Course title: Seminal Papers in Astrobiology
Course number: EAS/CHEM/BIOL 8802
Term: Spring 2021
Credits: 2

Instructors:
Lead instructor: Jennifer Glass: jennifer.glass@eas.gatech.edu
KnowledgeBase Contact: Graham Lau: grahamlau@bmsis.org
Faculty paper discussion hosts:
Week 1: Mariel Borowitz: mariel.borowitz@inta.gatech.edu
Week 2: James Wray: jwray@gatech.edu
Week 3: Margaret Kosal: margaret.kosal@inta.gatech.edu
Week 4: Martha Grover: martha.grover@chbe.gatech.edu
Week 5: Loren Dean Williams: loren.williams@chemistry.gatech.edu
Week 6: Chris Reinhard: chris.reinhard@eas.gatech.edu
Week 7: Frank Rosenzweig: frank.roenzweig@biology.gatech.edu
Week 8: Frances Rivera-Hernandez: frh6@gatech.edu
Week 9: Amanda Stockton: amanda.stockton@chemistry.gatech.edu
Week 10: Jacob Buffo (PhD 2019, Schmidt Lab): jacob.i.buffo@dartmouth.edu
Week 11: Thomas Orlando: thomas.orlando@chemistry.gatech.edu
Week 12: Gongjie Li: gongjie.li@physics.gatech.edu

Learning Objectives:
Upon completion of this course, students will be able to:
• Students will receive firm grounding in the disciplines comprising astrobiology.
• Students will strengthen their skills at written and oral communication of their research and its broader significance to diverse audiences.
• Students will engage in cross-disciplinary learning beyond their field of expertise.
• Students will engage in teamwork with astrobiologists at other institutions to create new content for a biosignature web tool (Knowledge Base).

Evaluation: SciComm: 40%; Discussion Lead: 40%; Quizzes: 10%; Attendance: 5%; Participation: 5%
Grading Scale: A: 90.00-100%; B: 80.00-89.99%; C: 70.00-79.99%; D: 60.00-69.99%; F: <60.00%. The scale above may be curved slightly (a few %) upward depending on class performance.
Pass/Fail: ≥70%: Satisfactory; <70%: Unsatisfactory
Withdrawal Deadline: March 17, 2021 at 4pm Eastern
Canvas: The course will make extensive use of Canvas (log on with your GT username and password and select “EAS 8802”):
1) Announcements: also sent via email
2) Quizzes: where you will submit weekly quiz answers about the weekly seminal paper
3) Assignments: where you will submit project progress reports and presentation files
4) Files: Syllabus, Weekly Presentations, Seminal Paper PDFs, Project Instructions
5) Grades: where all scores are posted and you can view your current grade
6) Discussions: post here to ask questions and communicate with students and instructors

Grades and Grade Changes: Students can check current grades at any time on Canvas Gradebook. Scores will be posted within 1 week after deadline.
Science Communication Project (40%). A key component of this course is a semester-long science communication project. Students will be adding content to the new biosignature database (Knowledge Base (https://ldfknowledgebase.com) created by the astrobiology community, specifically the Network For Life Detection (NFoLD; www.nfold.org). Sign up at https://forms.gle/pfXxmAXXWeSEKk1xs8. For the first question, choose “Yes, I will attend both the plenary session and join at least one of the working groups”. In this course, students will participate in working groups with other astrobiologists to add content to KnowledgeBase. The overall objective of this project is to gain experience in communicating astrobiology science and scientific debates. You will gain skills in technical writing and editing, avoiding jargon, determining source credibility, weighing competing claims, accurately describing differing viewpoints and their significance, and working as a team with new collaborators. You will submit monthly progress reports and give a final presentation to the class about the experience. Assignment details are provided in Canvas > Files > SciComm Project.


a) Enantiomers: section 1.3.2
b) Lipids: section 3.2
c) Isotopes: section 3.3
d) Structures: chapter 7
e) Exoplanets: chapter 11

Discussion leader (40%): Each student will be assigned a seminal paper in astrobiology (list of citations in calendar, below) and a date to lead the course discussion (see schedule on final page). The student discussion leader will prepare a 15-minute PowerPoint presentation on the paper. The student presenter must upload their presentation to Canvas > Assignments > PowerPoint Presentation before the course period in which they present. The presentation should: (1) provide a brief (one-slide) biography on the Scientist Spotlight (see calendar), (2) summarize the paper’s major discovery, (3) explain why the paper was seminal, (4) explain any new concepts (e.g. derivations, explanations of related concepts, etc.) in the paper that might be unfamiliar to those outside the sub-field, (5) give a summary of the current status of the field, (6) provide a list of questions for further discussion on the last slide. The student will assist the faculty host with facilitating the discussion for the next hour of class. Each student should contact their faculty host at least 2 weeks prior to the discussion date to arrange to meet virtually to go over their slides and questions. Please contact your faculty host (email addresses are listed on the first page of the syllabus) with the subject “Booking EAS/CHEM/Biol 8802 Meeting”. The presentation files will be posted on Canvas (Files > Weekly Presentations > Spring 2021 Presentations) and BlueJeans course meetings will be recorded and posted on Canvas > BlueJeans. Example presentations from other seminal papers used in last year’s course are in Weekly Presentations > Example Presentations.

Quizzes (10%): Canvas quizzes will ask basic questions about the paper to ensure students have read the paper prior to weekly discussion. They will be due exactly 24 hours before the discussion. Faculty hosts will review the quiz answers prior to the class discussion. If late, one point will be deducted.

Attendance (5%): It is expected that all students attend all classes. Attendance (1 point per lecture) will be taken by the faculty host at the beginning of each class. Please contact Prof. Glass at the start of the semester if you anticipate needing to miss a class for a professional or medical reason. Due to COVID-19, I will be lenient with absences, but all absences must still be excused. Please email Prof. Glass prior to class if you have to miss it for any reason.

Participation (5%): The schedule for mandatory reading assignments is listed on the calendar on the last page of the syllabus. Students are expected to spend significant time and effort outside of the classroom in order to come prepared for discussion. Participation points are based on verbal engagement during the discussion days with evidence of having read the paper carefully. Students are highly encouraged, but not
required, to turn on their cameras during course meetings. Note: there is only time for one response per student. Please be respectful and let each student answer one question before responding a second time.

**Optional additional background reading:**
2) *Astrobiology: The Story of our Search for Life in the Universe* graphic novel series, issues 1-7, available here: [https://astrobiology.nasa.gov/resources/graphic-histories/](https://astrobiology.nasa.gov/resources/graphic-histories/)

**Graduate Certificate in Astrobiology:** This course counts as one of two required core courses (in addition in EAS 8001, Planetary Science and Astrobiology Seminar) for the Georgia Tech Graduate Certificate in Astrobiology. The 12-credit embedded certificate program is open to graduate students enrolled in any degree program at Georgia Tech. There are no prerequisites for entering the program. Graduate students enrolled in EAS 8802 are highly encouraged to complete the Graduate Certificate in Astrobiology to add to their graduate curriculum. More details here: [https://astrobiology.gatech.edu/graduate-certificate/](https://astrobiology.gatech.edu/graduate-certificate/)

**Student accommodations:** If you have any kind of disability, whether apparent or non-apparent, learning, emotional, physical, or cognitive, and you need some accommodations or alternatives to course exercises, please contact Prof. Glass to discuss reasonable accommodations for your access needs. Students with disabilities who require reasonable accommodation to fully participate in course activities or meet course requirements must contact the Office of Disability Services at 404-894-2563 or [http://disabilityservices.gatech.edu/](http://disabilityservices.gatech.edu/), as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter.

**Support Services and Resources**

**COVID-19 Testing (fast, cost-free, and pain-free, saliva PCR test)**
- Asymptomatic students are highly encouraged to get tested at least once weekly when on campus.
- Symptomatic students should make an appointment at Stamps Health Services and follow public health instructions for quarantining.
- Testing times and locations: [https://health.gatech.edu/coronavirus/testing](https://health.gatech.edu/coronavirus/testing)

**Academic Support**
- Center for Academic Success
  - 1-to-1 tutoring
  - Peer-Led Undergraduate Study (PLUS)
  - Academic coaching
- Residence Life's Learning Assistance Program
  - Drop-in tutoring for many 1000-level courses
- OMED Educational Services - Group study sessions and tutoring programs
- Communication Center - Individualized help with writing and multimedia projects
- Academic advisors for your major

**Personal Support**

Georgia Tech Resources
- The [Office of the Dean of Students](https://www.gatech.edu/deanstudents) | **404-894-6367** | 2nd floor, Smithgall Student Services Building; You also may request assistance [here](https://www.gatech.edu/deanstudents/)
- [Counseling Center](https://www.gatech.edu/counseling) | **404-894-2575** | Smithgall Student Services Building 2nd floor

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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)
  - Can assist with interview clothing, food, and housing needs.

- Stamps Health Services | 404-894-1420
  - Primary care, pharmacy, women’s health, psychiatry, immunization and allergy, health promotion, and nutrition

- OMED Educational Services | 404-894-3959
- Women’s Resource Center | 404-385-0230
- LGBTQIA Resource Center | 404 385 4780
- Veteran’s Resource Center | 404-385-2067
- Georgia Tech Police | 404-894-2500

National Resources:

- The National Suicide Prevention Lifeline | 1-800-273-8255
  - Free and confidential support 24/7 to those in suicidal or emotional distress
- The Trevor Project
  - Crisis intervention and suicide prevention support to members of the LGBTQ+ community and their friends
  - Telephone | 1-866-488-7386 | 24 hours a day, 7 days a week
  - Online chat | 24 hours a day, 7 days a week
  - Text message | Text “START” to 687687 | 24hrs day, 7 days a week

Cancellation of classes: If classes are cancelled by Georgia Tech due to campus closing, the schedule of topics and exams will be re-evaluated by Prof. Glass once campus has re-opened, and announcements about any changes to the schedule and assignments will be made by a Canvas announcement and email.

Academic integrity and honor code: Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. The instructor, teaching assistants and students in this class, as members of the Georgia Tech community, are bound by the Georgia Tech Academic Honor Code. Please see http://www.catalog.gatech.edu/policies/honor-code/ for Georgia Tech’s Academic Honor Code, which you are required to uphold. Any student suspected of plagiarizing will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Student-Faculty Expectations Agreement: In order to create a mutually respectful classroom environment, your instructors abide by the principles for student-faculty expectations laid out by Georgia Tech. This means that we will:

- create a positive, engaged academic environment;
- be available to meet with you (virtually) outside of class at a mutually convenient time;
- provide you in advance with all necessary materials so that you can complete all course assignments;
- make my grading criteria and rubrics available to you so that you understand how we evaluate your assignments.

In turn, instructors expect that students too will fulfill your responsibilities. Specifically, we expect that:

- you will work with us to create a respectful, engaged academic environment;
- you will attend classes regularly and on time;
- you will attend presentations unless you have an emergency or formal, pre-approved excused absence;
- you will come to class prepared, having read the required material, and ready to engage in class discussions;
- you will adhere to the principles of Georgia Tech Student Honor Code.

You can review Georgia Tech student-faculty expectations here: http://catalog.gatech.edu/rules/22/.
## Spring 2021 Calendar:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Faculty Host</th>
<th>Student Host</th>
<th>Seminar Paper</th>
<th>Scientist Spotlight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 20</td>
<td>History of Astrobiology</td>
<td>Mariel Borowitz</td>
<td>N/A</td>
<td>N/A – paper and sci comm assignments</td>
<td></td>
</tr>
<tr>
<td>Mar 24</td>
<td>Final presentations on sci comm projects</td>
<td>N/A</td>
<td>N/A</td>
<td>No course meeting -- mid semester break</td>
<td></td>
</tr>
</tbody>
</table>