COURSE DESCRIPTION
SCIENTIFIC PROGRAMMING
MA 360/560
SPRING 2020

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Ivan Mann
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Office Hours: Mon/Wed 10-11 AM and Tue/Thu 10:45-11:15 AM (or by appt)

Course Info

Meeting times: MonWedFri, 12:20–13:10 AM
Meeting location: HHB 221
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 class: January 13, 2020
martin Luther King Day Holiday: January 20, 2020
Last day to drop without paying full tuition: January 1, 2020
Last day to withdraw with a "W": March 13, 2020
Spring Break: March 16 – 22, 2020
Last day of our class: April 24, 2020.

Project approximate due dates:
Project I: Fri, February 14, 2020
Project II: Fri, March 13, 2020
Final Project: Wed, April 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.

Date: Jan 13, 2020.

- 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.*

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

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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. You should log in to canvas *at least once* a day!
- I prefer to receive emails via campus email, *ivanmann@uab.edu.* I will answer emails fairly quickly when not in class, but after 9:00 probably not until the next day.
- 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 35% to the course average.
  - **Announced quizzes.** Quiz problems are similar to the homework problem sets. Quizzes contribute 20% to the course average. There will be no make-ups for the quiz.
  - **Two projects.** Each project contributes 10% to the course average.
  - **Final project.** The final contributes 25% to the course average.

  Grading Scheme: 35 % homeworks, 20% quizzes, 20 % projects, 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

Tips

How to succeed:
- Come to class – on time
- Do all homework and all assignments
- By working steadily and regularly, you will increase your chances of success in this course.
- Remember, being a full-time student is a full-time job.

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.