SYLLABUS FOR MATH 4073–001, Fall 2015

Numerical Analysis

Lectures: TR 9:00–10:15am, PHSC 321
Instructor: Dr. Ying Wang, PHSC 1119, Tel: 405-325-6074, Email: wang@math.ou.edu
Office Hours: TR 2:30-3:30pm (tentatively), and by appointment

Prerequisites: MATH 3113 (Intro to ODEs) or 3413 (Physical Math I).

References: (not required)
• Finite Difference and Spectral Methods for Ordinary and Partial Differential Equations, by Lloyd N. Trefethen, available online.
• Numerical Methods (Dover Books on Mathematics), by Germund Dahlquist, Åke Björck.

Course content (tentative)
• Numerical linear algebra.
• Numerical solutions of nonlinear scalar equations.
• Numerical solutions of initial-value problems for ordinary differential equations.
• Numerical approximation of functions.
• Numerical solutions of nonlinear systems of equations.

The course content may change based on the schedule.

Online materials: The Desire2Learn system will be used to post grades only. All the homework assignments, notes and announcements can be found at http://www.math.ou.edu/~wang/4073_2015_Fall/schedule.html.

Grading: There will be grades for homework/class participation, quizzes, two exams and a final exam. All exams are closed book/notes.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Homework &amp; Participation</td>
<td>35%</td>
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<tr>
<td>Quizzes</td>
<td>10%</td>
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<tr>
<td>Exam 1 (Thursday, October 1 tentatively)</td>
<td>15%</td>
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<td>Exam 2 (Thursday, November 12 tentatively)</td>
<td>15%</td>
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<tr>
<td>Final Exam (Monday Dec 14, 8:00–10:00am)</td>
<td>25%</td>
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All the exams will be held in the usual lecture room.

Homework: Homework assignments will be set regularly throughout the semester; the assignments will be posted on http://www.math.ou.edu/~wang/4073_2015_Fall/schedule.html. Hand-in assignments will be due at the beginning of class. Students are encouraged to work together on the assignments but everyone should write up their own version of the solutions. Not all of the assigned problems will be graded; those that are will be done so by taking into account the correctness, clarity and neatness of presentation. No late assignments will be accepted.

Quizzes: Quizzes will be given in class at random times, your lowest quiz(zes) score(s) will be dropped. The quizzes will use material that has been covered very recently, for example, the previous lecture, so you have to make every effort to keep up with the material right after they have been discussed in class.

Attendance: You are required to attend class on those days when an examination/quiz is being given. Incomplete and make-up exams will almost never be given, and only for cases of extreme personal
misfortune. Arrangement of make-up exams/quizzes should be discussed with me in advance. Attendance
during other class periods is also strongly encouraged. However, be advised that frequent missed classes will
negatively affect your grade because of missed quizzes (which are recorded as zero if not taken). Also be
advised that you are fully responsible for the material covered in each class, whether or not you
attend.

Use of calculators and technology: The students are expected to write and execute programs (with any
program language) throughout the semester. Most of the programming demonstrations in class will be done
using MATLAB - a high-level programming language and interactive environment. Previous knowledge of
program is not assumed, but the students are expected to learn quickly the basics of program in order to
complete the homework assignments and projects. For all computations required on in-class exams/quizzes,
a simple (non-graphing) calculator (e.g.TI-30Xa) will be sufficient, and most likely a calculator is not needed
(and not allowed) for the in-class exams/quizzes.

Miscellaneous: You are expected to review carefully all graded homework and exam papers as soon as
they are returned. All questions and/or perceived discrepancies about the grading of homework or exam
papers must be reported to me within seven calendar days of the date on which the paper was returned.

Policy on W/I grades: Through September 4, you may drop this course with no record. You can
withdraw this course with an automatic W anytime up through Friday, October 30 (but students are not
allowed to have more than five courses on their transcripts for which a W is assigned as a final grade).
Graduate students, however, can only drop with an automatic W through Friday, October 2; during the
period October 2 through October 30 graduate students must obtain a drop form signed by me with an
indication of passing or failing at the time of the drop. After November 2, you may only drop this course
by petition to the College Dean. If you make such a petition and it is approved, I will give you a grade of
W or F according to whether you were passing or failing the course on the date you made the petition.
The grade of I is not intended to serve as a benign substitute for the grade of F. I only give the I grade if
a student has completed the majority of the work in the course at a passing level (for example everything
except the final exam), the course work cannot be completed because of compelling and verifiable problem
beyond the student’s control, and the student expresses a clear intention of making up the missed work as
soon as possible.

Academic misconduct: All cases of suspected academic misconduct will be referred to the Dean of
the College of Arts and Sciences for prosecution under the University’s Academic Misconduct Code. The
penalties can be quite severe. Don’t do it! For more details on the University’s policies concerning
academic misconduct see http://integrity.ou.edu/files/Academic_Misconduct_Code.pdf See also the
OU Student Code, which can be found at http://judicial.ou.edu/content/view/27/32/

Students with disabilities: The University of Oklahoma is committed to providing reasonable accommo-
dation for all students with disabilities. Students with disabilities who require accommodations in this course
are requested to speak with the instructor as early in the semester as possible. Students with disabilities
must be registered with the Office of Disability Services prior to receiving accommodations in this course.
The Office of Disability Services is located in Goddard Health Center, Suite 166: phone 405–325–3852 or
TDD (only) 405–325–4173.

Religious holidays: It is the policy of the University to excuse absences of students that result from
religious observances and to provide without penalty for the rescheduling of examinations and additional
required class work that may fall on religious holidays. Students who plan to observe a religious holiday
should notify me as soon as possible in order to make appropriate arrangements for class work or rescheduling
of examinations.