

Course Change Request

New Course Proposal

Date Submitted: 10/02/19 2:20 pm

Viewing: **GEOL 441 : Great Events in Earth**

History

Last edit: 10/02/19 5:10 pm

Changes proposed by: ggilleau

Are you completing this form on someone else's behalf?

No

Effective Term: Spring 2020

Subject Code: GEOL - Geology

Course Number:

In Workflow

1. **AOES Chair**
2. **SC Curriculum Committee**
3. SC Associate Dean
4. CHEM Chair
5. BIOL Impacted Unit Approver
6. Assoc Provost- Undergraduate
7. Registrar-Courses
8. Banner

Approval Path

1. 10/02/19 4:43 pm
Jim Kinter (ikinter):
Approved for AOES
Chair
2. 10/02/19 5:05 pm
Stacey Verardo
(sverardo):
Approved for SC
Curriculum
Committee
3. 10/02/19 5:10 pm
Jennifer Bazaz
Gettys (jbazaz):
Rollback to SC
Curriculum
Committee for SC
Associate Dean

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Great Events in Earth History

Banner Title: Great Events in Earth History

Will section titles vary by semester? No

Credits: 3

Schedule Type: Seminar

Hours of Lecture or Seminar per week: 3

Repeatable: May only be taken once for credit, limited to 2 attempts (N2) **Max Allowable Credits:** 3

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):
GEOL 101

Recommended Corequisite(s):
None

Required Prerequisite(s) / Corequisite(s) (Updates only):
GEOL 102

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(Course/Test Code	Min Grade/Score	Academic Level)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog

Description:

Through 4.5 billion years, Earth has undergone tumultuous changes, from the origin of life and atmospheric oxygenation, to mass extinction events and human evolution. In this seminar-style course, each week will involve an in-depth, student-led discussion on one 'Great Event' that helped shape the course of Earth history. The course is also focused on scientific literacy, with emphasis on reading the primary literature and writing/communicating effectively in a scientific setting.

Justification:

This course was run as a trial in Spring 2019 as the generic GEOL 315/500. By all accounts, it was a smashing success with a high level of intellectual discourse and stellar student reviews. A proper understanding of Earth history, as well as how Earth history is read from the rock record, is essential for both undergraduate and graduate degrees in geology. In addition, there is currently no GEOL course that is focused as intently on scientific communication. This involves learning to read the primary scientific literature, formulating ideas for in-depth discussion, writing both short discussion synopses and long-form scientific papers, and preparing both teaching- and conference-style presentations.

Does this course cover material which crosses into another department? Yes

Impacted Departments:

Department
BIOL - Biology
CHEM - Chemistry & Biochemistry

Learning Outcomes:

- Understand the concepts of geologic time and evolution
- Understand how Earth history is read from the rock record
- Be able to summarize the most important events in Earth history
- Be able to read and understand a scientific paper
- Be able to openly discuss scientific concepts and ideas
- Develop proficient scientific writing skills
- Effectively deliver a scientific presentation

Attach Syllabus

[GEOL441-541 syllabus.pdf](#)

Additional Attachments

Staffing:

Dr. Geoff Gilleaudeau

Relationship to Existing Programs:

Elective credit for B.A. and B.S. in geology, M.S. in Earth System Science, and Ph.D. in Environmental Science and Policy

Relationship to Existing Courses:

None

Additional Comments:

Requesting cross-list as GEOL 441/541

Reviewer Comments

Jennifer Bazaz Gettys (jbazaz) (10/02/19 5:10 pm): Rollback: COSCC review required

GEOL 441/541: GREAT EVENTS IN EARTH HISTORY
Spring 2020 Syllabus

Professor: Dr. Geoff Gilleaudeau

Meeting Time: Tuesdays 1:30 to 4:10 pm

Meeting Place: Exploratory Hall Room 1005

Professor's Office: Exploratory Hall Room 3452

Office Hours: Mondays and Thursdays 11:00 am to 12:00 pm or by appointment

Professor's Email: ggilleau@gmu.edu

Course Goals:

The story of Earth is one of the most gripping and compelling tales ever told. Through 4.5 billion tumultuous years, Earth has undergone monumental changes from the formation of the moon, early magma oceans and meteorite bombardment, the origin of life, the buildup of oxygen, great ice ages, the explosion of multicellular organisms, great mass extinction events, and ultimately, human evolution and anthropogenic change. In this course, each week we will have an in-depth, student-led discussion on one “Great Event” that helped shape the course of Earth history. In addition to providing perspective on the fascinating history of our planet, this course is also designed to teach scientific literacy. That means being able to read and interpret the primary scientific literature, generate informed lines of discussion, and ultimately, write a scientific paper and make a conference-style scientific presentation on the “Great Event” of your choice. This course is meant to be fun, intellectually-stimulating, and highly participatory!

“Thus, although we are mere sojourners on the surface of the planet, chained to a mere point in space, enduring but for a moment of time, the human mind is not only enabled to number worlds beyond the unassisted ken of mortal eye, but to trace the events of indefinite ages before the creation of our race, and is not even withheld from penetrating into the dark secrets of the ocean, or the solid globe.”

— Charles Lyell

GEOLOGIST AT LUNCH



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Grading Scheme:

Each week for each “Great Event”, ~4 scientific papers will be assigned for discussion. Each student is expected to thoroughly read and be prepared to discuss each paper that is assigned. There will be a total of 11 discussion weeks (11 “Great Events”). Geoff will lead the discussion for the first “Great Event”. For the following 10 weeks, the discussion will be led by students in groups of 2 or 3.

Your final course grade will consist of:

30%: Leading of discussions

Each student will end up leading the discussion 3 times throughout the course of the semester. The discussion-leading groups are encouraged to be creative in the use of class time. Some ideas for taking the lead include (but are not limited to):

- Beginning the class period with a short PowerPoint providing the necessary background for the ensuing discussion
- Preparing a list of discussion questions for each paper
- Designing a classroom activity that illustrates key concepts/linkages
- Being prepared to define terms that are unfamiliar to the class
- Promoting participation and a stress-free idea-sharing environment

Geoff will lead the discussion on the first week to provide some examples and ideas. Geoff will also be prepared to jump in if the discussion stalls. After the discussion, the group that leads will hand in whatever materials they used (i.e., their PowerPoint or list of discussion questions). A grading rubric for the discussion leads will be provided in a separate document.

30%: Weekly write-ups

For the 8 weeks that you are NOT leading the discussion, each student is required to turn in a short write-up summarizing the broad concepts covered in the papers and in the class discussion. It should be ~2 pages (double-spaced), written in scientific style, and make reference to each paper assigned. A guide for writing these will be provided in a separate document.

These will be due by email (ggilleau@gmu.edu) by MIDNIGHT on the Sunday night following the Tuesday discussion. I will grade them on Monday and return them the following Tuesday. 10% will be taken off for each day late.

30%: Term paper on the “Great Event” of your choice

Each student will choose one “Great Event” on which to write an ~10 page (double-spaced) term paper. In this paper, students will be required to investigate the scientific literature beyond what has been assigned in class. A first draft will be turned in on Week 8 (see schedule below). Your draft will then be reviewed by both Geoff and one of your peers in the class. We have set aside Week 10 to discuss papers and revisions. You will then have an opportunity to consider the

comments and make revisions before turning in your final version. This 30% of your grade will be divided as follows:

- 10%: your first draft
- 10%: your peer review of a classmate's paper
- 10%: your final paper

Rubrics and suggestions for your paper and peer review will be provided in a separate document.

10%: Final presentation

On the final week of class, each student will give a conference-style 15 minute presentation on the "Great Event" that they chose for their paper. Rubrics and suggestions will be provided in a separate document.

Final Grading Scale:

97 to 100% = A+
93 to 96% = A
90 to 92% = A-
87 to 89% = B+
83 to 86% = B
80 to 82% = B-
77 to 79% = C+
73 to 76% = C
70 to 72% = C-
67 to 69% = D+
63 to 66% = D
60 to 62% = D-
Less than 60% = F

Fun popular science readings that may help (not required):

The Story of Earth: The First 4.5 Billion Years, From Stardust to Living Planet
Book by Robert M. Hazen

Life on a Young Planet: The First Three Billion Years of Evolution on Earth
Book by Andrew H. Knoll

Semester Schedule:

Week 1: Introductions, syllabus, reminder of geologic time scale and lines of inquiry in Earth science

Week 2: **The formation of the moon and the giant-impact hypothesis** (discussion led by Geoff)

Week 3: **The Great Oxidation Event** (discussion led by students A and B)

Week 4: **Precambrian climate, the ‘faint young sun paradox’, and Snowball Earth events** (discussion led by students C and D)

Week 5: **Origin of animals and the Cambrian Explosion** (discussion led by students E and F)

***Please speak to me about your term paper topic by Week 5

Week 6: **Evolution of land plants and biogeochemical cycles** (discussion led by students G and A)

Week 7: **Pangea and the supercontinent cycle** (discussion led by students B and C)

SPRING BREAK

Week 8: **Permo-Triassic extinction event** (discussion led by students D and E)

***First draft of term paper due in class on Week 8. Each paper will be distributed to a classmate for peer review. 10% will be taken off for each day late.

Week 9: **The Mesozoic world, ocean anoxic events, and dinosaur evolution** (discussion led by students F and G)

Week 10: **Term paper discussion and peer review** (peer review of your classmate’s paper is due, Geoff will return first draft comments, class period used to discuss ideas for revision)

Week 11: **Cretaceous-Paleogene extinction event** (discussion led by students A and C)

Week 12: **Cenozoic climate, origin of grasses, and mammal evolution** (discussion led by students B and D)

Week 13: **Pleistocene-Holocene climate, megafauna extinction, and human evolution** (discussion led by students E, F, and G)

Week 14: **Final presentations**

***Final draft of term paper due in class on Week 14. 10% will be taken off for each day late.

Academic Integrity

The integrity of the University community is affected by the individual choices made by each of us. Mason has an Honor Code with clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. If you have any doubts about what constitutes plagiarism, please see me.

Disability Accommodations

Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu | Phone: (703) 993-2474

Privacy

Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.