

BIOS 4401 Syllabus

Experimental Design & Statistical Methods, 3 credits

Fall 2026

Instructor Information

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General Course Information

Description

Statistics is how we can learn things from data. In this introductory course, we will cover a broad range of probabilistic and statistical methods applicable to many areas of biological research. This is an introductory course on probability distributions and statistical testing, using techniques commonly applied in biological research. In-class activities will be split between mini-lectures, which will introduce general concepts and outline/model steps for solving statistical problems, and exercises, where you will actively implement these ideas on your own or working in small groups.

Course Learning Outcomes

Through this course, you will be able to (adapted from NSF ACE-Bio Competencies):

- Generate a research question and formulate hypotheses.
- Plan feasible and ethical experiments to answer research questions or test hypotheses.
- Analyze and process data.
- Draw conclusions about data with inferences drawn from the experimental design.
- Communicate research work in professionally appropriate modes, including visual, written, and oral formats.

These goals will be divided into specific learning objectives that we will post on Canvas and practice across the term.

Required Course Materials

- **Laptop** – This is required by GT, and for this class, pretty indispensable, both for in- and out-of-class, particularly to complete assignments in R. Webcam/video-

streaming and microphone/audio-streaming capabilities is highly advised to facilitate class participation *If you don't have access to this technology, or something happens during the term, please see the library loaner program (b.gatech.edu/laptop-loaner) or on-campus computer labs.*

- **High-speed Internet-** please connect to class via high-speed internet suitable for video-conferencing.
- **Learning Catalytics** account; register at learningcatalytics.com. You will receive a unique activation code during the first week of class
- **A scanner/scanning app that can generate a pdf** (e.g. CamScanner, evernote)
- **R statistical computing software** (free; we'll walk you through how to download it)

Other materials will be made available via Canvas, including custom readings which will serve as your (free) textbook.

Grading Policy:

This course covers a lot of material, but everything we do is designed to prepare you to do well in this class and as scientists. This *requires* practice. Except for tests, which are our source of summative assessment, all other assignments are graded focused on engagement, rather than absolute correctness. I fully believe in reflective, honest, and accurate assessment of one's skills, but also that every student can earn a good grade in the course. *Again, practice and reflection are key tools to learn and achieve.*

We will provide feedback, both numeric and written, quickly and regularly to help you gauge your progress in real-time; to be successful, you should plan to review and reflect on this feedback often. Note that we take the time to give you feedback because we have high expectations and know that you can reach them, and it can help to have pointers to reach your best, particularly if we notice patterns across your work that isolated grades may not make clear. If at any point you are concerned about your performance, please reach out to us and we will be happy to help you strategize improvements.

Grading Schema

Component	Weighting A**	Weighting B	Weighting C
In class exercises	20%	20%	0%
Homework Assignments	40%	20%	20%
Exams	30%	50%	60%
Final Project	10%	10%	20%

We will use the following procedure in calculating your final grade:

1. We will **calculate subtotals** including the dropping of assignments as outlined in this syllabus.
2. We will **calculate your grade assuming Weighting A**, calculate again assuming **Weighting B**, then calculate a third time assuming **Weighting C**.
3. We will compare your scores under each weighting, and ***the highest of the three resulting scores will be your score for the course.***
4. We will **assign final letter grades** using the following scale:

A: $\geq 90.00\%$

B: $\geq 80.00\%$ and $< 90.00\%$

C: $\geq 70.00\%$ and $< 80.00\%$

D: $\geq 60.00\%$ and $< 70.00\%$

F: $< 60.00\%$

The above scale is the most stringent we will use, and *you are not competing with anyone for your grade.*

**This is the default schema set up in Canvas. If at any point you would like to calculate your grade using Weighting B or C, please use the raw scores or subscores as shown in Canvas to recalculate an overall grade.

Description of Graded Components

GC.1 In-Class Exercises

Exercises will be delivered during our synchronous class time through either Learning Catalytics or Canvas. These exercises will reinforce the concepts taught in lecture, ask you to discuss/reflect on those concepts, and often represent the type of questions that you will see later on exams. All in-class exercises are open book, and working with other students is encouraged. Presence in class alone is not sufficient to earn credit. Rather, points will be awarded for participation and a *good faith attempt* to solve problems, not on the “correct” answers. *Using and reflecting on a careful, deliberative and logical process is more important than “guessing” the answers correctly.*

Activities will be open and close during class time and may vary as to when they are available during our class window based on the activities of the day, thus it is important to **arrive on time and plan to participate for the duration of class**. Lessons have an intentionally-designed order and timing structure to maximize learning and the data that indicates it, so *please do not distract others (classmates or the instructional team) by requesting or completing the activity before or after it is/was designed to be completed.*

We also reserve the right to modify how credit for in-class activities is assigned based on lesson pacing and as student learning (accuracy/effectiveness) data warrant. Your work during class helps us assess what we as a class need to do next, so please test yourself earnestly (especially as that's data-supported for how you learn!).

Note that it is an Honor Code violation to complete these for/by another student or outside of class meetings (i.e. while not logged into our Zoom class sessions) or otherwise make false claims of your performance. We value having you each in class and providing interactions that help everyone grow, so we respectfully ask that you do not attend and attempt to participate if you cannot commit your full focus to class. There is a lot we can learn from each other, especially in group work, so please *contribute!*

GC.2 Homework Assignments

This is your opportunity to both practice problems and evaluate your own thinking.

Homeworks are intended to help you determine your level of understanding and to help you to identify strategies that do or do not work in advance of exams, so it is very important that you take this seriously. Homework will have 2 stages:

- **Stage 1:** We will post ~5 homework questions for you to solve AND rate your own understanding. Your grade will come from (1) giving answers and showing your work to arrive at those answers, even if incorrect, and (2) rating your understanding, regardless of the if rating is high or low. Regardless of the rating you give yourself on a problem, ratings must be accompanied by a good faith attempt at the problem.
- **Stage 2:** We will post the answer key to Stage 1. You are then to review your work from Stage 1 in comparison to the key, and for each problem (1) state specifically where you went wrong/what you did not understand when attempting the problem AND correct your mistakes (when your answer was wrong) OR explain the answer in a new, different way from the key (when you were right), and (2) re-rate your understanding (which can change or stay the same, BUT is an indication of where to review/get help). *Be sure you explicitly state whether your answer was right/wrong initially to help frame your reflection and clearly denote areas for later review.* Note that, even if you have gotten a question correct in your first encounter with the problem, it is often a sign you are weak in that area if you cannot easily generate new questions or apply the idea to a new scenario, so please be open to admitting and fixing deficiencies.
- ***Your overall homework grade will come 50% from a good faith initial attempt (Stage 1), and 50% from your careful corrections and/or new explanations (Stage 2). Stage 1 is required for Stage 2.***

Why two stages? This format requires that you regularly engage with the material at spaced intervals, giving you distributed practice through time, which is the most efficient way to learn (Taraban et. al (1999); Rohrer & Pashler (2007), among *many* others). This means it takes you *less time* overall to get to the same level of mastery. Additionally, reflection as a part of learning reinforces finding and fixing trouble-spots, so you achieve more than just doing problems alone (Balgopal & Montplaisir (2011); Chang (2019), among *many* others, too!). Finally, this gives you the opportunity to practice carefully delineating your logic; often you will find that your own work may not be as clear as you thought it was initially when you are forced to return to it some time later. Practicing making logic clear will help you in many ways for science, but particularly when conveying your work to others.

Homework assignments will have some general questions for written response and some that require the use of the R statistical computing platform. We advise typing to ensure your answers are legible, but you may hand-write some responses when needed. You are welcome to collaborate with other students, but all submitted work must be your own. This means you must perform and record the work yourself; copying is plagiarism. If you work with one or more other students, you will be asked to acknowledge your collaboration when you submit the assignment. ***Your work must ALWAYS EITHER list the names of collaborators or “NA” in order for it to be considered for grading.*** Generally, homeworks will open on Mon., and Stages 1 and 2 will be due 5pm Wed. and Fri., respectively.

GC.3 Exams

We'll have lots of smaller exams, rather than a few big ones, but don't underestimate them: the content on each exam is *cumulative*. This means you will need to *repeatedly demonstrate mastery* of past topics as you complete each exam; any content previously covered in the course could show up on a test, either individually or as part of an integrative question linking multiple topics. This is challenging, but this approach accurately represents what abilities you will need to do statistics and experimental design in the real world.

Exams are a combination of short answer/multiple choice; focused questions on data interpretation, experimental design, or quantitative concepts; and essays/short answers that require you to synthesize material in different ways. **Exams have a Part A and a Part B.**

- **Part A** is worth 50% and is primarily focused on fundamental concepts. Part A will be held synchronously during class time to allow for students to ask questions of the instructional team in real time. For equity, standard time (50 min) and 1.5x extended time (75 min) exams will be worked into class time that all students have already set aside in their schedules. You do not have to be present in the class call to take the exam during the testing window, and we will not use proctoring software, but we do ask that you ***do not communicate (e.g. post, call, text, etc.) with other students for any reason until we give an all-clear*** so that everyone has a fair shot

to do their best on the exam without distraction. **You are allowed to use notes on this section.**

- **Part B** is worth 50% and is held in-person. This section is primarily deeper material, which you will have an opportunity to first review and answer individually, then as a collaborative. The goal is that you show what you know and work with other students in real time to tackle analyses, as scientists in lab groups often do. Because this is collaborative, and consistent with other assignments, you are required to denote on your exam the first and last names of all members of your group. **Note again: Your work must ALWAYS EITHER list the names of collaborators or “NA” in order for it to be considered for grading.** You can expect to chew on these problems, try out a few ways to solve them, and eventually justify your approaches logically, experimentally, and statistically—to yourself and others. **You are NOT allowed to use notes on this section.**

Exams, as is common, are typically scored based on accuracy, and we include relevance and scope in that scoring (e.g. there are lots of ways one could process a dataset, but some are indeed better than others). Thus, we will practice logic, and not just calculations, in statistics frequently. It’s where you’ll become truly unstoppable 😊

We reserve the right to confirm understanding on and adjust exams based on student performance and other mitigating factors. More exam info will be announced as exams approach, so please always look for those details.

GC.4 Final Project

As tests are cumulative as we go, each test serves to cement new and prior content, like final exams as we go. A project, as an alternative, serves then as a longer-term assessment that really examines your science skills holistically.

The ultimate deliverable will be a report of no more than 3 pages (single-spaced, 11 or 12pt font with standard 1-inch margins) investigating your own research question using a dataset(s) you have chosen. It will consist of a series of sections (e.g. research question, background, methods, results, and discussion). For this project, you can work in groups of 1-3 people (groups are encouraged), and your work is expected to be shared through official venues that go beyond this course. Examples are posted and more details will be given later in the semester.

This alternative form of assessment will give you practice with material as we go, allow you to show (off!) what you know, and allow you a testing break during finals. I trust you to work hard enough during the term that this will work.

Course Policies

Attendance and/or Participation

Consistent engagement supports both individual learning and the collective progress of the class. Attendance is required to submit any form of in-class exercises (see above), but attendance and participation do not themselves substitute in place of completed in-class exercises for the purposes of earning course credit. Please also note that the submission of exercises without participation, but mere presence in class, runs counter to course goals and the stated policies for earning credit above. You are, of course, always welcome to participate beyond the basics to earn credit, and should you miss a day, we post copious resources to catch up. We ask that you review what's posted ASAP to cover what you've missed, rather than reflexively emailing us. Please see the 'in-Class Exercises' and 'Stuff Happens Clause' for more information.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. All students are expected to be aware or abide by the Academic Honor Code, which can be viewed online at www.honor.gatech.edu. By rule, we are required to report any student suspected of cheating or plagiarizing to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations. Additionally, unapproved collaboration/discussion of assignments (e.g. unauthorized use of Google Docs, GroupMe/Discord activity, posting to Chegg/CourseHero, etc.), devices, software, and other violations of the Honor Code may be referred to OSI. If you have any questions regarding these expectations, I encourage you to consult me before submitting materials or engaging in questionable behavior. Remember that the honor code extends to a responsibility of students to report when violations are observed. Help each other out by setting clear boundaries and gentle reminders.

Core IMPACTS

Not applicable.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, [contact the Office of Disability Services](#) (ODS; 404-894-2563) 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. Be aware that digital assistive devices must be pre-approved by ODS, and accommodations must be discussed prior to implementation, particularly to ensure that an accommodation can work for your needs and the course goals. The more proactive you are, the better we can collectively accomplish these goals.

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 the student body. [The Student-Faculty Expectations](#) articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Pre- &/or Co-Requisites

Prerequisites: (MATH 1553 and either MATH 1555 or MATH 1552) and (BIOS 1107 or BIOS 1207) and (BIOS 1107L or BIOS 1207L). Note that, if it's been a bit since you've taken these, reviewing basic experimental design elements, linear algebra, and the principles of mathematical integration will be most key to review.

"Stuff Happens" Clause:

In a time that is so tumultuous, things can happen. It can be difficult to keep up with assignments, and late/make-up work can often work *against* students by allowing work to pile up and force 'just get it done' behavior, rather than helping you meaningfully engage in completing the work and reviewing the feedback in a timely manner. In recognition of this, we will **drop your 5 lowest In-Class Exercise scores, your lowest Homework, and your lowest Exam** to account for days when you cannot arrive, think with optimum clarity, make a deadline (e.g. started too late to upload and check your work before the deadline), are temporarily ill, have a technological snafu/issue, need to do something else, just need a break, etc. As not everyone has access to the means to get official excuse documentation (Soria and Stebleton 2012; Winograd and Rust 2014), this is intended to broadly cover all students. ***There is no need to email us about needing to use a drop, and to help you plan, drops are worked into Canvas already so what you see is the best-case, real-time score you could receive for that category.***

My goal is to craft a class where accommodations/extensions/exceptions are not necessary to request because maximum flexibility is extended to all from the start. If you find you don't need these adjustments, ok. If you find you do, they're there. Please understand that, because you are not competing with others for your grade, this policy keeps us focused on learning and supporting our classroom community. If you're thinking otherwise, I encourage you to read and reflect on Brown et al. 2022's work (link: <https://www.science.org/doi/10.1126/sciadv.abm2385>)

Remember, each graded component is worth a small amount, especially relative to all of the challenges of life, some of which will be unanticipated and serious. So, please 1) generally focus less on grades overall, and 2) ***be mindful and judicious of how you plan to use your drops*** to ensure you leave some room for unexpected issues, as *this lenient policy is the extent to which flexibility can go* before compromising course goals. Please also do not be surprised if I email just to check in to see how you are doing—I care!

What if my ‘stuff’ is ‘bigger’? What if I need more on top of this? Let me know (to the extent you’re comfortable sharing) and I can try to point you to the right campus resources, as things that require additional assistance beyond the lenient policy above are likely worthy of broader solutions that address more than just this course. For your privacy, please do not send sensitive info, medical documentation, etc. to me in an email, but rather talk with me or use the confidential official institute processes for this big stuff. Please also let me know if you need assistance with these processes. Please do not interpret it as a lack of caring if I refer you to someone else or place boundaries to prevent secondary trauma to me; these safeguards protect us all. ***In sum, while I hope conditions will allow for meaningful engagement in the course, our wellbeing is of higher priority.***

Assignment Submission, Lateness, and Make-ups

All assignments are to be submitted directly to Canvas or Learning Catalytics. You are responsible for ensuring the timely submission of appropriately-formatted, applicable, openable, readable files; technological hiccups are surmountable, so, *please get in the habit of checking your submissions prior to their deadlines to ensure everything is on time, the correct assignment, meets the specified submission requirements, and appears as intended.* We strongly suggest working in the cloud (e.g. using GT provided Microsoft 365) as a safeguard in the event of an issue. Be aware: Assignments submitted via email or as linked documents (e.g. google docs) will not be accepted.

Canvas marked it late by like 2 seconds...can’t you just make an exception? Just like a p-value, which is compared to a pre-set cutoff (an alpha, usually 0.05) for whether a result is significant or not (*there is no “almost”*), the deadlines are the pre-set times that determine on time for credit, or late and no credit. Deadlines which are pre-announced and consistent provide clear cut-offs; this approach helps to keep bias from creeping in through arbitrary exceptions, and particularly in the cases where feedback or keys are set to be returned, it avoids delays that can impact your classmates’ learning. *We strongly suggest incorporating the due dates in all of your syllabi into a common schedule (agenda, app, calendar) that you will reference often and use to plan your study time.*

What happens if I missed an assignment? Late work, one-off extensions, and make-ups generally don’t support the class structure for providing rapid feedback, or effective practice skills, so we’ve made alternative arrangements that are more inclusive of everyone’s individual circumstances (see “Grading Schema” and “Stuff Happens Clause”). For this reason, we won’t accept late work or do make-ups for assignments, but we’ll ask you to review the posted materials and consult with us if you’d like feedback/help with those ideas. This way, you can *prioritize learning* as we go through the course, and don’t have to worry about completing everything or submitting past-due assignments/make-ups just for points.

Please note: Any assignment which is 0 because of institute OSI procedures is not eligible for being dropped and will factor into all grade calculations. Furthermore, inappropriate requests for special treatment (e.g. individual extra credit, personal requests for grade adjustment counter to course-wide policies, grade requests made directly of TAs, etc.) will not be entertained and will be reviewed with the Honor Code in mind. *Act with integrity.*

Will you review my work before I submit it? No, but for good reasons. Hear us out: You will be challenged in this course. This means you may run into complex things you perhaps have never done before or only a few times, and this normal part of growth can sometimes generate discomfort. While you will have ample guiding materials, opportunities for practice, and regular feedback, we won't pre-grade your work (i.e. assess/grade work prior to grading your submission) for two big reasons:

1. *Your growth as a learner depends on cultivating the skill of self-assessment to discern quality, rather than merely reacting to our feedback.* Developing the ability to ask conceptual questions for clarification and honing your skills is key for improvement in science. You will think faster and deeper and create higher-quality work more reliably when you develop self-assessment skills.
2. *We need to be able to meet your learning needs and do so equitably.* The teaching team collectively reviews submitted work and jointly decides to address any observed patterns across the student work. This keeps everyone on the same page for evaluating the work and enables us to make adjustments if there are systemic issues. If we 'pre-grade', this muddies the water on what we can detect that may need adjusting (meaning we can't adjust class grades or provide extra coaching/explanation if there are systemic issues). To pre-grade therefore gives an *unfair advantage to individuals while robbing the class holistically of data-driven learning support.*

We want all of you to have the opportunity to learn and succeed, so please understand that there's a line between clarification and pre-grading. Please understand that we may need to remind you of this boundary, and we would generally appreciate if you all will self-monitor for this, making those reminders rarely needed.

How can I ensure I submit my (best) work? Follow the guidelines above, and consider working in drafts. As you work, go ahead and submit a copy each time you stop working, even if you're not done. This will help you to meet deadlines in the event that you forget to submit. You have unlimited submissions before the deadline, and we grade only the last one. Thus, it can only help you to upload your progress (even if the work is not yet complete/revised to your satisfaction), especially if something happens that prevents uploading your final version.

Missed Test Policy

You should email Dr. Weigel within 24hr of a missed exam, and ideally before a test if you know of your scheduling conflict in advance. We will strive for consistency, but also treat each situation individually. Generally, should you miss an exam, the first miss is already covered in your drops (see “Stuff Happens Clause”). If needed, a second miss will be handled at the instructor’s discretion through either a make-up test (not necessarily identical to the original test in format or questions) or the grade-neutral approach of using average of your other tests to replace the missing score; this will happen only with documentation, following <http://www.catalog.gatech.edu/rules/4/> and requestable through institute processes, such as the Dean’s referral <https://studentlife.gatech.edu/request-assistance>. If you need to miss 3 or more exams, you’ll likely have missed too much, so we’ll pursue an Incomplete for you to give the course another go in a future term.

Please note: Any test which is 0 because of institute OSI procedures is not eligible for being dropped and will factor into all grade calculations.

Extra Credit Opportunities

On select occasions, opportunities for extra credit may be offered to the class. Note that *no extra credit will be offered on an individual-student basis*, as such requests are in violation of GT’s Honor Code. Please don’t ask.

Grade Dispute Policies and Procedures

Grades are not negotiable, but mistakes can occur in the grading process. If you feel an assignment has been incorrectly scored, notify us to request we take a second look.

Any requests for adjustment of grades must be submitted in writing via your GT email as a single complete and comprehensive email directly to Dr. Weigel no more than 48 hrs after the work has been returned. After this point, grades will stand, regardless of the merits of a rereview at a later date; please see this as a measure to encourage your review of your own work and taking responsibility for accurate assessment of your performance. Your email should include the specific assignment, question number and a *detailed explanation* as to what you would like us to review. In all cases, the entire assignment will be reevaluated, and a final, revised grade (higher or lower) will be assigned if warranted. Note that, if in review we identify necessary changes will impact the accuracy of *another* student’s(s’) scores (e.g. a miskeyed multiple choice), affected grades may shift from the original score to ensure accuracy of the assessment. We will strive to finalize scores for everyone quickly, but be aware that (re-)grading takes time, so be patient.

Any grade requests made via piazza, during open office hours, or during class meetings (i.e. public forums) will automatically be denied and void the opportunity for others; these requests can create misunderstandings and cause complex Honor Code issues, so please do NOT do this! Additionally, for yourself, us, and your classmates, *please make sure to*

review your work, schedule, etc. to ensure what you state is honest, accurate, and applicable, particularly as errant requests and Honor Code violations from false statements can negatively impact everyone.

Collaboration and Group Work Policy

I encourage students to work together, but I have three important notes:

1. Each course component is explicitly indicated as either collaborative or individual work. If you are unsure/unclear about the definitions or boundaries of academic misconduct and whether you are allowed to collaborate, it is your explicit responsibility to ask *before* attempting to, or actually, collaborating.
2. Individual submissions which allow collaboration (which can include comparing and changing your answers) still need to show what you know. Even if heavily influenced by others, each student is expected to create their own figures and figure legends, compose their own code, and write their own responses to written work. Please don't simply copy over (plagiarize) work, as it hurts your learning. *Put your own spin on things to help you remember and recall it later.*
3. Items completed in collaboration with other students must accurately list the first and last names of those collaborators when submitted (not doing so will be considered Unauthorized Collaboration under the Honor Code). Generally, you'll be prompted to note your collaborators on these assignments, but should we forget, please be proactive to list them.

AI Policy

While use of AI is not wholly forbidden except for on Exams (where AI is not permitted), whenever AI is used, **each student is expected to always credit any AI sources, both by name and how they contributed to the final work**, just as is done in author contribution sections of science papers. It is also wise to include when you used a particular tool, as features and AI behavior can change rapidly. AI tools can be a great way to learn, but *be sure not to muddy what is actually your own work vs. that of others.*

For example, at the end of a student's work, we could see this AI attribution section: "I used Connected Papers to find research references (Nov. 2), chatGPT to debug my code (Nov. 7), and Grammarly to correct my grammar before submission (Nov. 10)."

Tips to use AI responsibly and effectively:

- Make your own notes/sketches before engaging with AI. This will help you to keep a log of your own thoughts that can be referred to later, and it will keep the AI from pulling your work in a direction where there is no/sparse data and/or where you are less prepared to write.

- Pick good tasks for AI- both that it can do well and that help you to learn. Summarizing your notes or generating practice quiz questions are uses that can be helpful, but having it do your homework in this class would deprive you of very useful practice. Historic data also shows AI generated HW assignments score on average lower than human generated assignments (yes, there IS a difference!)
- Always check the source information for accuracy, and if you cannot find and verify information with the original source, don't trust it. AI is generally great for finding papers and writing assistance, but frequently gets basic facts wrong, although it can present them as if they are truth; don't fool yourself.
- You should always remember to check LLM/AI output for calculation and code accuracy, and do so step by step, especially when it comes to numbers. AI can produce answers fast, but can be clearly wrong, or do things in a way that is overly complicated, hard to adapt, and hard to troubleshoot, leaving you with broken code... and headaches.
- Avoid directly cutting and pasting in the same file. In fact, it's best not to even have a submission file open at the same time to avoid issues of losing track of what's yours.
- Note how you used the AI and any elements that came from AI right when you use it for your work. Don't wait or rely on later memory to distinguish how parts were used
- Work in documents that log your process automatically. Note that, if we see indications of uncredited AI use or AI used to replace your contributions as an author, we may follow up with you and/or OSI to resolve the matter. As a good safeguard, use the institute's [OneDrive access](#) (or GoogleDocs, if you are more familiar) to compose each part of your writing process. This way, a shareable log of the version history will exist that can be used to behaviorally verify you wrote the work. Please be aware that timely provisioning of such a log that shows a typical writing process is your responsibility; choosing not to create this evidence as part of your writing process is done at your own risk.
- If you work with others, be sure you can describe to groupmates what steps you took to use AI and verify the AI output. If you're a groupmate, question groupmates actively, both on whether or not you're ok with using AI, and on the content that has been generated. This can help both/all of you discover where the holes are in your knowledge and whether or not AI is helpful for them.
- Do not upload or use AI on any items for which you do not have permission from the creator. This can not only break trust, but land you in legal trouble.

You are responsible for anything you submit/has your name, so be sure you and others with whom you work are aware. These steps won't save you from poor work and academic integrity issues in every case, but they can help you (and us!) to better see your growth and engagement across the term.

Class Content Intellectual Property Policy

There are tons of very smart people in this course that will be looking to grow intellectually. This means we will all be sharing ideas, some fully formed, some in process, as we grow. Any work and/or communication that you are privy to as a member of this course should be treated as the intellectual property of the speaker/creator, and is not to be shared without their permission. Specifically, students may not make or distribute screen captures, audio/video recordings of, or livestream, any class-related activity, including lectures and presentations, without official GT accommodations. We have taken care to prepare class recordings that should meet the needs of members of this course, with or without official accommodation, but we invite you to share if there are ways we can make class more inclusive. If your accommodations do stretch beyond what we are able to offer broadly to the course, we ask that any recordings you have not be shared with any other student, whether in this course or not, or with any other person or on any other platform, to not run afoul of applicable privacy laws. *Failure to follow this policy on recording or distributing class-related activities may subject you to discipline under the Student Code of Conduct.*

All course materials, including but not limited to In-Class Materials, Tests, 'How To' Guides and Tutorials, Sample Assignments, Student Support materials, and the like are protected by copyright law. Students may take notes and make copies of course materials for their own personal use only. However, students may NOT reproduce, distribute or display (post/upload/ screenshot/take photos of) lectures or course materials in whole or in part in any other way without the instructor's prior written consent (this includes uploading course materials to "study websites" such as Chegg, Course Hero, etc.). Violations of this policy will be subject to student conduct proceedings under GT's Student Code of Conduct, and applicable laws, even after the course has concluded and/or you have left GT.

Email Policy

Emails can be an appropriate forum to exchange ideas, particularly when addressing *individual* concerns (e.g., your grade, an institute absence, etc.). **When you email, please put BIOS4401 in the subject line so we see and prioritize the message.** Please also use your GT email; we can respond most thoroughly (and rapidly) when we can simply hit reply vs. needing to search for your verified GT email to respond. **Please also do NOT use Canvas or Learning Catalytics messaging; they are not reliable.** Although we request that you give us at least 1 business day to respond, we will generally reply well within that time and be most responsive M-F 8am-5pm, but if we reply outside of those hours, unless the concern is urgent (e.g., we're troubleshooting your access to LC, a test, etc.), please don't feel the need to immediately respond. We understand we all need balance and have lives outside of this course. Please pay us this same respect.

Additionally, should you email to request a special appointment for office hours and be very late or fail to show, we reserve the right to no longer allow you to schedule individual appointments outside of regular office hour times. If you have an unavoidable, unforeseen

conflict, please do let us know as soon as you can, but otherwise plan to make the appointments you set.

Piazza and Chat Policy

We encourage asking questions and working together, both in and outside of class. To this end, we will set up Piazza, an online platform for you to ask us and your fellow students questions, and we will enable the chat feature in video conferences (e.g. class and in office hours). We ask that you always first listen/review the questions before posting (in case your question has already been asked/answered), and we also ask that you do not post solutions or code to give everyone the chance to do their own work. Please remember that conversations on Piazza and in the chat are visible to the class (not private), so please email with personal concerns (your grade, illness, etc.)

Important: A challenge with written communication can be in interpreting text without the visual and auditory clues from speech. Please remember that this is an academic course, taught and taken by real people, so we are asking that you treat your fellow students and instructors with respect. Please grant each other grace and the benefit of the doubt in potential miscommunications by asking for clarification when needed, and please respond to requests in good faith. We will strive to keep our learning environment as a place where we can seek knowledge openly, and we will keep Piazza and the chat available as long as this goal is met.

Changes: Course content and assignments may necessarily vary from this syllabus to meet the needs of this particular class. Students will be notified by the instructor via Canvas when adjustments to this syllabus are required.

Campus Resources for Students

A comprehensive and extensive list of student supports can be found here: [Student Resource Guide](#) We suggest that you bookmark this reference and review it periodically to become familiar with the plethora of academic and wellbeing supports at Georgia Tech. You've got us, and your classmates, in this class, but the people supporting and vested in your overall physical, social, and mental well-being are far more numerous.