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## 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 microbially-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)*

**COURSE REQUEST**  
5160 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette  
Chantal  
09/14/2015

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Krissek, Lawrence Alan	09/10/2015 02:25 PM	Submitted for Approval
Approved	Krissek, Lawrence Alan	09/10/2015 02:26 PM	Unit Approval
Approved	Haddad, Deborah Moore	09/10/2015 04:17 PM	College Approval
Pending Approval	Nolen, Dawn Vankeerbergen, Bernadette Chantal Hanlin, Deborah Kay Jenkins, Mary Ellen Bigler Hogle, Danielle Nicole	09/10/2015 04:17 PM	ASCCAO Approval