Sara Pollock
Department of Mathematics

MAD 6407 (S20) Syllabus

General Information

Instructor: Dr. Sara Pollock

email: s.pollock@ufl.edu,

office: LIT 444

Spring 2020 office hours: Tuesday, Periods 8-9 (3:00-3:50 and 4:05-4:55), or by appointment. *Please request an appointment by email if you are not available during regular office hours.*

Class Time and Location

M W F Period 5 (11:45-12:35p), Little Hall Room 205.

Required Texts:

Numerical Analysis, W. Gautschi. Published by Springer. (You can download a pdf of the book or order a low-cost paperback if you search for the book through the UF library from online or VPN. Or, try this link.)

Numerical Mathematics, A. Quarteroni, R. Sacco and F. Saleri. Published by Springer. (You can download a pdf of the book or order a low-cost paperback if you search for the book through the UF library from online or VPN. Or, try this link.)

Recommended text:

Numerical Analysis, D. Kincaid and W. Cheney. Published by Brooks/Cole, any edition is fine.

Description and Goals

Description. (Credit hours: 3), Numerical techniques to solve systems of nonlinear equations, to approximate functions, to compute derivatives, to evaluate integrals, and to integrate systems of differential equations. Introduction to numerical techniques for partial differential equations. Companion to MAD 6406.

Topics.

Approximation and Interpolation

Numerical differentiation and integration

Numerical solution of nonlinear equations and systems

Numerical solution of ODEs.

Goals. Understand the mathematical framework of basic numerical approximation techniques used in numerical analysis and scientific computing.

Prerequisites. MAA 4212, 5105, or 5229 (Analysis); and programming language.

Grading Policy

Grades will be calculated according to the following percentages ('+' and '−' may be assigned at upper and lower ranges of each grade):

Midterm	25%	| |	90%-100%	A
Homework	35%	| |	80-89%	B
Final Exam/Project	25%	| |	70-79%	C
Class Participation	15%	| |	60-69%	D
		| |	<60%	F
Total	100%	| |		

Class Participation. Your participation grade will be determined by the following factors. (1) Showing up to class on time on a regular basis and attending the entire class. (2) Asking for clarification if you do not understand a concept or assignment. (3) Maintaining the appearance that you are paying attention in class.

Homework. Problem sets will be assigned regularly. You are welcome to discuss problems with each other and/or with me, but the solutions you turn in must be your own. Any code turned in must be your own. You are discouraged from searching the internet for solutions. If you do refer to an outside source, you should cite that source. Wikipedia, blogs and tutorial websites are not valid sources.

Some problems will include writing basic matlab code. In some cases I may ask you to submit the code (by email) so that I may run it. Not all problems will be graded; homework grades will be assigned based on completeness (attempting all problems), and on your solutions to a few of the problems turned in.

Exams. There will be two exams: a midterm and a final. They are designed to prepare you for the FY/PhD exams on this topic. Each exam will include a written component. Exams may also have a take-home component which may involve producing running code. This work is expected to be your own, and you will receive a zero on the entire exam if it is not. Exam dates will be posted.

Projects. Students may opt to do a final project in place of the final exam. The project should either explore some topic covered in this class in greater depth, or it may explore how one or more topics from this class relates to a topic of interest from outside this class. Students planning to take the Ph.D. or first year exams are strongly encouraged to take the final exam. Other students are strongly encouraged to

consider the project.

Class Policies

Symbolic Math. The focus of the class is on the basic computational algorithms in floating-point arithmetic used in scientific computation. **You should not use the symbolic math toolbox** (including but not limited to the matlab commands “syms,” and “symsum”). We may use it on occasion for comparison.

Attendance. It is in your best interest to attend lectures.

Calculators. No calculators on in-class exams.

Computers. There may be times a computer is necessary for the homework and take-home components of exams, as required. It is suggested that you program in Matlab or Python. C, C++, Fortan are acceptable, too. Example code will generally use Matlab.

Cell phones. Please don’t use your cell phone during class. Phones and all electronic devices should be turned off during exams.

Make-up/late work. Make-up exam work is allowed only when written evidence of an official University excused absence is provided. Notification in writing (acknowledged email is acceptable) prior to the date of the absence is required. In cases where this is not feasible, the student must provide documentation by the end of the second working day after the absence. If these conditions are met, then the percentage grade earned on the final exam will be substituted for a missed exam.

Academic Integrity

Honor Code. UF students are bound by The Honor Pledge which states,

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied:

“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. You can find the honor code here: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/ If you have any questions or concerns, please consult with the instructor.

I take academic integrity very seriously. If a homework solution or take-home portion of an exam you turn in is not your own work as outlined above, you will receive a zero on that assignment. If multiple assignments are found not to be your own work, you will receive an F in the class.

SUGGESTION. Seek outside help on a problem only after thinking about it for at least 40 minutes.

Additional UF Policy Information

UF Policy on Grade Points. Grading will be in accord with the UF policy stated here: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Class Attendance. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found here: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Accommodations for Students with Disabilities. Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

U Matter We Care. Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392- 1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Contact information for the Counseling and Wellness Center. https://counseling.ufl.edu/, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Online Evaluations. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

UF UNIVERSITY of FLORIDA
The Foundation for The Gator Nation

This page uses **Google Analytics** (**Google Privacy Policy**)