Course Change Request

New Course Proposal

Date Submitted: 01/20/22 11:45 am

Viewing: GEOL 734 : Paleobiology

Last edit: 02/17/22 11:22 am

Changes proposed by: muhen

Programs referencing this course : Geology and Earth Sciences, PhD

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

No

Effective Term: Fall 2022

Subject Code: GEOL - Geology

Bundled Courses:

Is this course replacing another course? No

3

Equivalent Courses:

Credits:

- Catalog Title: Paleobiology
- Banner Title: Paleobiology

Will section titles No vary by semester?

Schedule Type: Lecture

In Workflow

1. AOES Chair

- 2. SC Curriculum Committee
- 3. SC Associate Dean
- 4. Assoc Provost-Graduate
- 5. Registrar-Courses
- 6. Banner

Approval Path

- 1. 01/20/22 11:42 am Mark Uhen (muhen): Rollback to Initiator
- 2. 01/31/22 2:27 pm Mark Uhen (muhen): Approved for AOES Chair

Course Number: 734

2/17/22, 3:47 PM	GEOL 734: Paleobi	GEOL 734: Paleobiology				
Hours of Lecture or week:	Seminar per 3					
Repeatable:	May be only taken once for credit, limited to 3 attempts (N3)	Max Allowable Credits: 9				
Default Grade Mode:	Graduate Regular					
Recommended Prerequisite(s): STAT 250 or equiva	lent or permission of instructor.					
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:

Paleobiology involves the ways that paleontologists study fossil organisms as living entities in ecological context. It also deals with large scale patterns in the fossil record and the relationships of those patterns to geologic events. Paleobiology will use various statistical methods and other analytical methods to study these large scale patterns in the fossil record.

Justification:

What: Creating a new course.

Why: Other graduate level paleontology courses offered by Mason primarily deal with fossil organisms individually. Paleobiology will offer an integrative, statistical, and analytical approach to the study of fossils.

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

Learning Outcomes:

Critical Thinking: Develop your ability to comprehend and analyze scientific concepts, and to critically evaluate scientific ideas.

Topical Comprehension: Students will study areas of analysis and analytical techniques that can be used by virtually all paleontologists on almost any taxa from anywhere in the geological record. Students will learn about each of the topics as a group and perform a series of weekly assignments applying the analytical techniques to their own data to further their own research aims.

Scientific Communication: Students will develop skills in communicating the results of their analyses in a clear and concise manner that demonstrates comprehension of scientific topics.

Attach Syllabus

GEOL 734 Paleobiology.pdf

Additional Attachments

Staffing:

Dr. Mark D. Uhen will teach this course. Other guest lecturers from local museums and other universities will also contribute expertise.

Relationship to Existing Programs:

This course will also be available to students in the Earth Systems Science Master's degree, and also to graduate students in Environmental Science and Policy and Biology.

Relationship to

Existing Courses:

Paleobiology will add methodological and analytical knowledge to the biological systematic information contained in Invertebrate Paleontology (GEOL 512) and Vertebrate Paleontology (GEOL 534).

Additional Comments:

Reviewer Comments Mark Uhen (muhen) (01/20/22 11:42 am): Rollback: fix typos

Key: 17502

GEOL 734 Paleobiology

Paleobiology involves the ways that paleontologists study fossil organisms as living entities in ecological context. It also deals with large scale patterns in the fossil record and the relationships of those patterns to geologic events. Paleobiology will use various statistical methods and other analytical methods to study these large scale patterns in the fossil record.

3 credits

Instructor Information

Instructor Contact Information: Dr. Mark D. Uhen; Office location, 277A Research Hall Office Hours, 10:30-11:30 Mondays or by appointment; email: <u>muhen@gmu.edu</u>; phone; 703-993-5264

Textbook

Principles of Paleontology / Edition 3, by Michael Foote, Arnold I. Miller, ISBN-10 071670613X; ISBN-13 9780716706137; Freeman, W. H. & Company

Analytical Software

PAST statistical package, <u>Mesquite package</u> for evolutionary analysis, <u>TNT</u> (Tree analysis using New Technology), Paleobiology Database (PBDB)

Student Responsibilities

Students are expected to have read the syllabus and be familiar with expectations and due dates. The syllabus will be posted on the Blackboard system and students are expected to pay attention to any changes that are made over the course of the semester.

Students are expected to check their Mason email and the Blackboard system regularly for information about the course. Students are expected to have read the syllabus and be familiar with expectations and due dates. The syllabus, including the schedule is posted on Blackboard and students are expected to pay attention to any changes that are made over the course of the semester. Failure to be aware of information posted to a student's Mason email account or on Blackboard is not a valid excuse for missing assignments, assignment instructions, presentations, or student responsibilities of any kind.

This course operates under the rules of the <u>George Mason University Honor System and Code</u>. Please be familiar with the code. Quizzes and exams are closed book and your answers must be your own.

Students are expected to respectful of the instructor and to each other during class. Demonstrate that respect by please, not talking out of turn during class, turning off your cell phone and instant messaging during class, and trying not to disturb class if you enter late or leave early. If you are a student with a disability and you think that you need academic accommodations, contact the Office of Disability Services at 703-993-2472 or ods@gmu.edu immediately if you have not already done so. All academic accommodations must be arranged through that office. You must then bring the accommodation recommendations to your instructor(s) immediately.

Learning Objectives

Critical Thinking: Develop your ability to comprehend and analyze scientific concepts, and to critically evaluate scientific ideas.

Topical Comprehension: Students will study areas of analysis and analytical techniques that can be used by virtually all paleontologists on almost any taxa from anywhere in the geological record. Students will learn about each of the topics as a group and perform a series of weekly assignments applying the analytical techniques to their own data to further their own research aims.

Scientific Communication: Students will develop skills in communicating the results of their analyses in a clear and concise manner that demonstrates comprehension of scientific topics.

Assessment

Students will perform weekly homework assignments that will constitute 80% of the course grade. Students will also complete a final project and presentation where they will apply appropriate techniques learned in class to their own research data and present the results of those analyses to be critically evaluated by their student peers in the class which will constitute 20% of the course grade.

A+ = 97 - 100%, A = 94 - 97%, A- = 90 - 94%, B+ = 87 - 90%, B = 84 - 87%, B- = 80 - 84%, C = 70 - 80%, F = 0 - 70%

Course Topics

Week 1. The Nature of the Fossil Record
Week 2. Paleontological Univariate
Statistics
Week 3. Paleontological Multivariate
Statistics
Week 4. Growth and Form
Week 5. Populations and Species
Week 6. Systematics
Week 7. Phylogenetic Analysis
Week 8. Evolutionary Morphology
Week 9. Biostratigraphy
Week 10. Evolutionary Rates and Trends

Week 11. Global Diversity and Extinctions Week 12. Paleoecology Week 13. Paleobiogeography Week 14. Ethical issues in Paleontology