

Course Change Request

New Course Proposal

Date Submitted: 01/27/26 2:18 pm

Viewing: **GEOL 520 : Resource Geology**

Last edit: 02/09/26 9:28 am

Changes proposed by: bklinger

Programs
referencing this
course

SC-PHD-GESC: Geology and Earth Science, PhD

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

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

Approval Path

- 1. 01/27/26 2:19 pm
Barry Klinger
(bklinger):
Approved for AOES - Curriculum Committee
- 2. 01/27/26 4:08 pm
Mark Uhen
(muhen): Approved for AOES Chair

No

Effective Term: Fall 2026

Subject Code: GEOL - Geology

Course Number: 520

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Resource Geology

Banner Title: Resource 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, limited to 2 attempts (N2)

Max Allowable Credits:

9

Default Grade Mode:

Graduate Regular

Recommended Prerequisite(s):

GEOL 101 or GGS110 or equivalent.

Recommended Corequisite(s):

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

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:**

A survey of Earth's material resources (water, minerals, metals, stones and aggregates), energy resources (oil, gas, coal, solar, wind, hydro, geothermal, hydrogen, nuclear), interdependencies and sustainability (3 credits).

Justification:

What: Creating a new course.

Why: Currently, there is an undergraduate course GEOL 320-Resource Geology, which serves as an elective for undergraduate geology majors pursuing a Geology BA or Geology BS. The new GEOL 520-Resource Geology course will provide a new elective in graduate programs (see below); it replaces a somewhat more specialized graduate course GEOL 521-Geology of Energy Resources.

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

Learning Outcomes:

Knowledge and Understanding

- Gain knowledge about Earth's material and energy resources, and their geological origins
- Understand the advantages, disadvantages and limitations of non-renewable and renewable resources
- Understand major interdependencies among Earth resources

Analytical Skills and Abilities

- Develop the ability to access reliable information about Earth resources
- Develop skills for solving quantitative problems about Earth resources

Professional Development

- Communicate about the types, distribution, size, and intensity of Earth resources
- Be informed on the natural resource mix portfolios of major world nations
- Advise public and private-interest groups on issues relating to Earth natural resources

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

Please use the **Additional Attachments** button to attach two syllabi for review, one undergraduate and one graduate, preferably as separate documents. These should be provided in order to demonstrate the difference in expectations and assessments for undergraduates and graduates taking the course.

Attach Syllabus

[geol520syllb.pdf](#)

[geol320syllb.pdf](#)

Additional Attachments**Staffing:**

Linda Hinnov.

Relationship to**Existing Programs:**

RELATION TO PROGRAMS:

The new GEOL 520-Resource Geology will contribute a new elective for the following programs:

- Earth System Science Master's Program
- Master of Arts in Interdisciplinary Studies (Energy and Sustainability concentration)
- Geology and Earth Science PhD Program

Relationship to**Existing Courses:**

RELATION TO OTHER COURSES:

There are no other related courses in AOES; other departments offer the following related courses:

- RENE 411-Renewable Energy (Physics and Astronomy)
- ECON 435-Economics of Energy (Economics)

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: 19211

GEOL 520 – RESOURCE GEOLOGY

Proposed Syllabus, January 26, 2026

A survey of Earth's material resources (water, minerals, metals, stones and aggregates), energy resources (oil, gas, coal, solar, wind, hydro, geothermal, hydrogen, nuclear), interdependencies and sustainability (3 credits).

Instructor: Linda Hinnov, Dept. AOES, office: 3409 Exploratory Hall; email: lhinnov@gmu.edu

Meetings: Wednesdays, 4.30 am-7.10 pm, online (synchronous) only

Zoom URL: TBD

Prerequisites: GEOL 101 or GGS110 or equivalent.

Materials: Online resources, review and research articles posted on the course *Canvas* website.

Requirements: 3 homework assignments, 1 take-home final exam, 1 research project

Ethics: See <https://academicstandards.gmu.edu/academic-standards-code/> for course policy

Grading: Assignments, final exam and research project each scaled to 100 points and equally weighted:

A+ = 98 – 100%; A = 94 – 97%; A- = 90 – 93%; B+ = 88 – 89%; B = 84 – 87%; B- = 80 – 83%; C+ = 78 – 79%; C = 74 – 77%; C- = 70 – 73%; D = 60 – 69%; F = 0 – 59%

AI guidelines: AI is not required or encouraged in this course. AI may be consulted for collecting and organizing facts, and for suggesting hierarchical associations among facts. AI must not be used to generate narratives, text, answers to questions, or solutions to problems. AI used in assignments and research projects must be acknowledged. Read the George Mason University policy on AI here: <https://www.gmu.edu/ai-guidelines/ai-guidelines-students>.

Class schedule:

DATE	ONLINE LECTURE TOPIC	ASSIGNMENT
Week 01	Resource Geology-Introduction	
Week 02	Water	Hand out HW1
Week 03	Minerals	
Week 04	Metals	
Week 05	Stones and Aggregates	Hand in HW1
Week 06	Oil (Petroleum)	Hand out HW2
Week 07	Natural Gas	
S P R I N G B R E A K		
Week 08	Coal	
Week 09	Nuclear Energy	
Week 10	Hydrogen and Other Gases	Hand in HW2
Week 11	Wind and Solar Resources	Hand out HW3
Week 12	Geothermal and Hydro Resources	
Week 13	Interdependencies	
Week 14	Sustainability	Hand in HW3
TAKE-HOME FINAL EXAM; 10-PAGE RESEARCH PROJECT		

Learning objectives:

Knowledge and Understanding

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Analytical Skills and Abilities

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Additional information:

Please read George Mason University policy guidelines at <https://stearnscenter.gmu.edu/home/gmu-common-course-policies/>:

- Academic Standards
- Accommodations for Students with Disabilities
- FERPA and Use of GMU Emails
- Title IX Resources and Required Reporting

DIFFERENCES FROM GEOL 320:

This graduate section, GEOL 520-Resource Geology will share all lectures with the undergraduate section of GEOL 320-Resource Geology, with the following performance requirement differences:

1. Graduate students will complete the same 3 assignments as for undergraduates, each worth 100 points, that involve research and analysis of specific problems, and the take-home final exam, also worth 100 points.
2. Graduate students additionally will complete a written research project on a topic of their choosing and pre-approved by the instructor, worth 100 points. Examples: contemporary gold mining (extraction vs. recycling); geological formation of hydrogen; deep ocean mining ecosystem degradation; cobalt on the Moon; industrial applications of coal ash; the global lithium reserve: pegmatites vs. evaporites; etc.