COURSE DESCRIPTION
SCIENTIFIC PROGRAMMING
MA 360/560
FALL 2020

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Carmeliza Navasca
Contact Information: cnavasca@uab.edu
Preferred Methods of Contact: Email is the preferred method of contact if you have questions. Please expect a response within 24 hours on weekdays and a slower response on weekends (OR Emails received after 5 pm on Friday will be returned Monday morning). Include course number in the subject line of your email for a faster response. I am available to meet with you virtually via Zoom by appointment during my virtual office hours (see below for my scheduled virtual office hours).
Virtual Office Hours: Tue/Thu 1:00-2:00pm Central Time via Zoom
Instructional Method is Remote: This class will be conducted virtually using a combination of live and recorded content through Canvas, Zoom, and other tools using the Canvas Learning Management system. Students should reserve the days and hours listed in the Class Schedule for live course elements, determined by the teacher. Students will not attend class on-campus.

Course Info

Meeting times: Mon/Wed/Fri, 9:05–9:55 AM Central Time via Zoom
Prerequisite: Grade of C or better in MA 126 or equivalent. *Any student who has not fulfilled the prerequisite will be dropped from the class.*
Credits: 3 semester hours
Required Textbook: (1) *Insight Through Computing: A MATLAB Introduction to Computational Science and Engineering* by Charles F. Van Loan and K.-Y. Daisy Fan, SIAM, 2010.
(2) Downey, Allen B., Think Python: How to Think Like a Computer Scientist. O'Reilly, 2012. Free PDF at `http://www.greenteapress.com/thinkpython/`
(3) *Class Notes: MA 360/560, Scientific Programming* by Ian Knowles. (Recommended)

Important Dates

First day of our class: August 24, 2020
Labor Day Holiday: September 7, 2020
Last day to drop without paying full tuition: August 31, 2020
Thanksgiving: November 23–November 29, 2020
Last day of our class: December 4, 2020
Final Date: Wednesday, December 9, 2020

Date: August 24, 2020.

Course Policies

- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- If your are contacted by the Early Alert Program, you should consider taking advantage of the services it offers.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at *dss@uab.edu*. See below for COVID-19 Temporary Adjustments.

Course Description

Programming and problem solving using Matlab and Python. Emphasizes the systematic development of algorithms and programs. Topics include iteration, functions, arrays, Matlab graphics, image processing and robotics. Assignments and projects are designed to give the students a computational sense through complexity, dimension, inexact arithmetic, randomness, simulation and the role of approximation.

Objectives of the Course

Upon successful completion of the course, a student

(1) develops and implements algorithms from a mathematical given problem;
(2) develops programming skills to produce working codes;
(3) learns the basic principles of scientific computing, i.e. algorithms and software tools for science, math and engineering problems

Class Management via Canvas

- Homework problems will be posted in canvas (`http://www.uab.edu/online/canvas`). All other materials (class announcements, codes, grades and etc.) will be posted in canvas. Students should log in to canvas everyday.
- Homework assignments, projects and activities will only be collected on canvas.

Assessment Procedures

- Student achievement will be assessed by the following measures:
  - **Weekly homework.** Homework will be assigned on a weekly basis. There will be no extension of deadlines for any reason. Homework contributes 15% to the course average.
  - **Projects.** Each project contributes 10% to the course average. There will be six projects.
  - **Final project.** The final contributes 25% to the course average.

  Grading Scheme: 15 % homeworks, 60 % projects and 25% final project

- Your course performance is your course average (including the final exam score). This is a number between 0 and 100.

- Your final grade is determined according to the following table:

Course performance:	88-100	75-87	62-74	50-61	below 50
Final Grade:	A	B	C	D	F

Where the university can, it is providing a Pass/Fail option in case there are circumstances and/or challenges students are encountering related to the ongoing pandemic that might make a Pass/Fail option a better option. If students are not remaining with the default letter grade method for any of their courses, they must select the Pass/Fail grading method for each course individually. This selection is made toward the end of the semester. Once a student selects the option for a Pass/Fail grading method for a particular course, that decision is not reversible regardless of their performance on remaining assignments or final exams.

- There will be a group project or activity in this course. Please make sure to check the group project instructions page to locate your group and your group space in Canvas. In this group project activity, you will collaborate with other students to submit a report/video/ presentation. As a team, you will work together to break the project up into separate tasks and decide on the tasks or sub-tasks each member is responsible for. Be sure to leave enough time to put all the pieces together before the group assignment is due and to make sure nothing has been forgotten. At the end of the project, you will be required to fill out a group self-evaluation form to evaluate other team members contributions to the project. This peer evaluation score is worth 15% of your group project grade.

Tips

- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.

UAB Policies and Resources

- Misconduct
  The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Students, faculty, and the administration of the institution must be involved to ensure this quality of academic conduct. Review the Academic Honor Code and Non-Academic Student Code of Conduct linked below.
  - Academic Honor Code (`https://www.uab.edu/students/one-stop/policies/academic-honor-code`), see below.
  - Non-Academic Student Code of Conduct (`https://www.uab.edu/students/conduct/`)
- DSS Accessibility Statement
  Accessible Learning: UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact DSS to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call(205) 934-4205, visit (`https://www.uab.edu/students/disability/`), or their office located in Hill Student Center Suite 409.

COVID-19 Adjustments for Students: Attendance WILL NOT be a part of your grade in this course. [Where attendance is part of the grade: All absences for COVID-19-related illnesses will be excused.] Students concerned about their attendance as a result of COVID-19 should register with Disability Support Services. UAB Disability Support Services (DSS) has established a process for UAB students to request temporary adjustments based on the impact of COVID-19. The process is similar to the traditional DSS registration procedures for accommodations based on disability. However, these requests will be referred to as "COVID-19 Related Temporary Adjustments". On the DSS website, there is a section (next to the traditional DSS application process) titled "Request COVID-19 Temporary Adjustments" where students can read the process and click to complete an application. On the application, the student must complete an attestation and identify which of the following category(s) applies to their situation. Students will be allowed to submit documentation to support their requests.

- I am 65 or older
- My medical provider has determined that I am an individual who is considered high risk according to Centers for Disease Control and Prevention
- I care for or reside with an individual who has been determined to be high risk according to Centers for Disease Control and Prevention
- I have tested positive for COVID-19
- I am requesting adjustments for another reason Any questions regarding this process should be referred directly to dss@uab.edu. For qualifying students, DSS staff will create a Notification of Temporary Adjustment Letter (PDF format) which will be provided to students. Students will share this letter, as needed, with instructors to request adjustments.

- Title IX Statement
  The University of Alabama at Birminghamis committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct we encourage you to reportthe incident.UAB provides several avenues for reporting.For more information about Title IX, policy, reporting, protections, resources and supports, please visit (`https://www.uab.edu/titleix/`)for UABs Title IX, UABs Equal Opportunity, Anti-Harassment, Duty to Report, and Non-Retaliation policies.

Academic Honor Code

The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Academic misconduct undermines the purpose of education. Such behavior is a serious violation of the trust that must exist among faculty and students for a university to nurture intellectual growth and development. Academic dishonesty and misconduct includes, but is not limited to, acts of abetting, cheating, plagiarism, fabrication, and misrepresentation. Candidates are expected to honor the UAB Academic Honor Code as detailed in the most current UAB Student Catalog. Please consult this resource (`https://www.uab.edu/students/one-stop/policies/academic-honor-code`) for additional information regarding the specific procedures to be undertaken when a student violates the UAB Academic Honor Code.

Non-harassment, Hostile Work/Class Environment

The UAB College of Arts and Sciences expects students to treat fellow students, their Course Instructors, other UAB faculty members and staff as adults and with respect. No form of hostile environment or harassment will be tolerated by any student or employee.

Course Netiquette

There are course expectations concerning etiquette on how we should treat each other online. It is very important that we consider the following values during online discussions and email.

- Respect: Each students opinion is valued as an opinion. When responding to a person during the online discussions, be sure to state an opposing opinion in a diplomatic way. Do not insult the person or their idea. Do not use negative or inappropriate language.
- Confidentiality: When discussing topics be sure to be discreet on how you discuss children, teachers, and colleagues. Do not use names of people or names of facilities.
- Format: When posting use proper grammar, spelling, and complete sentences. Avoid using ALL CAPITALS. This signifies that you are yelling. Avoid using shortcuts/text abbreviations such as 'cu l8r' for 'See you later.'
- Relevance: Think before you type. Keep posts relevant to the discussion board topic.