There will be a final exam, covering the complete course material (books and notes can be used).
- Exam questions:
  - Review questions from the text book (electronic version available on Class-Web), and
  - Solved homework (posted by students on the Class-Web). You should study the assigned and solved homework of your colleagues.