Informatics, or "data science," is increasingly becoming essential to scientists across fields; in addition to field-specific specializations, researchers require knowledge of and experience with quantitative analytical techniques for extracting knowledge from raw data.

This course aims to provide an introduction to concepts in scientific programming and data science using the Python language. Students are given hands-on opportunities to learn techniques applicable to quantitative analyses across a broad range of fields. These core techniques involve formulating solutions in terms of their inputs and outputs (functional programming), repeated operations (loops), branching operations (conditionals), different methods of organizing data (data structures), how to implement an optimal problem-solving strategy (algorithm design), and methods for visualizing and interpreting results.
Data science is important, almost irrespective of what field you go into. So we're going to learn what it is and how it works. But first, we'll learn Python.

Pre-Requisites and/or Co-Requisites

- MATH 1113–Pre-Calculus

This course assumes no prior programming or statistics knowledge. It is meant to be an introduction to these concepts in the larger context of data science and scientific programming through the lens of the Python ecosystem. The course is targeted at undergraduate students across fields who, irrespective of their ultimate career goals, are interested in a foundational understanding of programming and quantitative data analytics.

COURSE OBJECTIVES

By the conclusion of this course, students will learn:

1. Frame scientific experiments in terms of their inputs and outputs.
2. Formulate algorithms in terms of conditionals, loops, functions, return values, data structures, and existing Python APIs.
3. Write a program or package to implement automated analysis of data.
4. Process data of varying types, such as text or images.
5. Render appropriate visualizations of analysis results, and interpret these visualizations.
COURSE MATERIALS

Required Materials

Textbook:


COURSE AVAILABILITY

This course material is on eLC, meaning that module material will be available 24 hours per day. Be sure to check due dates and times for assignments.

COURSE EXPECTATIONS

For you to be successful you need to do the following:

- Use time wisely, be organized, be self-directed, and be willing to use new modes of communication and learning.
There are a few assignments for modules that will be announced during the semester. Each student is expected to do his/her own work. Teamwork is not allowed unless explicitly specified. Homework is due on the specified day at the specified time. Assignments should be worked on during the allotted period and submitted to eLC for grading. Assignments are typically due before 5 pm. However, they may be submitted up to 48 hours late with a penalty of 25 points deducted from the student's grade. No assignments will be accepted after the 48-hour cutoff. Students are responsible for checking the correctness of their assignments before submitting them. After submitting an assignment, students should double-check that their eLC submission was successful. No makeup assignments will be given.

Exams/Quizzes

We have one quiz for each module. Throughout the semester, quizzes may take place during lecture periods or on eLC. Quizzes cannot be made up in this course. If a quiz is missed due to an excused absence granted by the lecture instructor, then the student may request a regrade of that quiz during the lecture instructor's office hours no more than seven calendar days after the quiz was missed. If the regrade is granted by the lecture instructor, then the missed quiz grade will be replaced by the average grade (scaled if necessary) of the previous quizzes. **Exams:** There would be a midterm exam and a separate final exam. All instructions stated by the instructor before an exam must be followed. Students late to an exam may have points deducted from their exam grades. If you don't submit it, then you will not be permitted to take the exam, and you will receive a zero on it. Makeup exams will not be given. However, if the exam is missed because of an absence due to an extreme and verified emergency, then it might be excused by the instructor. To be considered for an excused exam absence, students must bring detailed documentation explaining the circumstances to the instructor during office hours no more than seven calendar days after an exam is missed. Students must leave a copy of their documentation with the instructor. The instructor has full authority to decide whether or not to excuse an exam absence. If the absence is excused, then
the final exam score (scaled if necessary) will be counted for the missed exam. If the absence is not excused, then a grade of 0 will be given. Only one exam may be excused. If two exams are missed, then a grade of 0 will be recorded for all missed exams. Exams will not be handed back to students to look over or keep after they are graded. The exam must be taken at its scheduled time. Also, the final exam must be taken at its scheduled time unless the student has an official UGA final exam conflict as defined at https://curriculumsystems.uga.edu/curriculum/finalExamConflicts/ (https://curriculumsystems.uga.edu/curriculum/finalExamConflicts/). If a student has an official UGA final exam conflict, then they must send a completed petition to reschedule, https://curriculumsystems.uga.edu/_documents/exam_petition.pdf (https://curriculumsystems.uga.edu/_documents/exam_petition.pdf), and its accompanying documents to the lecture instructor's email three weeks before the final exam's date to be considered for a final exam reschedule. Final exams will not be rescheduled for any other reason. Regrade Requests: With the exception of the final exam, you may request a regrade of any graded item any time within 5 calendar days (i.e., not 5 class days) of receiving the grade on eLC. If a grade is posted on or after reading day, then you must request a regrade request within 3 calendar days. To make a regrade request, you should follow the following procedures: For exams, and quizzes please reach out to your instructor. For assignments please reach out to your TA. By your UGA email account with a subject that contains “cs1360 regrade request for y”, where y is the name of the assignment or exam. The regrade request should include which parts of the assignment were incorrectly graded by the teaching staff. Regrade requests will only be granted in the cases where a grader made a mistake grading your assignment. Regrade requests may result in a lower grade.

Module Content

Each module has its content for you to work through each week.

Accessibility

Students who seek special accommodations due to a disability should contact me during the first week of the semester or as soon as the need for accommodation is discovered. I will work with the Disability Resource Center (706-542-8719), http://drc.uga.edu/ (http://drc.uga.edu/) to provide appropriate accommodations.
CONTACT INSTRUCTOR

If you need to contact me for any reason, please do so through email. When emailing me, include "CSCI 1360 and Your Name" in the subject line. I will be checking my email frequently throughout the entire course.

EVALUATION & GRADING POLICY

There will be no extra credit work assigned to make up for a low grade.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Midterm</td>
<td>25%</td>
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<tr>
<td>Final</td>
<td>25%</td>
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<tr>
<td>Quizzes (after each module)</td>
<td>10%</td>
</tr>
<tr>
<td>Homework Assignments</td>
<td>40%</td>
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</tbody>
</table>
# Grading Criteria

Your final grade will be based on the following:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100</td>
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<tr>
<td>A-</td>
<td>89-92.99</td>
</tr>
<tr>
<td>B+</td>
<td>87-88.99</td>
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<tr>
<td>B</td>
<td>81-86.99</td>
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<tr>
<td>B-</td>
<td>79-80.99</td>
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<tr>
<td>C+</td>
<td>77-78.99</td>
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<tr>
<td>C</td>
<td>71-76.99</td>
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<tr>
<td>C-</td>
<td>69-70.99</td>
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<td>D</td>
<td>60-68.99</td>
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<tr>
<td>F</td>
<td>0-59.99</td>
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<tr>
<td>I</td>
<td>Incomplete</td>
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</table>
Academic Honestly

As a UGA student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at www.uga.edu/honesty. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to me, the instructor. Trust that I take these policies seriously – and that you should too in every class at UGA.

UNIVERSITY CLOSURE

In the event the University closes temporarily during the semester due to inclement weather, emergencies, pandemics, etc., the number of graded assignments (lab assignments, projects, and quizzes) may be reduced. However, the way grades are calculated in this class will typically not change. In such an event, an announcement will be posted on eLC regarding any changes to the class.

Mental Health and Wellness Resources:

- If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit https://sco.uga.edu. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
- UGA has several resources for a student seeking mental health services (https://www.uhs.uga.edu/bewelluga) or crisis support (https://www.uhs.uga.edu/info/emergencies)
If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (https://www.uhs.uga.edu/bewelluga/bewelluga) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.

Additional resources can be accessed through the UGA App.