

# Syllabus Biology 2300 Ecology, Fall 2022

Time: MWF 11:00-11:50am EDT, Instructors:

Dr. Marc Weissburg  
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Office Hours: By appointment

Dr. Emily Weigel  
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Office Hours: Tues 9-11am (link on Canvas) and by appt

**\*\*When emailing, please put BIOS2300 in the subject line to ensure we see it.\*\***

Teaching Assistants:

Prerequisites: Undergraduate Semester level BIOL 1510/1511 or BIOS1107/1108 or equivalent with a Minimum Grade of D Required Resources:

1. Student subscription to Tophat ([www.tophat.com](http://www.tophat.com))
2. Laptop, tablet or smart phone (in that order) capable of running the TopHat app enabling users to respond to in class prompts and quizzes outside of class

Course Description:

This is an **active-learning** class that stresses active problem solving as a way to understand Ecology specifically and science generally. You will be expected to be able to understand, apply, critique, hypothesize, predict, interpret and analyze using real data. These problem solving activities will take place in class, and will be the major vehicle by which you will learn. They often will be team-based. *There will be **NO LECTURES IN CLASS, and THERE IS NO REQUIRED TEXT.*** Lessons to prepare you for each class will be delivered remotely via videos on CANVAS. We will then spend class time building your comprehension on the material using ecological problems presented in class that you will work through in small groups with our guidance. In-class assignments or other assessments (such as the quizzes associated with lessons) will occur every day and will be based in the given class content and in-class activities.

Course Scope and Objectives:

With respect to ecology, you will learn the theoretical and conceptual foundations for how individuals, species, and communities interact among themselves and with the environment. The course will stress processes that determine the structure and function of populations, communities, and ecosystems, often using quantitative tools. We also will examine applications of ecological principles to issues such as conservation and management.

By the end of this course, you will be able to:

1. Read, interpret, analyze, and explain primary literature that concerns ecology
2. Identify and interpret basic ecological concepts through data derived from observation, experimentation, and modeled simulation
3. Design and critique experiments and approaches to test hypotheses
4. Develop predictions, based on real data, for how an ecological system should behave, and apply your knowledge to novel scenarios
5. Effectively communicate scientific findings in oral and written English, as well as in mathematical (symbolic) logic

### Class Sessions

We are scheduled as an in-person course, but we have the Zoom web conferencing platform available for class as an option so that you can connect remotely when needed. To get the link for our virtual classroom, and access the recorded video lectures if unable to attend in-person/online, go to the Zoom tab on the course Canvas page. Be aware: recordings don't always do class sessions and their activities justice, and such recordings may not always exist/be lengthy, so if you can, aim for real-time engagement. It's more fun, and more effective.

Grading: Your final course grade will depend on the following components:

Lesson Quizzes	10%
In-Class Problem-Solving Activities	10%
Self-reflection	10%
Work Portfolio	10%
Midterm Exams (2 @ 17.5% each)	35%
<u>Final Exam</u>	<u>25%</u>
	100%

This course is graded on a straight scale – you are not competing against anyone else for your grade. The most stringent scale used will be:

A:  $\geq 90.0\%$

B:  $\geq 80.0\%$  and  $< 90.0\%$

C:  $\geq 70.0\%$  and  $< 80.0\%$

D:  $\geq 60.0\%$  and  $< 70.0\%$

F:  $< 60.0$

We reserve the right to change this scale based on class performance, but it will never be stricter than this.

Graded Course Components:

- Lesson Quizzes (10%):  
Quizzes are 2-4 questions that test your basic understanding of the video lesson relevant to a give class period. They are administered using Top Hat, and are **due by 10 AM on the day of the relevant class period.** *Not understanding the material **before class** will considerably diminish your ability to solve the in class problems.* You will be able watch the video to prepare as many times as you like, but will get one quiz attempt before the deadline. *Hence, we strongly encourage you to master this material rather than take short cuts. You are allowed one missed quiz, but it is your responsibility to assure you have a functioning device.*
- In-Class Problem-Solving Activities (10%): These constitute problems that you work on in class, sometimes individually and sometimes in teams. These will be assessed by a variety of means, including questions answered in class using Top Hat, or turning in your work at the end of class. Most of the points (75%) will be awarded for participation and a good faith attempt to solve the problem, not on the “correct” answer. *Using a careful, deliberative and logical process is more important than “guessing” the answer correctly.*
- Self-reflection (10%): This is your opportunity to understand your own thinking and how well you understand the material. *It is intended to help you determine your level of understanding and to help you to identify strategies that do or do not work, so it is very important that you take this seriously.* You will be required to address these aspects roughly **weekly**, submitting a short (e.g. 1-2 paragraph) statement of what you believe you understand, what in particular helped you to understand, and what is preventing you from understanding. **Assignments are due Friday by 11:55 PM on CANVAS,** but you may submit them any time prior. Again, the emphasis is on engaging the question deliberately and with thoughtfulness; there is no correct answer. Thoughtless and perfunctory answers will receive no credit. You are allowed one missed or late assignment without penalty. Further late assignments will be accepted up to 24 hr past the deadline for up to 50% credit.
- Work Portfolio (10%): **Required daily** as a record of your work in class. Since you will often work in teams, and there is no textbook, *it is essential that you have your own record of the in-class problems, how you tried to solve them, and the appropriate conclusion.* This is your portfolio. It may be digital or on paper, and it should include all the information you need to understand the problem and how you worked through it. Each entry should indicate the date (so we know what you are referring to), a description of what you were asked to do, and record your conclusions, thinking and corrections to your initial ideas where appropriate. *It should reflect your work in class, but also your subsequent conclusions and thoughts on the problem.* It is not simply the slides from class with a few

accompanying sentences, but rather a study guide, or personal mini-book for the course. Again there is no single “right” way; we are simply looking for your ability to describe the problem, the relevant facts, your conclusions, and any areas of uncertainty in a useful way. We will periodically ask that you submit a copy of this portfolio electronically (typed or scanned, submitted as a .pdf, .doc, OR .docx only); comments will likely be more frequent early in the semester to aid your notetaking skills, and will tend to taper off throughout the semester as you grow. *Note that, should you miss class, it is your responsibility to seek out the material you missed and ensure you've got a good understanding of it. Please consult with classmates and TAs to fill in gaps. Each missing activity in your portfolio will result in a **50% deduction** for that portfolio check. **You are expected to have all activities worked even if you have missed class.***

Exams (Midterms at 17.5% each, Final at 25%): Exams are a combination of short answer/multiple choice; focused questions on data interpretation, experimental design, or quantitative concepts; and essays that require you to synthesize material in different ways. The final will include questions addressing the last 3<sup>rd</sup> of the course, but also will be cumulative. Cumulative questions are either drawn from prior sections of the course or will require you to integrate material across the entire course. We reserve the right to confirm understanding via oral exam as situations warrant.

Extra Credit Opportunities: Throughout the semester, periodic extra credit opportunities may be offered at the instructors' discretion. Such opportunities are to get you further engaged with the material and the ecology of Atlanta more broadly. Any opportunities will be posted to CANVAS and announced in class; please pay close attention to the requirements and deadlines for each opportunity.

Missed Class: In a time that is so tumultuous, things can happen that might cause you to miss class. 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 6 lowest In-Class scores**, to account for days when you cannot arrive, think with optimum clarity, are temporarily ill, have a technological snafu/issue, need to do something else, just need a break, etc. To level the playing field, this catch-all policy is intended to cover both official institute-excused items, as well as issues for which getting excuse letters presents a real barrier, such as getting an illness or disability officially documented, or unexpected need to care for a loved one. Each graded component is worth a small amount, especially relative to all of the challenges of life. So, please be mindful of how you plan to use these drops to insure you do not miss more than you intend, and be judicious in case of unexpected issues across the term, as this lenient policy is the extent to which flexibility can go before compromising learning. Please reach out to us if what's going on goes beyond this built-in policy, and do not be surprised if we email just to check in to see how you are doing—we care!

Missed Exams: If you miss an exam for any reason, you will receive a grade of 0 (zero) on that exam unless you **petition us for a makeup exam within 24 h of the start of the missed exam**, and we approve your petition. Your petition must be submitted in writing (by e-mail) and must include documentation of a legitimate reason for missing the exam. You are encouraged to submit your petition before the exam if you know of your scheduling conflict in advance. We will consider each petition individually. Examples of legitimate reasons to miss an exam include documented illness, illness or death in your immediate family, and participation in official university activities. If we approve your petition, we will either administer a makeup exam (which may be in a similar or alternative format, e.g. oral exam) or remove the missed exam from your grade calculation by using the weighted average of your other exam scores as your grade for the missed exam, making it completely neutral in your final point total.

### Tldr; What is your role as a student?

Before class, read/watch/listen to the assigned preparatory material, complete work outside of class, and formulate any questions you want to ask. During class, you can expect to build your understanding through activities and class discussions.

This course format will ask you to develop skills in identifying what information you need, and learning how to break down a problem into achievable parts. Key attributes of A-level class participation include (based on rubric by Filipe and Pritchett 2013):

- Actively looking for and recognizing inadequacies of existing knowledge
- Consistently seeking and asking probing questions
- Reformulating incorrect ideas based on your in-class activities and discussion

### How to succeed in this course:

- Attend, be on time, and participate actively: This is because class time is devoted to problem-solving and assessment of your learning. For these reasons, **on-time attendance is mandatory**. We will allow 1 unexcused absence. Beyond this, there will be **NO MECHANISM** to make up assignments, quizzes, etc. that are missed because you did not sign in or were late to class. Excused absences include sickness (with a doctor's note), official school activities, or in some cases major life emergencies or religious observance. You may be required to produce documentation of your activities, and these last exceptions will be decided on a case-by-case basis.
- Come prepared: It is **essential** that you come to class, and have prepared. **This means that you MUST:** have seen the video required for a given class and have completed the corresponding assessment on Top Hat prior to class. *The assessment for each lesson will be closed roughly 2 hours before class so that we have time to examine the results.* **Make sure** to have examined the video at least once, and completed the assessment **prior to this deadline**. Also, **make sure** that

you have a **smart phone, tablet, or computer for class**, since this will be required for the in class activities.

- Use Technology for Class: Assessment class will take place via Top Hat (<https://tophat.com/>). Please go to this site, sign up as a **student**, and download the application to the device or devices of your choice. (The price is ~\$30 for a semester). All assessments and presentations will be available on the Top Hat site and all other materials will be available on CANVAS. CANVAS is the primary way we will communicate with you about class activities and other important updates. Please set CANVAS **either for immediate or daily updates** or you will miss things you need to know.

Note that you are **required** to have a mobile device (laptop, tablet, phone-in that order of preference) with Top Hat installed, and working, for class. We encourage you to otherwise manage digital distraction, as we can tell when you're off-task, and more importantly, we want you to work well in your group and do well in the course. You can forfeit points for the day if you are off-task or distracted, and worse, not learning the overall material as deeply as you would otherwise. Please focus for the time we have together; it is valuable!

- Reflect on feedback we, your classmates, and you make to yourself: Part of learning means monitoring your own learning— the things you know, the things you don't, and the strategies you use to close the gap. Take feedback you receive seriously, and be open to change, as it is for your benefit. We spend time to give you feedback because we have high expectations and know you can reach them. We and your classmates are your allies in helping you do your best.
- Behave ethically: 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. 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.

Note that we fully encourage you to study in groups, or watch lessons in groups and discuss the material. *However, all individual assignments should be done without the direct aid of others.* Please ask us if this is unclear to you.

Email Policy: Emails can be an appropriate forum to exchange ideas, particularly when addressing individual concerns (e.g., your grade, an institute absence, etc.), and GT expects that you check your email every 24hrs or so, if not more frequently, to stay-in-the-know.

When you email us for this course, *please put BIOS2300 in the subject line* so we see and prioritize the message. Please also use your *GT email*; **do NOT use Canvas**

**messaging to email; it is not reliable.** Send **single email addressed to both of us** to avoid delays. Please also ensure that outside communications, such as those from the Dean of Students, are addressed to both of us, as they may occasionally email just one of us, which can delay responses.

We will generally reply well within 24 hrs 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 Tophat, an exam, etc.), please don't feel the need to immediately respond. We understand we all need balance. Please pay us this same respect.

Piazza and In-Class 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. A challenge with such online communication can be in interpreting text without the visual and auditory clues from speech. 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.

Statement of Intent for Inclusivity: As members of the Georgia Tech community, we are committed to creating a learning environment in which all students feel safe and included. Because we are individuals with varying needs, we are reliant on your feedback to achieve this goal. To that end, we invite you to enter into dialogue with us about the things we can stop, start, and continue doing to make our classroom an environment in which every student feels valued and can engage actively in our learning community.

Additionally, it's hard to feel included and learn when basic needs are not secure. Any student who faces challenges securing food or safe housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify the us if you are comfortable in doing so. This will enable us to provide resources to help you.

Tutoring: Georgia Tech offers a variety of free learning and communications support options. Learn about free tutoring resources at [www.success.gatech.edu](http://www.success.gatech.edu) or at the Center for Academic Success's tutoring desk in Clough Commons 273. For assistance with writing, consult the Communications Center (Clough Commons 447 or [commlab.gatech.edu](http://commlab.gatech.edu)).

Learning Accommodations: 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 us as soon as possible in order to set up a time to discuss your learning needs.



Changes: Course content and mechanics may vary from this syllabus to meet the needs of this particular class. Students will be notified in class by the instructors when adjustments are required.

Course Schedule:

Week	Date	Who	Lecture topic
1	8/22	Weissburg, Weigel	Introduction
	8/24	Weissburg	Population distributions
	8/26 Reflection due by 11:55pm	Weissburg	Population distributions
2	8/29	Weissburg	Population growth and regulation
	8/31	Weissburg	Population growth and regulation
	9/2 Reflection due by 11:55pm Portfolio due by 11:55pm	Weissburg	Population growth and regulation
3	9/5		<i>Labor Day- No class</i>
	9/7	Weissburg	Population growth and regulation
	9/9 Reflection due by 11:55pm	Weissburg	Population dynamics; metapopulations
4	9/12	Weissburg	Population dynamics; metapopulations
	9/14	Weissburg	Competition
	9/16 Reflection due by 11:55pm	Weissburg	Competition
5	9/19 Portfolio due by 11:55pm	Weissburg	Competition
	9/21	Weissburg	Predation
	9/23 Reflection due by 11:55pm	Weissburg	Predation
6	9/26	Weissburg	Predation
	9/28	Weissburg	Predation
	9/30 Reflection due by 11:55pm		Exam 1 (Population Distributions to Predation)
7	10/3	Weigel	Buffer Day**



	10/5	Weigel	Mutualism
	10/7 Reflection due by 11:55pm	Weigel	Parasitism
<b>8</b>	10/10	Weigel	Zoonotic Diseases
	10/12	Weigel	Life History
	10/14 Reflection due by 11:55pm Portfolio due by 11:55pm	Weigel	Life History
<b>9</b>	10/17		<i>Fall Break- No class</i>
	10/19	Weigel	Succession
	10/21 Reflection due by 11:55pm	Weigel	Succession
<b>10</b>	10/24	Weigel	Succession
	10/26	Weigel	Biodiversity
	10/28 Reflection due by 11:55pm	Weigel	Biodiversity
<b>11</b>	10/31	Weigel	Biogeography
	11/2	Weigel	Biogeography
	11/4 Reflection due by 11:55pm	Weigel	Biogeography
<b>12</b>	11/7	Weigel	Exam 2 (Parasitism to Biogeography)
	11/9	Weigel	Productivity
	11/11 Reflection due by 11:55pm	Weigel	Buffer Day**
<b>13</b>	11/14	Weigel	Productivity
	11/16 Portfolio due by 11:55pm	Weigel	Productivity
	11/18 Reflection due by 11:55pm	Weigel	Energy flow and food webs
<b>14</b>	11/21	Weigel	Buffer Day**
	11/23		<i>Thanksgiving Break (No Class)</i>
	11/25		<i>Thanksgiving Break (No Class)</i>
<b>15</b>	11/28	Weigel	Energy flow and food webs (VIRTUAL)
	11/30	Weigel	Energy flow and food webs (VIRTUAL)
	12/2 Reflection due by 11:55pm	Weigel	Biogeochemical cycles (VIRTUAL)

16	12/5	Weigel, Weissburg	<i>Last Class Day (Topics of Student Choice) (VIRTUAL)</i>
	Fri Dec 9 2 11:20 AM - 2:10 PM		<b>Final Exam</b>

\*\*Buffer days are included in case we need to shift for any reason (need more time with a topic, institute shifts, etc.). If we do not need these days, we will ask that you take the day off and simply take care of yourselves.

### Campus Resources for Students

In your time at Georgia Tech, you may find yourself in need of support. Below you will find some resources to support you both as a student and as a person.

#### Academic support

- Center for Academic Success <http://success.gatech.edu> ○ 1-to-1 tutoring <http://success.gatech.edu/1-1-tutoring>
  - Peer-Led Undergraduate Study (PLUS) <http://success.gatech.edu/tutoring/plus> ○ Academic coaching <http://success.gatech.edu/coaching>
- Residence Life's Learning Assistance Program <https://housing.gatech.edu/learning-assistance-program> ○ Drop-in tutoring for many 1000 level courses
- OMED: Educational Services (<http://omed.gatech.edu/programs/academic-support>) ○ Group study sessions and tutoring programs
- Communication Center (<http://www.communicationcenter.gatech.edu>) ○ Individualized help with writing and multimedia projects
- Academic advisors for your major <http://advising.gatech.edu/>

#### Personal Support

##### Georgia Tech Resources

- The Office of the Dean of Students: <http://studentlife.gatech.edu/content/services>; **404-894-6367**; Smithgall Student Services Building 2<sup>nd</sup> floor ○ You also may request assistance at [https://gatechadvocate.symplicity.com/care\\_report/index.php/pid383662?](https://gatechadvocate.symplicity.com/care_report/index.php/pid383662?)
- Counseling Center: <http://counseling.gatech.edu>; **404-894-2575**; Smithgall Student Services Building 2<sup>nd</sup> floor ○ Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention.
  - Their website also includes links to state and national resources.
  - *Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2204.*
- Students' Temporary Assistance and Resources (STAR):

<http://studentlife.gatech.edu/content/need-help> ○ Can assist with interview clothing, food, and housing needs.

- Stamps Health Services: <https://health.gatech.edu>; **404-894-1420** ○ Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition
- OMED: Educational Services: <http://www.omed.gatech.edu>
- **Women's Resource Center: <http://www.womenscenter.gatech.edu>; 404-385-0230**
- **LGBTQIA Resource Center: <http://lgbtqia.gatech.edu/>; 404-385-2679**
- **Veteran's Resource Center: <http://veterans.gatech.edu/>; 404-385-2067**
- **Georgia Tech Police: 404-894-2500**