Course Approval Form

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

Action Requested:

- [X] Create new course
- [ ] Inactivate existing course
- [ ] Reinstate inactive course
- [ ] Modify existing course (check all that apply)
  - [ ] Title
  - [ ] Credits
  - [ ] Repeat Status
  - [ ] Grade Type
  - [ ] Prereq/coreq
  - [ ] Schedule Type
  - [ ] Restrictions
  - [ ] Other:

Course Level:

- [ ] Undergraduate
- [X] Graduate

College/School: COS
Department: AOES
Submitted by: Dr. Stacey Verardo
Ext: 1045
Email: sverardo@gmu.edu

Subject Code: GEOL
Number: 532
(Do not list multiple codes or numbers. Each course proposal must have a separate form.)

Effective Term:

- [X] Fall 2015
- [ ] Spring *Year* 2015
- [ ] Summer

Title:
Current:
Banner (30 characters max w/ spaces):
New: Paleoclimatology

Fulfills Mason Core Req? (undergrad only)

- [ ] Currently fulfills requirement
- [ ] Submission in progress

Credits: (check one)

- [3] Fixed
- [ ] Variable

or
to

Repeat Status: (check one)

- [X] Not Repeatable (NR)
- [ ] Repeatable within degree (RD)
- [ ] Repeatable within term (RT)

Maximum credits allowed:

Grade Mode: (check one)

- [X] Regular (A, B, C, etc.)
- [ ] Satisfactory/No Credit
- [ ] Special (A, B C, etc. +IP)

Schedule Type: (check one) LEC can include LAB or RCT

- [X] Lecture (LEC)
- [ ] Lab (LAB)
- [ ] Recitation (RCT)
- [ ] Internship (INT)
- [ ] Independent Study (IND)
- [ ] Seminar (SEM)
- [ ] Studio (STU)

Prerequisite(s):
Previous lab-science courses in geology and/or atmospheric science and/or oceanography (12 credit hours); or permission of instructor.

Corequisite(s):

Instructional Mode:

- [X] 100% face-to-face
- [ ] Hybrid: ≤ 50% electronically delivered
- [ ] 100% electronically delivered

Restrictions Enforced by System: Major, College, Degree, Program, etc. Include Code.

Are there equivalent course(s)?

- [ ] Yes
- [X] No

If yes, please list

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)
Explores the natural evolution of Earth's climate with the goal of providing a baseline for understanding present climate variability and future trends through increased knowledge of the physical, chemical, and biological processes that influence climate over the long-term.	

Indicate number of contact hours: Hours of Lecture or Seminar per week: 3 Hours of Lab or Studio:
When Offered: (check all that apply) [X] Fall [ ] Summer [ ] Spring

Approval Signatures

Department Approval Date

College/School Approval Date

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

For Registrar Office's Use Only: Banner_____Catalog_____

revised 10/16/14

Course Proposal Submitted to the Curriculum Committee of the College of Science

1. COURSE NUMBER AND TITLE: GEOL 532

Course Prerequisites: Previous lab-science courses in geology and/or atmospheric science and/or oceanography (12 credit hours); or permission of instructor.

Catalog Description: Explores the natural evolution of Earth's climate with the goal of providing a baseline for understanding present climate variability and future trends through increased knowledge of the physical, chemical, and biological processes that influence climate over the long-term.

2. COURSE JUSTIFICATION:

Course Objectives: This course will provide one of the core courses (Atmosphere) for the MS in ESS degree.

Course Necessity: AOES currently does not provide any Atmosphere core courses for MS in ESS degree.

Course Relationship to Existing Programs: Course is designed to fulfill core Atmosphere requirement in support of the Earth Systems Science MS.

Course Relationship to Existing Courses: Course content is not covered in other graduate courses so it does not conflict with existing courses.

3. APPROVAL HISTORY: Approved by AOES faculty on 21 Nov 2014.

4. SCHEDULING AND PROPOSED INSTRUCTORS:

Semester of Initial Offering: Fall '15

Proposed Instructors: Dr. Stacey Verardo

5. TENTATIVE SYLLABUS: See below.

PALEOCLIMATOLOGY

GEOL 532

Fall 20XX

Instructor: Dr. Stacey Verardo
sverardo@gmu.edu, 703-993-1045
Class hours: Tuesdays and Thursdays, 9:00–10:15am
Classroom: Exploratory Hall 1309

Office: Exploratory Hall 3451
Office Hour: Thursdays, 11am -noon

Goals and Objectives: This course will explore the natural evolution of Earth's climate with the goal of providing a baseline for understanding present climate variability and future trends through increased knowledge of the physical, chemical, and biological processes that influence climate over the long-term.

Text: Earth's Climate, Past and Future, Ruddiman, 2011 3rd *ed*
Videos: http://www.nbclearn.com/portal/site/learn/changing-planet

LECTURES

Dates	Lecture Topic	Chapters
August 27	Overview of Climate Science	1
August 28	Earth's Climate System Today	2
September 2	Earth's Climate System Today	
September 4	Climate Archives	3
September 9	ANDRILL video	
September 11	CO_2 and Long Term Climate	4
September 16	Plate Tectonics and Climate	5
September 18	Greenhouse Earth	6
September 23	Icehouse Earth	7
September 25	Review	
September 30	**EXAM 1**	
October 2	Astronomical Control of Solar Radiation	8
October 7	Insolation Control Of Monsoons	9
October 9	Insolation Control of Ice Sheets	10
October 14	COLUMBUS BREAK (Monday schedule)	
October 16	Orbital Scale Changes in CO_2 and CH_4	11
October 21	Orbital Scale Interactions	12
October 23	Last Glacial Maxima	13
October 28	Climate During and the last Deglaciation	14
October 30	Millennial Oscillations in Climate	15
November 4	Review	
November 6	**EXAM 2**	
November 11	Humans and Preindustrial Climate	16

November 13	Climate Change over past 1000yrs	17
November 18	Climate since 1850	18
November 20	Causes of Warming over last 125yrs	19
November 25	Climate Change in the future	20
November 27	THANKSGIVING	
December 2	Class Presentations	
December 4	Review	
December 11	**FINAL EXAM 7:30-10:00am NOTE different time!!**	

In addition, there will be readings from current material.
Guest speakers will be part of the curriculum as well.

COURSE INFORMATION
This is a three credit course.

Presentation topic is due by September 11, 20XX

Grading: Three equally weighted exams.
**One 20 minute presentation relating to of one of the text chapters OR a related topic. The topic must be cleared by me. The presentations will utilize current and relevant research. This will a solo endeavor and will be evaluated by your classmates.

**You will be responsible for a research paper. This can be the same topic as your presentation. Information will be forth coming.

Make up exams will NOT be given.

All exams will emphasize material presented in the lectures.
Students are responsible for all material in the textbook readings.
Exams are closed book.

Attendance at all scheduled lecture classes is required to achieve the requisite level of knowledge in this course.
This course operates under the rules of the Honor Code.