EAS 2600: Earth Processes (Majors/Minors Section)

The Georgia Institute of Technology
Instructors: Andrew Newman (Lect.) Hiba Kunwer (Lab)

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General

The purpose of this course is to provide you with an understanding of how the Earth works and how it affects you. As an inhabitant of Earth, it is important to understand the processes that shape the landscape, cause natural hazards, influence climate change, and produce natural resources. Knowledge of how the Earth works can also help you in your daily life. For example, it is useful to be able to assess potential geologic hazards when buying a home, make informed decisions about the use and conservation of natural resources, and better appreciate the features you might encounter in the mountains, at the beach, or when visiting a national park.

Student Learning Outcomes: In addition to critical scientific thinking, students will come away with an overview of major Earth and planetary processes associated with:

- Natural and Anthropogenic Hazards (incl., earthquakes, tsunami, flooding, landslides)
- Earth Resources and Materials (incl., water, mineral, energy, construction, formation and differentiation of rocks & minerals)
- Planetary and Biologic Evolution and Plate Tectonics (incl., geologic time & dating, nutrient cycling & availability, biologic radiations/extinctions)
- Impacts on the Earth's Critical Zone (incl., landscape evolution, atmo/cryo/hydro-sphere, biologic, human)

Required Text: Grotzinger, J. & T. Jordan, Understanding Earth, 6^{th}, 7^{th}, or 8^{th} Ed., MacMillan Learning, ISBN: 131905532X, 2020 (publisher, ISBN and date are 8^{th} Ed.).
Because the material is largely duplicated between versions, students may use any of the above editions of this book. Chapter numbers described in the outline on page 4 correspond to the 8^{th} edition, with priors in parentheses.

Required Electronics: Students must have a computer with reliable high-bandwidth internet, a functional webcam, speakers, and microphone (headphones are fine). A quiet and minimally disruptive environment for online activities and study are important.

Online Resources and Communication: Canvas is the primary organizational resource for information about the class. Lectures are planned to be live and in-person. If there is a significant health concern due to COVID or similar, we will transition to Zoom meetings. I will always inform of any such changes through your Canvas announcements. *Being at class and on-time is essential for performing best in this course.* If you need to email me outside of Canvas, please identify `[EAS 2600]` at the beginning of the subject line.

Health: For any face-to-face contact masks will be optional, unless otherwise instructed. Presentation slides for class are planned to be made available following each class. *These are considered supplementary for study, but are not a replacement for class attendance.*

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 `https://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.

Evaluation

Weekly Quizzes (80%): At the beginning of every Thursday class (after 1st week), we will have a brief quiz ($\sim$10 min) on the prior week's material. These will be administered through Canvas, and can only be taken at that time. The lowest two grades can be replaced by a comprehensive final quiz during the final exam period. If you are satisfied with your grade before the final, you do not need to take it. *Quizzes will focus on lecture and discussion material.*

Labs (20%): All students must sign up for the laboratory section associated with the class. A separate lab syllabus will be handed out during your first lab section. The labs are designed to help your overall understanding of the course, and should help you perform better during quizzes. Normally, labs include both in-lab activities as well as on-campus, and off-campus trips. We are planning at least 2 off-site field trips during labs, or optionally on a Saturday.
There are no labs during the first 2 weeks of school this semester.

Attendance: You are expected to attend the class in-person. If health-measures require, we will offer a remote, likely synchronous option. I will not be taking direct attendance, but if you miss a quiz without a university-approved reason it will count as one of your dropped scores. In any serious situation that precludes your participation in class (death in the family, serious illness, etc.) you should contact the Dean of Students as they are there to help you in these cases (`https://www.deanofstudents.gatech.edu/`).

Course Grade: Your grades will be based on your performance during **Quizzes (80%) and Labs (20%)**.

- Letter Grade: A $\geq$ 90% > B $\geq$ 80% > C $\geq$ 70% > D $\geq$ 60% > F
- Satisfactory/Unsatisfactory: S $\geq$ 70% > U

Academic Honesty

General: It is expected that all students are aware of their individual responsibilities under the Georgia Tech Academic Honor Code, which will be strictly adhered to in this class. The complete text of the Honor Code may be found at: `https://honor.gatech.edu`.

Quizzes and Exams: All quizzes are planned to be administered through Canvas, and will be available for only a short window. Proper review of lectures and readings will ensure your best performance during these assessments. Relying on real-time lookup is not the intent of this course, and will likely be detrimental to your performance. You **are forbidden from sharing answers** during, or otherwise while a quiz or exam is still open for others to take. No use of Artificial Intelligence in answering quizzes, labs, or other course work. If there is evidence of such, you will be reported to the Dean of Students, receive a zero (0%) on the quiz and will, and that score **will not be dropped in determining your final grade**.

Student-Faculty Expectations

At Georgia Tech we believe it is important to strive for an environment of mutual respect, acknowledgment, and responsibility between faculty and students. Please see the *Student Handbook Code of Conduct* for some basic expectation that we should have of each other. Ultimately, we should respect each others time,

hard work, and quest for knowledge. We should strive to build an environment for cordial and effective interaction.

Pathway to success:

Students do best in this course if they keep up with reading, actively participate in lecture and lab meetings, turn in assignments on time, and rapidly seek help if they begin to fall behind, or are having difficulty with a topic. Note that chapters are listed with each lecture and that I will not explicitly tell you to read beforehand. When prepping for quizzes, it is wisest to focus on content that was discussed in lecture rather than material only covered in the book. Finally, I try to focus the course on understanding processes rather than memorizing jargon. However, a certain amount of jargon is inevitable. The jargon that I expect you to know are usually underlined during my lectures.

Impacts Course: EAS:2600 EARTH PROCESSES

This is a Core IMPACTS course that is part of the STEM area.
Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help students 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

Lectures

A detailed list of course lectures will be available within Canvas, and will be updated as necessary. We plan to roughly follow the below schedule.

Lecture #	Chapter: 8 (6&7) Eds.	Topic
1 Tu	Ch 1	Earth system/Intro.
2 Th (No Quiz)	Ch 2	Plate Tectonics
3 Tu	Ch 3	Materials: Rocks/Minerals
4 Th (Quiz)	Ch 4	Igneous Processes/Features
5 Tu	Ch 5 (12)	Volcanoes
6 Th (Quiz)	–	*How to monitor a volcano?* *
7 Tu	Ch 7 (6)	Metamorphic Processes/Features
8 Th (Quiz)	Ch 8 (7)	Deformation of Rocks/Mountain Building
9 Tu	Ch 10 (13)	Earthquakes: I
10 Th (Quiz)	Ch 10 (13)	Earthquakes: II
11 Tu	Ch 11 (14)	Earth's interior: I
12 Th (Quiz)	Ch 11 (14)	Earth's Interior: II
no class	*Fall Break*	
13 Th (No Quiz)	Ch 6 (5)	Sedimentary Processes/Features
14 Tu	Ch 9 (8)	Clocks in Rocks
15 Th (Quiz)	–	*Spherical cows and other oddly shaped creatures* *
16 Tu	Ch 12 (15)	Climate
17 Th (Quiz)	Ch 15 (21)	Glaciers
18 Tu	Ch 16 (16+22)	Landscape Development
19 Th (Quiz)	Ch 16 (22)	Landscape Development
20 Tu	Ch 20 (9)	Planetary
21 Th (Quiz)	Ch 21 (10)	History of the Continents
22 Tu	Ch 17	Hydrology
23 Th (Quiz)	–	*We're doing science!* *
24 Tu	Ch 18	Stream Transport
25 Th (Quiz)	Ch 22 (11)	Geobiology
26 Tu	Ch 19	Winds & Deserts
no class	*Thanksgiving Break*	
27 Tu	Ch 13-14 (23)	Human Impacts: I
28 Th (Quiz)	Ch 13-14 (23)	Human Impacts: II
29 Tu	Ch 1-22	Course Review
Final Quiz	**Chs. 1-22**	**refer to Final Exam schedule, when published**

* In-class Discussion/Activity

Topics and timing are subject to change during the semester.
Quizzes are on most Thursdays.

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. Some websites change with time (faster than syllabi!). As such, links to all of these resources should be findable on the left-hand side of the Canvas webpage.

Academic support

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

Personal Support at Georgia Tech Resources

- The Office of the Dean of Students: https://studentlife.gatech.edu/content/services; 404-894-6367; Smithgall Student Services Building 2nd floor: *You also may request assistance at https://gatech-advocate.symplicity.com/care_report/*
- Counseling Center: https://counseling.gatech.edu; 404-894-2575; Smithgall Student Services Building 2nd 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): https://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, allergy, health, nutrition*
- OMED: Educational Services: https://www.omed.gatech.edu
- Women's Resource Center: https://www.womenscenter.gatech.edu; 404-385-0230
- LGBTQIA Resource Center: https://lgbtqia.gatech.edu/; 404-385-2679
- Veteran's Resource Center: https://veterans.gatech.edu/; 404-385-2067
- Georgia Tech Police: 404-894-2500