Habitable Planet

Last Updated: Mon, 01/12/2026

Course prefix: EAS

Course number: 1601

Section: B

CRN (you may add up to five):
35454

Instructor First Name: Heather

Instructor Last Name: Chilton

Semester: Spring

Academic year: 2026

Course description:

We live in an exciting and challenging time—the human species is dramatically reshaping the Earth system, while the search for life beyond Earth is advancing at incredible speed. This course will explore the history of the solar system and Earth as the one currently known example of a habitable planet—one that can support living organisms. We will consider how stars, elements, and planets form, the important planetary processes that brought about the Earth as it was when life arose and have shaped its evolution as an inhabited planet over billions of years, and the science of searching for life beyond Earth. We will also explore the factors that shape the Earth today, and some of the physical and societal drivers that will potentially govern its future. This course is geared toward undergraduate students and is meant to be challenging and broadly accessible. The course will draw upon lectures and readings, as well as laboratory exercises to enrich those lessons.

Course learning outcomes:

Upon completion of this course, students should be able to:

- Apply a scientific framework to analyze or justify a scientific position.
- Use basic science tools and concepts to outline the timeline, characteristics, and implications of the formation and evolution of both the universe and Earth.
- Analyze the basic properties of stars and planetary systems to identify and justify which are most likely to host potentially habitable worlds.
- Describe the processes, features, and characteristics of a planet's structure, atmosphere, and climate, along with how those affect habitability and methods used to determine basic properties.

- Outline the major thresholds in the rise of life, the co-evolution of life and climate, and the role of humans in recent times.

Required course materials:

OLI Torus (Online Adaptive Platform) for online HabWorlds content

Grading policy:

The course grading breakdown is as follows:

Participation	**5%**
Homework Assignments (OLI Torus)	**40%**
Final Project	**15%**
Final Exam	**15%**
Labs	**25%**

- *Labs can be further broken down into the weekly lab assignments (80%) and the mission proposal project (20%), which is not the same as lecture final project*

Final letter grades will be assigned according to the following scale:

- A >= 90.0%, Achieved high performance level in course assessment goals, demonstrating content and skill mastery
- B >= 80.0% and < 90.0%, Achieved good performance level in course assessment goals, demonstrating content and skill fluency
- C >= 70.0% and < 80.0%, Achieved reasonable performance level in course assessment goals, demonstrating content and skill familiarity
- D >= 65.0% and < 70.0%, Achieved limited and partial performance level in course assessment goals, demonstrating only basic content and skill understanding
- F **< 65.0%**, Did not meet the minimum required performance level in course assessments

Note 1: Passing is considered a "C" or higher, although individual major requirements may require or accept different thresholds.
Note 2: If taking this course as pass/fail, a “passing” grade requires achieving a C or higher.

Final Grade Rounding: Any final course grade rounding will only be for up to 0.4 percentage points (e.g. a grade of "B" at an 89.6 could round up to a 90.0 for a grade of "A" given good course involvement, but not a "B" at 89.2 which cannot round to a 90.0) and will only be evaluated based on having attended and scored well on participation prompts and polls, indicating involvement and thoughtful analysis throughout the class. This applies only to the final course grade and NOT to individual assignments.

Extra Credit: There is no extra credit planned.

Grade Curve: Curving is highly unlikely but may be applied to exams to reflect a reasonable distribution of the scale described above (**up to the instructor's discretion**).

Attendance policy:

LECTURE PARTICIPATION: *Not required, but is a graded component of the final course grade (5%)*

- During each lecture, there will be several zoom polls. Participation points are based on lecture on-the-spot quizzes / knowledge checks, covering either student impressions or recently covered content. **You must be logged into the zoom session with your gatech email and first/last name for us to correctly award points.** Points are divided up as follows:
    - 75% for submitting an answer (being present and trying)
    - 25% for correct answers - this should motivate students to try and determine the correct answer without overly penalizing for struggling with content

  Please note, there are **two (2)** dropped lecture participation day grades, which can be used freely, ranging from unexcused absences, technology problems, etc. with no questions asked.

LABORATORY PARTICIPATION: *REQUIRED synchronous*

Academic honesty/integrity statement:

Georgia Tech aims to cultivate a community based on mutual trust, academic integrity, and honor. As such, all instructors and students are expected to act according to the highest ethical standards, and are bound by the Georgia Tech Honor Code. For more information on Georgia Tech's Academic Honor Code, please visit: https://catalog.gatech.edu/policies/honor-code/Links to an external site. and https://policylibrary.gatech.edu/student-affairs/academic-honor-code

"*Academic misconduct is any act that does or could improperly distort Student grades or other Student academic records. Such acts include but need not be limited to the following:*

- *Unauthorized Access: Possessing, using, or exchanging improperly acquired written or verbal information in the preparation of a problem set, laboratory report, essay, examination, or other academic assignment.*
- *Unauthorized Collaboration: Unauthorized interaction with another Student or Students in the fulfillment of academic requirements.*
- *Plagiarism: Submission of material that is wholly or substantially identical to that created or published by another person or persons, without adequate credit notations indicating the authorship.*

- *False Claims of Performance: False claims for work that has been submitted by a Student.*
- *Grade Alteration: Alteration of any academic grade or rating so as to obtain unearned academic credit.*
- *Deliberate Falsification: Deliberate falsification of a written or verbal statement of fact to a Faculty member and/or Institute Official, so as to obtain unearned academic credit.*
- *Forgery: Forgery, alteration, or misuse of any Institute document relating to the academic status of the Student.*
- *Distortion: Any act that distorts or could distort grades or other academic records.*

While these acts constitute assured instances of academic misconduct, other acts of academic misconduct may be defined by the professor. The Honor Agreement may reappear on exams and other assignments to remind Students of their responsibilities under the Georgia Institute of Technology Academic Honor Code."

COURSE-SPECIFIC POLICIES AND EXAMPLES:

We are navigating an interesting time with the increased access of both authorized and unauthorized tools as well as the advent of large language models (LLMs) and generative AI such as ChatGPT, Gemini, and others. We will try to balance some of the usefulness of these tools with addressing the pitfalls and problems that can come up; however, such materials and tools are **not a replacement for student's own understanding or work**.

In addition to the general GATech list above, academic honesty violations in this course also include, but are not limited to...

- For any graded material
    - Students giving/receiving answers to/from other students,
    - Students reporting content from other sources that are not their own without attribution,
    - Students providing answers that are not significantly original to themselves (e.g. cannot paste lecture content, even if cited, as the entirety of their graded response)
- Exam-specific
    - Students giving/receiving any input or answers to/from other students or persons, aside from authorized clarification from the instructor or TA
    - Students archiving specific exam question information that lends an unfair advantage to any student
    - Utilization of any materials not provided by this semester's course, including online content outside of course materials, large language models (e.g. ChatGPT, etc.)

Assignments and exams are assessments of a student’s own understanding and capabilities related to the content covered during class. As such, each student is required to submit work according to their own knowledge, comprehension, and effort. The exams

are open notes, where allowed material for each individual student includes 1) notes and submissions they created themselves in association with content covered during lecture, lab, and class assignments, or 2) content directly provided from this semester's class; However, the **use of unauthorized materials, including but not limited to LLMs (such as ChatGPT or similar), any external sources, or other people, is strictly prohibited**.

Any violation of this policy is considered academic dishonesty and will result in an incident referral of the student(s) to the Office of Student Integrity (OSI). Suspected violations will result in OSI being contacted for advice and may result in either a formal submission to OSI or a student-optional Faculty Conference for which the resolution will still be submitted to OSI and attached to the student's record. The Office of Student Integrity will investigate the incident and identify the appropriate penalty for violations (which may include failure in one or more classes, and/or suspension from Georgia Tech)

Tips to avoid violations:

1. Be sure to READ and UNDERSTAND any class rules and policies documents, as we have had situation in the past where students are called up on integrity violations and didn't realize it was in the document they signed in lab. If you have any questions or concerns, just reach out and ask.
2. Your agreement and signature are important, and just because you didn't read or forgot something you signed doesn't mean you won't bear the consequences for what it says...(being an adult isn't always fun, but ALWAYS read these sorts of documents, whether for class, work, buying a house, anything financial or legal, etc.)
3. It can be hard in a moment of panic to think of the larger picture, but when faced with a situation, try and walk through if and how an action could be seen as a violation (think from the perspective of an instructor or administrator).
4. This is NOT one of those situations that it is better to ask for forgiveness than permission - you risk your class grade, academic probably, or even expulsion and your academic career with these actions. Further, it degrades the quality of everyone's degree, and unfairly treats students who have properly adhered to the rules, skewing grades against their honest work.

While we encourage students to help each other learn course material, each student must complete their own work without engaging in plagiarism or other false claims of performance. In addition, course materials, including assignments and notes, are not to be archived anywhere online, distributed, or provided to persons outside of this class. Materials are presented for your benefit and evaluation. ***Any student who breaches this policy and violates the Academic Honor Code will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations (which may include suspension from Georgia Tech).***

Core IMPACTS statement(s) (if applicable):

This is a Core IMPACTS course that is part of the Technology, Mathematics & Sciences area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question:

- How do I ask scientific questions or use data, mathematics or technology to understand the universe?

Completion of this course should enable students to meet the following Learning Outcome:

- Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems and explain natural phenomena.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

- Inquiry and Analysis
- Problem-Solving
- Teamwork