

# Georgia Institute of Technology

## Course Syllabus: INTA 6450 OCY/O01 Data Analytics and Security

<b>Summer 2024 Section OCY/O01</b>	MS in Cybersecurity Policy
<b>Delivery:</b> 100% Web-Based, Asynchronous	Canvas for Content Delivery

### Instructor Information

Professor Jeffrey Borowitz <a href="mailto:jborowitz3@gatech.edu">jborowitz3@gatech.edu</a>	Head TA: Emma Cheng-Shumway
Office Hours:  Professor – 1 hour per week, Monday nights  TAs – office hours by appointment (email to set)	Teaching Assistants are listed on Canvas

## General Course Information

### Description

Explores the foundations of data analytics, including foundations in computing technology and statistics. Explores the nature of underlying technical challenges and statistical assumptions used to understand relationships in a variety of applied fields, with a focus on the fields of fraud detection and communication monitoring. Engages with the social implications of increased knowledge, surveillance, and behavioral prediction made possible by big data, and the ethical tradeoffs faced. While the course includes a substantial analytics project, no prior technical experience is required.

### Pre- and/or Co-Requisites

There are no prerequisites or co-requisites for this course. This course does not assume any mathematical or computer programming knowledge at all (except perhaps a little familiarity with Algebra).

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### Course Goals and Learning Outcomes

1. Familiarity with and exposure to a range of topics in hardware/software
  - a. Demonstrate familiarity with hardware trends underlying the rise of big data
  - b. Demonstrate familiarity with software trends underlying the rise of big data
  - c. List specific links between big data technologies that affect our security as a society.
2. Reasoning about limits and problems with both technology and models
  - a. Articulate a strategy for defining and algorithmic finding a specific type of wrongdoing
  - b. Identify problems that technologies likely can or can't solve in the future.
3. Technical Execution of code
  - a. Demonstrate effective use of R programming language
  - b. Use R programming language to perform statistical analysis
  - c. Use Python to find the most common words in a book
  - d. Use Python to query a data set.

### Course Materials

There will be no required textbooks. A range of articles and materials will be posted during the class.

### Course Website and Other Classroom Management Tools

This class will use Canvas to deliver course materials to online students. The PACE ICE cluster will be available for students wishing to use the cluster. All course materials will be available via these resources.

### Assignment Distribution and Grading Scale

Here is a list of the assignments and activities required in the course. Except for quizzes, most assignments will have a rubric associated with them so that students can see what criteria are used for grading and what weight is given to them.

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Assignment	Weight
<b>Lecture Activities</b> Discussions (11 total) - 4 points each Quizzes (9 total) - ~50 points each	<b>30%</b>
<b>Computing Activities</b> R Exercises (4 total) - 10 points each Crime and Punishment Python Exercise (1 total) - 10 points	<b>20%</b>
<b>Project Activities</b> Course Project, Part 1 Proposal – 20 points Course Project, Part 1 Peer Review – 10 points Course Project, Part 2 Paper – 30 points Course Project, Part 2 Presentation – 30 points Course Project, Part 2 Presentation Peer Review – 5 points Peer Review of Teammates – 5 points	<b>50%</b>

### Assignment Submission and Due Dates

All assignments will be due at the times listed on Canvas. These times are specified in Eastern Time and are subject to minor changes so please check Canvas. To convert to your local time zone, use a [Time Zone Converter](#).

Each assignment will have a separate entry in Canvas that explains in more detail what is expected and what criteria are used to grade it. The weighting of the different assignments in determining your final grade is clear from the table above. Most assignments will be finalized by the student uploading a file in the relevant assignment place in Canvas. Do not send assignments directly to the professors or TA's via email unless you have previous direction to

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do so. All assignments must be submitted within Canvas, otherwise they cannot be graded properly and do not count towards the grade. If there are technical issues, please notify the help desk, as well as each professor immediately. Most assignments will be graded with feedback within **two weeks** of when learners turn it in.

### Quizzes

Quizzes are individual assignments – they provide an incentive to study the readings and they strengthen your recall and understanding of the reading and lecture material. Don't help other students answer their quiz questions – that's cheating! Quizzes are open-note. Quizzes are available to review for a week before they are due and also have a due date, but your answers are recorded and graded as you enter them. Quizzes *can not* be taken after the due date. **Don't forget to take your quizzes!**

Learners have the opportunity to request a regrade for quiz questions in the case that the autograder did not recognize the answer as correct. To request a quiz regrade, open a new question on Ed Discussion and include the following information: question number, question text, what you answered, and why your answer should be given credit. Regrade requests must be submitted within 24 hours of quiz closure to be considered.

### Late assignments, Re-scheduling

Coding assignments and discussions may be submitted late by Friday at 5:00 pm the same week they are due for any reason for 50% credit. Work submitted after will not be accepted. Any other make up work is only permitted as explicitly stated by university policies. If you feel that you have work that you should be able to make up due to medical, family emergencies, or life situations, please contact the teaching team as soon as possible. The earlier you can let us know, the better.

### Technology Requirements and Skills

To participate in this class, you need the following computer hardware and software:

- Broadband Internet connection
- Laptop or desktop computer with a **minimum** of a 2 GHz processor and 2 GB of RAM
- Windows for PC computers or Mac iOS for Apple computers.
- Complete Microsoft Office Suite or comparable applications and ability to use Adobe
- PDF software (install, download, open and convert)
- Mozilla Firefox, Chrome and/or Safari browsers

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### Technology Help Guidelines

30-Minute Rule: When you encounter struggles with technology, give yourself 30 minutes to 'figure it out.' If you cannot, then post a message to the discussion board; your peers may have suggestions to assist you. You may contact the Helpdesk 24/7. When posting or sending email requesting help with technology issues, whether to the Helpdesk, message board, or the professor use the following guidelines:

- Include a descriptive title for the subject field that clearly states the issue.
- List the steps or describe the circumstance that preceded the technical issue or error.
- Include the exact wording of the error message.
- When possible, include a screenshot(s) demonstrating the technical issue or error message.
- Also include what you have done to try to remedy the issue (rebooting, trying a different browser, etc.).

### Communication Policy

Email personal concerns, including grading questions, to the professor and head TA. If you have a grading concern, also include your grader in the CC line. Do NOT submit posts of a personal nature to the discussion board.

Email will be checked at least once per day Monday through Friday. During the week, the Professor or one of the TAs will respond to all emails within 24 hours; on weekends and holidays, allow up to 48 hours. If there are special circumstances that will delay a response, I will make an announcement to the class.

Student Forum/Q&A discussion boards will be monitored throughout the whole week.

Canvas DMs will not be monitored for this course.

Virtual office hours will be held using the Zoom. I will hold Virtual Office Hours as specified at the top of the syllabus, as well as special office hours for dedicated topics, such as a large, upcoming assignments. Special topic hours will be announced in advance. For questions related to technology, please contact: <https://b.gatech.edu/digitallearningsupport> for assistance.

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### Online Student Conduct and Netiquette

Communicating appropriately in the online classroom can be challenging. In order to minimize this challenge, it is important to remember several points of “internet etiquette” that will smooth communication for both students and instructors:

**Read first, Write later.** Read the ENTIRE set of posts/comments on a discussion board before posting your reply, in order to prevent repeating commentary or asking questions that have already been answered.

**Avoid language that may come across as strong or offensive.** Language can be easily misinterpreted in written electronic communication. Review email and discussion board posts *before* submitting. Humor and sarcasm may be easily misinterpreted by your reader(s). Try to be as matter-of-fact and professional as possible.

**Follow the language rules of the Internet.** Do not write using all capital letters, because it will appear as shouting. Also, the use of emoticons can be helpful when used to convey nonverbal feelings.

**Consider the privacy of others.** Ask permission prior to giving out a classmate's email address or other personally identifiable information.

**Keep attachments small.** Avoid gigantic files; if it is necessary to send pictures, minimize the size.

**Problem posts.** Do not spam your classmates or instructors. The instructor reserves the right to remove posts that are not collegial in nature and/or do not meet the Online Student Conduct and Etiquette guidelines listed above.

### University Use of Email

A university-assigned student e-mail account is the official university means of communication with all students at Georgia Institute of Technology. Students are responsible for all information sent to them via their university-assigned e-mail account. If a student chooses to forward information in their university e-mail account, he or she is responsible for all information, including attachments, sent to any other e-mail account. To stay current with university information, students are expected to check their official university e-mail account and other electronic communications on a frequent and consistent basis. Recognizing that some communications may be time-critical, the university recommends that electronic communications be checked minimally twice a week.

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### Plagiarism & Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. All students enrolled at Georgia Tech, and all its campuses, are to perform their academic work according to standards set by faculty members, departments, schools and colleges of the university; and cheating and plagiarism constitute fraudulent misrepresentation for which no credit can be given and for which appropriate sanctions are warranted and will be applied. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Plagiarism is the use of material that is not commonly known in formal papers or assignments, and passing it off as your own. In this class, this includes submitting papers or discussion posts without citations for the material. All external knowledge **must be properly cited**. If you need assistance with citations or aren't sure what information needs to be cited, please reach out to the teaching team prior to submitting an assignment or review and online citation style guide. Any assignments that contain **plagiarism will be given an automatic 0** and deferred to the Office of Student Integrity.

### AI and Course Assistance

Students are allowed to use AI such as ChatGPT to *assist* in completing course assignments. Use of AI as an educational resource must be cited in assignment submission. Students are responsible for the quality of the final submission when using AI as an educational resource. When using AI, make sure that is it a supplement to your learning, not a substitute. Students are expected to understand and be able to explain the concepts behind any AI-assisted products. Remember: you get out of the course what you put into it!

### Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404) 894-2563 or <http://disabilityservices.gatech.edu/>, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

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### Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and students. See the GT [catalogue](#) for an articulation of some basic expectations that you can have of me and that I have of you. In the end, respect for knowledge, hard work, and cordial interactions will help build the environment we seek. I encourage you to remain committed to the ideals of Georgia Tech while in this class.

### Subject to Change Statement

The syllabus and course schedule may be subject to change. Changes will be communicated via the Canvas announcement tool, email, or the class Ed Discussion forum. It is the responsibility of students to stay current on course information by keeping track of these communication tools throughout the semester.