

Course Change Request

Date Submitted: 08/27/25 3:07 pm

Viewing: **GEOL 720 : Bayesian Methods in Geology and Earth Sciences**

Last approved: 04/05/22 5:18 am

Last edit: 11/11/25 9:15 am

Changes proposed by: ggilleau

Catalog Pages
referencing this
course

[Department of Atmospheric, Oceanic and Earth Sciences](#)

[Geology_\(GEOL\)](#)

[Geology and Earth Science, PhD](#)

Programs

[SC-PHD-GESC: Geology and Earth Science, PhD](#)

Select modification type:

[Substantial](#)

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

No

Effective Term: Spring 2026

Subject Code: GEOL - Geology

Course Number: 720

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Bayesian Methods in Geology and Earth Sciences

In Workflow

1. **AOES -Curriculum Committee**

2. **AOES Chair**

3. **SC Curriculum Committee**

4. SC Assistant Dean

5. Assoc Provost-
Graduate

6. Registrar-Courses

7. Banner

Approval Path

1. 10/31/25 11:20 am
Barry Klinger

(bklinger):

Approved for AOES -
Curriculum
Committee

2. 11/05/25 4:25 pm

Mark Uhen

(muhen): Approved
for AOES Chair

History

1. Apr 5, 2022 by Mark Uhen (muhen)

Banner Title: Bayesian Methods in Geology

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable: May only be taken once for credit (NR)
GRADUATE ONLY

Default Grade Mode: Graduate Regular

Recommended Prerequisite(s): Undergraduate course in probability and/or statistics and an introductory undergraduate course in calculus or permission of instructor.

Recommended Corequisite(s): None

Required Prerequisite(s) / Corequisite(s) (Updates only): None ~~GEOL 525 or GEOL 540; or permission of instructor.~~

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

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?
	(	GEOL 525	B-	GR		
Or		GEOL 525	XS	GR		
Or		GEOL 540	B-	GR		
Or		GEOL 540	XS	GR	)	

**Registration
Restrictions
(Updates only):**

[Remove all hard-coded prerequisites for this course.](#)

Registrar's Office Use Only - Registration Restrictions:**Field(s) of Study:****Class(es):**

Include

Limited to students with a class of Advanced to Candidacy. (SCRRCLS_ONLY_DC)

Limited to students with a class of Graduate. (SCRRCLS_ONLY_GR)

Limited to students with a class of Non Degree (SCRRCLS_ONLY_ND)

Level(s):**Degree(s):**

Exclude

Non-Degree Undergraduate Degree students may not enroll. (SCRRDEG_NO_NDU)

School(s):**Catalog
Description:**

The focus of this course is the development of a broad and general tool set that can be applied to the student's own research. Case studies from geology and Earth science literature are a guide to learn about common pitfalls, explore strategies for data analysis, understand how to select the best model for the task at hand, and learn the importance of properly quantifying and reporting the level of confidence in one's conclusions.

Justification:

What: Updating prerequisites and including enrollment restrictions.

Why: The original prerequisites were entered in error and prevented us from rolling out this course this semester. After speaking with the instructor, she recommends having no prerequisites for this course.

**Does this course cover material which
crosses into another department?** No

Learning Outcomes:

- Advanced knowledge about probability, statistics and the Scientific Method
- Statistical models, uncertainty and hypothesis testing
- Principles of the Bayesian Theorem
- Ability to formulate, analyze, model and interpret data with Bayesian methods
- Advanced skills in scientific data processing, analysis, modeling and interpretation
- Comprehensive training in MATLAB and R languages
- Expertise in Bayesian models in geology and Earth science
- Experience in solving complex geology and Earth science problems with Bayesian methods

Will this course be scheduled as a cross-level cross listed section?

No

Attach Syllabus

[GEOL 720 Syllabus.pdf](#)

Additional Attachments

Specialized Course Categories:

Have you reached out to the Libraries to determine whether there are adequate resources to support your course? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

No

Additional Comments:

Reviewer Comments

Key: 17507