

Math451 Numerical Analysis, Fall 2015

Class Information

Professor: Dr. Jianliang Qian

Office: C-306 Wells Hall

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Website: <http://www.math.msu.edu/~qian/>

Text: Timothy Sauer, Numerical Analysis, second edition, Pearson, 2012.

Lectures: Days: **MWF**; time: **9:10-10:00am**; location: **B104 Wells Hall**

Office hours: Mon. 4-5pm, Wed. 4-5pm, Fri. 1-2pm, and by appointment.

Attendance: You are expected to be present for all class meetings so that you can be informed about homework, due dates, tests, exams and other matters relevant to the course.

Course objectives: This course on numerical analysis focuses on numerical algorithms, analysis, and implementation. For most of you, this is the first course where you encounter computer implementation of numerical algorithms. Upon completion of the course you are expected to be able to design and implement algorithms for some simple applied math applications. During this class a special effort is made to help you understand the presented algorithms. Please keep in mind that implementing algorithms to correctly carry out certain specific tasks is the ultimate purpose of the course.

The course covers the following topics: solving single equations, solving linear and non-linear systems of equations, linear interpolation, least-squares problems, numerical differentiation and integration, and if time permits: ordinary differential equations.

Homework assignments: Weekly homework assignments will be assigned with due date usually in a week. It is essential to your understanding of what is going on in class that you work hard on them. Your solutions must be written up neatly and logically, with appropriate explanation (in complete sentences) of what you are doing. You may discuss any of the problems with each other, as long as you work and code alone and use your own wording in writing up the homework to be handed in. Late assignments will not be accepted.

In terms of programming for homework assignments, matlab is the required programming language.

Exam: There is a Final Exam scheduled for Thursday, December 17, 7:45-9:45 a.m.

Grading: You can earn up to 1000 points in this class distributed as follows: 10 weekly homework assignments 40 points each; one midterm exam 200 points; Final Exam 300 points;

class participation 100 points.

NOTE: In order to achieve a passing grade in this course you need at least 100 points (50%) in the Midterm Exam, 150 points (50%) in the Final Exam, and 200 points (50%) of the homework assignments. Depending on all your work (homework, midterm exam, and final exam) your grade will be determined according to the following grading scale (subject to minor change): 92-100%, 4.0; 85-91%, 3.5; 78-84%, 3.0; 71-77%, 2.5; 64-70%, 2.0; 57-63%, 1.5; 50-56%, 1.0; 0-49%, 0.0.

After each class read your notes, read the section in the book, and do the assigned homework. You should do at least two hours of work outside of class for each class section. You should attend all classes.

Makeup exams: No makeup exams will be allowed except for medical and family emergency. A written note from an appropriate person is required. If you are a student athlete, please let me know ahead of time if your team travel schedule conflicts with a scheduled exam. A missed final exam will receive zero points.

Important dates:

Wednesday 09/02/2015: Classes Begin.

Monday 09/07/2015: Labor Day - University closed.

Wednesday 09/09/2015: Online open add period for Fall semester ends at 8pm.

Thursday 09/10/2015 to Wednesday 09/16/2015: Students go to Undergraduate office, C212 Wells Hall for Mathematics enrollment changes. (Late adds, drop to lower course, section changes).

Monday 09/16/2015: Last day to late add a course or change sections within a course. Last day to drop to a lower level course.

Monday 09/28/2015: End of 100% Tuition Refund.

Wednesday 10/21/2015: Middle of Semester. Last day to drop a course with no grade reported.

Thursday 11/26/2015 to Friday 11/27/2015: Thanksgiving Break.

Friday 12/11/2015: Last day of classes.

Academic honesty: The University's policy concerning academic integrity is covered in the Spartan Life booklet, General Student Regulations. According to the handbook, "...no student shall claim or submit the work of another as one's own." When taking a test or quiz, don't attempt to copy the work from another student's paper and don't refer to any material you have brought with you. You are on your honor to abide by these regulations.