



Course Approval Form

For instructions see:
<http://registrar.gmu.edu/facultystaff/catalog-revisions/course/>

Action Requested:

<input checked="" type="checkbox"/> Create new course	<input type="checkbox"/> Inactivate existing course		
<input type="checkbox"/> Modify existing course (check all that apply)			
<input type="checkbox"/> Title	<input type="checkbox"/> Credits	<input type="checkbox"/> Repeat Status	<input type="checkbox"/> Grade Type
<input type="checkbox"/> Prereq/coreq	<input type="checkbox"/> Schedule Type	<input type="checkbox"/> Restrictions	
<input type="checkbox"/> Other:			

Course Level:

<input type="checkbox"/> Undergraduate
<input checked="" type="checkbox"/> Graduate

College/School:	COS	Department:	AOES		
Submitted by:	Linda Hinnov	Ext:		Email:	lindahinnov@gmail.com

Subject Code:	GEOL	Number:	521	Effective Term:	<input checked="" type="checkbox"/> Fall <input type="checkbox"/> Spring <input type="checkbox"/> Summer	Year:	2016
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(Do not list multiple codes or numbers. Each course proposal must have a separate form.)

Title:	Current	Geology of Energy Resources	Fulfills Mason Core Req? (undergrad only)
	Banner (30 characters max w/ spaces)	Geology of Energy Resources	<input type="checkbox"/> Currently fulfills requirement
	New		<input type="checkbox"/> Submission in progress

Credits: (check one)	<input checked="" type="checkbox"/> Fixed	3 or	Repeat Status: (check one)	<input checked="" type="checkbox"/> Not Repeatable (NR)	Maximum credits allowed:	
	<input type="checkbox"/> Variable	to		<input type="checkbox"/> Repeatable within degree (RD)		
				<input type="checkbox"/> Repeatable within term (RT)		

Grade Mode: (check one)	<input checked="" type="checkbox"/> Regular (A, B, C, etc.)	Schedule Type: (check one)	<input checked="" type="checkbox"/> Lecture (LEC)	<input type="checkbox"/> Independent Study (IND)
	<input type="checkbox"/> Satisfactory/No Credit		<input type="checkbox"/> Lab (LAB)	<input type="checkbox"/> Seminar (SEM)
	<input type="checkbox"/> Special (A, B, C, etc. +IP)	LEC can include LAB or RCT	<input type="checkbox"/> Recitation (RCT)	<input type="checkbox"/> Studio (STU)
			<input type="checkbox"/> Internship (INT)	

Prerequisite(s):	Corequisite(s):	Instructional Mode:
GEOL 101 or GEOL 102, and completion of all Mason Core Natural Science requirements, or permission of instructor.		<input checked="" type="checkbox"/> 100% face-to-face
		<input type="checkbox"/> Hybrid: ≤ 50% electronically delivered
		<input type="checkbox"/> 100% electronically delivered

Restrictions Enforced by System: Major, College, Degree, Program, etc. (include code)	Equivalencies: (check only as applicable)
	<input type="checkbox"/> YES, course is 100% equivalent to: _____
	<input type="checkbox"/> YES, course is being renumbered to/will replace the following: _____

Catalog Copy for NEW Courses Only (Consult University Catalog for models)

Description (No more than 60 words, use verb phrases and present tense)	Notes (List additional information for the course)
Survey of global non-renewable and renewable energy resources. Topics include petroleum, natural gas, coal, nuclear, geothermal, solar, wind, and hydro power, and biofuels. Course discusses global production, usage, impacts and future prospects of these resources, and data capture, analysis and modeling of finite resources.	

Indicate number of contact hours:	Hours of Lecture or Seminar per week:	3	Hours of Lab or Studio:	
When Offered: (check all that apply)	<input checked="" type="checkbox"/> Fall	<input type="checkbox"/> Summer	<input type="checkbox"/> Spring	

Approval Signatures

Department Approval	Date	College/School Approval	Date
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If this course includes subject matter currently dealt with by any other units, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.

Unit Name	Unit Approval Name	Unit Approver's Signature	Date

For Graduate Courses Only

Graduate Council Member	Provost Office	Graduate Council Approval Date
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Course Proposal Submitted to the College of Science Curriculum Committee (COSCC)

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference. Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

Course Number and Title: **GEOL 521 Geology of Energy Resources**

Date of Departmental Approval:

- **Reason for the New Course:**

This is a graduate course to be cross-listed with GEOL 321 Geology of Energy Resources. The topic is of interest to graduate students as well as undergraduates.

- **Relationship to Existing Programs:**

The Master of Arts in Interdisciplinary Studies (MAIS) is being modified so that its Energy track will have a requirement that is satisfied either by GEOL 521 or by a PHYS 581.

- **Relationship to Existing Courses:**

GEOL 521 Geology of Energy Resources will be co-taught with GEOL 321 Geology of Energy Resources; graduate students will additionally complete an independent project on a topic that is pre-approved by the instructor. PHYS 581 Topics in Renewable Energy covers some of the same resource issues but with a greater emphasis on the physics of energy generation and with more physics prerequisites than many MAIS students have taken.

- **Semester of Initial Offering:** Fall 2016
- **Proposed Instructors:** Linda Hinnov
- **Syllabus:** See next page.

GEOL 321/GEOL 521

GEOLOGY OF ENERGY RESOURCES

Survey of global non-renewable and renewable energy resources. Topics include petroleum, natural gas, coal, nuclear, geothermal, solar, wind, and hydro power, and biofuels. Course discusses global production, usage, impacts and future prospects of these resources, and data capture, analysis and modeling of finite resources. (3 credits).

Instructor: Linda Hinnov, Dept. AOES, email: lhinnov@gmu.edu

Meetings: Tuesdays, 15.00-17.45, Exploratory 1005.

Materials: Online resources, review and research articles.

Requirements: All students: Five assignments, mid-term and final exams. **GEOL 521** students additionally complete an independent project.

Ethics: Consult <http://oai.gmu.edu/the-mason-honor-code-2/> for course policy.

Grading: Assignments, exams and (for **GEOL 521**) independent projects are individually scaled to 100 points.

Syllabus:

DATE	LECTURE
Week 1	Energy in Society
Week 2	Petroleum
Week 3	Natural Gas
Week 4	Coal
Week 5	Peak Oil (or Any Limited Resource)
Week 6	Nuclear Power
Week 7	Geothermal Power
Week 8	Wind Power
Week 9	Solar Power
Week 10	Hydro Power
Week 11	Biofuels
Week 12	Disasters
Week 13	Energy and the Environment
Week 14	Energy Resources Solutions

Student learning objectives:

Knowledge and Understanding

- Gain knowledge about energy, energy resources and their geological origins
- Gain knowledge about global production, delivery and consumption of energy resources
- Understand the advantages, disadvantages, and limitations of non-renewable and renewable resources
- Understand the intersection of energy and the environment

Analytical Skills and Abilities

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

Professional Development

- Communicate effectively about the geological distribution, size, and intensity of energy resources.
- Be informed on the energy mix portfolios of major nations of the world.
- Advise public and private-interest groups on issues relating to energy resources.