MATH 446 section 003, Spring 2020

Numerical Analysis I

T R, 10:15-11:45 am, Innovation Hall 206

Instructor: Dr. Sarah Khankan

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Office: Exploratory Hall 4219
Office Hours: Friday 8:30-10:30

Credit Hours: 3

Text(s): Numerical Analysis by Timothy Sauer, Pearson, 3rd Edition. (ISBN: 9780134696454)

Matlab codes and solutions:
https://media.pearsoncmg.com/aw/aw_sauer_num_analysis_3/main.html

Prerequisites: Sufficient recall of undergraduate linear algebra, differential equations and computer literacy including familiarity with MATLAB.

Broad purpose of the course: In this course, the emphasis will be to analyze and apply well-know numerical techniques to solve engineering problems and evaluate the results. The objective will be to train students to understand why the methods work, what type of errors to expect, and when an application might lead to difficulties. In particular, the students will become proficient in:

- 1. Understanding the theoretical and practical aspects of the use of numerical methods
- 2. Implementing numerical methods for a variety of multidisciplinary applications
- 3. Establishing the limitations, advantages, and disadvantages of numerical methods.

About MATLAB: The software package MATLAB will be used for scientific computation, analysis and presentation of data. MATLAB is an interactive programming language for general scientific and technical computation with powerful graphics and library functions. *Intructions on accessing MATLAB are available on BlackBoard.*

Disability statement: If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Resources at 703.993.2474.

All academic accommodations must be arranged through that office.

Tutoring Center: The Math Tutoring Center is located in the Johnson Center Room 344. Help is available on a walk-in basis. For hours of operation see http://math.gmu.edu/tutor-center.php University Honor Code: You are expected to follow the GMU Honor Code http://oai.gmu.edu/the-mason-honor-code/.

Exams:

- Midterm: 03/05/2020
- Final Exam: 04/30/2020, 10:15-11:45 am, in class

Grade Distribution:

Computer project	20%
Quizzes	20%
Midterm	30%
Final Exam	30%

Course Policies:

- Exams are closed book, closed notes.
- No makeup exams will be given.
- No late assignments will be accepted under any circumstances.
- Attendance is expected.
- Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

Tentative Course Outline:
The weekly coverage might change as it depends on the progress of the class.

Week	**Sections covered + Practice problems**
1 (01/21-1/23)	• 1.1: 1, 3, 5 • 1.2: 1, 3, 5
2 (01/28-01/30))	• 1.2: 7 - 17 (odd), 23 • 1.3: 1, 3, 5
3 (02/04-02/06)	• 1.4: 1, 3, 5, 7, 9 • 1.5: 1, 4, 7 • 0.1: 1, 3, 6
4 (02/11-02/13)	• 0.2: 1 - 4, 7 • 0.3: 1-3, 5, 7, 10
5 (02/18-02/20)	• 0.4: 1, 2, 3 (also Computer Problem 3) • 2.1: 1, 3, 5, 7
6 (02/25-02/27)	• 2.2: 1 - 5, 7, 9
7 (03/03-03/05)	• Review • MIDTERM
8 (03/10-03/12)	• SPRING BREAK
9 (03/17-03/19)	• 2.3: 1 - 3, 5, 7 • 2.4: 1 - 7
10 (03/24-03/26)	• 2.5: 1, 2 • 3.1: 1, 2, 3, 5, 7, 9, 11, 13, 15
11 (03/31-04/02)	• 3.2: 1, 3, 5 • 3.3: 1, 3, 5, 7
12 (04/07-04/09)	• 3.4: 1 - 6 • 3.4: 9, 11, 13, 15, 17 • 3.5: 1, 3, 5, 7
13 (04/14-04/16)	• 4.1: 1, 2, 3, 7 • 4.1: 9, 11
14 (04/21-04/23)	• 4.2: 1, 3, 5
15 (04/28-04/30)	• Review • Final Exam