Math 446–002/OR 481: Numerical Analysis

Spring 2019: MW 3:00pm – 4:15pm, Innovation Hall, 206

Instructor: Dr. Daniel Anderson
(Room: 4411 Exploratory Hall, Tel: (703) 993-1482, Email: danders1@gmu.edu)
Office Hours: MW 1:30–2:30pm, and by appointment.
Text: *Numerical Analysis*, Third Edition, by T. Sauer

Prerequisites: MATH 203 and CS 112.

Course Goals: Design and implementation of algorithms for the solution of scientific and engineering problems. Emphasis will be placed on the written and graphical presentation of solutions.

Exams: There will be two midterm exams. Midterm exam dates and topics listed below are tentative and will be confirmed in class. You are responsible for being aware of any such changes announced in class. *Makeup exams will not be given.* In the event that one exam is missed and (1) a valid, documented excuse is given in writing to the instructor at the time of the absence and (2) the student provides sufficient evidence to the instructor that he/she is keeping up with the topics in the course, the final exam score will count in place of the missed exam. The instructor will determine whether an excuse is valid. Without a valid documented excuse given at the time of the exam, a missed exam will count as a zero. If more than one midterm exam is missed, that situation will be dealt with on an individual basis.

Homework: There will be regularly assigned homework problems.

Resources: Useful Matlab code, solutions to selected exercises, and additional examples are available at the webpage

https://media.pearsoncmg.com/aw/aw_sauer_num_analysis_3/main.html

Grading Policy: Homework = 40%
Midterm Exams = 20% each
Final Exam = 20%

In general, 90%–100% = A, 80%–89% = B, 70%–79% = C, 60%–69% = D, below 60% = F. Plus and minus grades will be approximately 2 or 3 percentage points above or below these boundaries (e.g. 88% would correspond to a B+). I reserve the right to lower the curve, but will not raise the curve.

Important Dates: Spring Break, March 11–17
Monday, May 6 (our last day of classes)
(**Final Exam Date: Monday, May 13, 1:30–4:15pm**)

Final Exam: The final exam will be an in-class cumulative exam and must be taken at the scheduled time. Exceptions are allowed only with a Dean's permission, by University rules.

Online class information, including assigned homework, will be posted periodically at
`http://math.gmu.edu/~dmanders/WEBDAN/math446spring19.html`

Calculators/Phones/Etc.: Calculators, smartphones, ipads, laptops, etc. will not be allowed for use during exams. Any exception to this rule will be explained clearly in class at the beginning of an exam. Plan to turn off and put away all mobile electronic devices during exams – accessing these devices between the time you receive your exam and the time you turn in your exam constitutes an honor code violation.

Honor Code: It is expected that each student in this class will conduct himself or herself within the guidelines of the Honor Code. All academic work should be done with the level of honesty and integrity that this University demands. Anyone caught cheating during a quiz, exam or on any other material submitted for grade will be sent to the University Honor Committee for formal resolution to the situation. The use of cell phones and other electronic communication devices for any purpose during a quiz or an exam will be considered an honor code violation. The most likely recommendation given by the professor to the Honor Committee is failure of the class (not just the specific quiz, exam, etc.) if the student is found guilty of violating the Honor Code.

Course Outline (Tentative):

Sections	Topics
Chapter 0	Floating point arithmetic
Chapter 1	Solution of nonlinear equations in one variable
Chapter 2	Solution of systems of linear equations
EXAM 1	(**Monday, February 25**)
Chapter 2	Solution of nonlinear systems
Chapter 3	Interpolation and polynomial approximation
Chapter 3	Curve fitting, cubic and Bezier splines
EXAM 2	(**Wednesday, April 10**)
Chapter 4	Least squares problems
FINAL EXAM	*Chapters 0–4* (**Monday, May 13, 1:30–4:15pm**)