Term Information

Effective Term: Spring 2016

General Information

Course Bulletin Listing/Subject Area: Earth Sciences
Fiscal Unit/Academic Org: School of Earth Sciences - D0656
College/Academic Group: Arts and Sciences
Level/Career: Graduate, Undergraduate
Course Number/Catalog: 5160
Course Title: Geomicrobiology
Transcript Abbreviation: Geomicrobiology
Course Description: The role of microorganisms in shaping our environment through mineralogical and geochemical processes at both local and global scales, in the present day and over geologic time periods.

Semester Credit Hours/Units: Fixed: 3

Offering Information

Length Of Course: 14 Week, 7 Week
Flexibly Scheduled Course: Never
Does any section of this course have a distance education component?: No
Grading Basis: Letter Grade
Repeatable: No
Course Components: Lecture
Grade Roster Component: Lecture
Credit Available by Exam: No
Admission Condition Course: No
Off Campus: Never
Campus of Offering: Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites: Open to Rank 4 undergrads and graduate students in the School of Earth Sciences, the Department of Microbiology, the Department of Civil, Environmental, and Geodetic Engineering, and the School of Environment and Natural Resources.

Exclusions: Not open to students with credit for Microbiology 5160

Cross-Listings

Cross-Listings: Cross-listed in Microbiology

Subject/CIP Code

Subject/CIP Code: 26.0502
Subsidy Level: Doctoral Course
Intended Rank: Senior, Masters, Doctoral
**Requirement/Elective Designation**

The course is an elective (for this or other units) or is a service course for other units

**Course Details**

**Course goals or learning objectives/outcomes**

- Understanding the physical properties of microorganisms as they relate to respiration, mineral nucleation, and transport of solutes.
- Understanding the principles of microbial ecology and current knowledge of microbial diversity.
- Understanding mechanisms via which microorganisms can exist in the absence of oxygen, and how these metabolisms can alter the local and global environment (e.g. sulfide generation, iron oxidation).
- Understanding microbiologically-catalyzed cycling of iron and sulfur in the present and the early-earth.
- Understanding how microbial metabolism can be harnessed for the in situ remediation of contaminant metals and organic compounds.
- Understanding how microorganisms can accelerate mineral precipitation, and also catalyze the weathering of certain substrates.
- Understanding the role of microorganisms in early Earth, including the generation of reduced chemical species, and the response to oxygenation of Earth’s atmosphere.

**Content Topic List**

- Microbial distribution in the marine subsurface and in the terrestrial subsurface.
- Microbial strategies for survival under energy limitation and short- and long-range microbial electron transfer.
- The sulfur cycle.
- Iron reduction and its role on early earth.
- Bioremediation and biomineralization.
- Microbial weathering.
- Microbial mat development.
- Geobiology of the Archean and Proterozoic Eons.

**Attachments**

- Geomicrobiology_new course syllabus.docx: Syllabus
  
  (Syllabus. Owner: Krissek,Lawrence Alan)

- Curricular Map, Earth Sci B.S._Sept 2015.docx: Curricular map
  
  (Other Supporting Documentation. Owner: Krissek,Lawrence Alan)

**Comments**

- Course was offered successfully as Earth Science 5194 in Autumn 2014, and will be offered as Earth Science 5194 again in Spring 2016. This request will transition the course to permanent status, cross-listed between Earth Sciences and Microbiology. (by Krissek,Lawrence Alan on 09/10/2015 02:23 PM)
### Workflow Information

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<td>09/10/2015 02:25 PM</td>
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<td>09/10/2015 02:26 PM</td>
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<td>Nolen, Dawn Vankeer Bergen, Bernadette Chantal Hanlin, Deborah Kay Jenkins, Mary Ellen Bigler Hogle, Danielle Nicole</td>
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