MATH 341—Computational Methods

Schedule number [2561]

Fall 1997

Instructor: Matthias K. Gobbert

- Office hours: M 2–3, W 11–12, F 2–3, and by appointment
  Please, note that some of these times may need to be cancelled, if there are faculty meetings (Monday) or colloquia (Friday).
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Lectures: MWF 10:00–10:50, SS 114 (Social Science)

Prerequisite: MATH 151 and 152 (Calculus I and II), MATH 221 (Introduction to Linear Algebra), and knowledge of a high-level programming language.

Textbook: Richard L. Burden and J. Douglas Faires, Numerical Analysis, sixth edition, Brooks/Cole Publishing Company, 1997. This course will cover chapters 2, 3, 4, and 6, as well as parts of chapters 1 and 5 of the textbook.

Homework: Homework will consist both of theoretical exercises and of computational assignments. Only through a familiarity with both sides of numerical analysis will a full appreciation of the material be achieved. (Indeed, it is this combination that is the most rewarding aspect of this class and of the field of numerical analysis as such!)

You will be allowed to use any programming or scripting language of your choice as long as it allows sufficient control over the implementation of the algorithms. However, I would personally encourage the use of a source level programming language like C or Fortran, as this class is a great opportunity to learn more about them and since in the long run only those will provide the needed control over all aspects of the computer's behavior.

Homework will be announced in class and on the course's webpage. Homework will be due in the last lecture of each week, usually the Friday lecture (except when the Wednesday before Thanksgiving is the last day of class during that week). The homework will be returned during the following week.

Make sure the pages are securely fastened together, for instance by staples. The first page must contain your full name and social security number; all following pages should contain at least your last name, in the event that the pages become separated.

Please note again that the homework is due in class. I discourage leaving homework at my office, if I am not present, as it can get lost. Also note that the department does not have sufficient resources to accept homework, so do not try to turn in homework to the department secretary, please.

Tests: There will be one (1) midterm exam during the semester and one (1) comprehensive final exam; see the syllabus for the dates.

According to university policy, attempts at cheating are considered a serious offense againgst the student honor code and will be looked upon seriously. The right is reserved to check a picture identification during any of the exams.

In addition to these general statements, I would like to clarify that the purpose of the computational assignments is for you yourself to learn something about computers. So, while I explicitly allow the exchange of ideas and information about them, everybody has to write his or her own code. Any code copied or downloaded from any source would need to be clearly labeled and referenced as such both in the accompaying write-up and the source file; talk to me for information and appropriateness of incorporating code from other sources, it should not be needed for this class.

Grading: Weights for the various items will be distributed approximately according to the following schedule:

Homework	Midterm	Final
40%	20%	40%

While the grading scale will be adjusted later to some degree to reflect the level of difficulty of the exams, the following may serve as a guideline based on experience:

Score above	90%	80%	65%	50%	otherwise
Letter grade	A	B	C	D	F

Both the weight distribution and the grading scale are subject to change by announcement in class. In particular, if it is found that additional reinforcement of material is needed, quizzes might be used.

Syllabus: This syllabus is the plan for the whole semester to give you an idea of the material to be covered. It is subject to change as needed.

Week	Monday	Wednesday	Friday
09/01–09/05 1	Labor Day, no class	Organization and review (section 1.1)	section 2.1 homework 1 due
09/08–09/12 2	section 2.2	section 2.3	section 2.4 homework 2 due
09/15–09/19 3	section 3.1 (last day to register)	section 3.1	section 3.2 homework 3 due
09/22–09/26 4	section 3.2	section 3.3	section 3.4 homework 4 due
09/29–10/03 5	section 8.1	section 4.1	section 4.1 homework 5 due (—)
10/06–10/10 6	section 4.2	section 4.3	section 4.3 homework 6 due
10/13–10/17 7	section 4.4 (Columbus Day) (—)	section 4.5	section 4.6 homework 7 due (—)
10/20–10/24 8	review	Midterm exam	section 4.7 homework 8 due
10/27–10/31 9	section 4.7	section 6.1	section 6.1 homework 9 due
11/03–11/07 10	section 6.2	section 6.2	section 6.3 homework 10 due
11/10–11/14 11	section 6.4 (last day to drop)	section 6.5	section 6.5 homework 11 due
11/17–11/21 12	section 6.6	section 7.1	section 5.1 homework 12 due
11/24–11/28 13	section 5.1 (—)	section 5.2 homework 13 due	Thanksgiving break, no class
12/01–12/05 14	section 5.2	section 5.3	section 5.4 homework 14 due
12/08–12/12 15	section 1.2	catch-up	course review
12/15–12/19 16	Final exam: 10:30–12:30	Finals week, no class	Finals week, no class