

**Ohio Articulation Number (OAN)
Course Submission Form
2005-2006**



College/University Bowling Green State University

Course(s) Submitted(Title & Course #) **GEOL 105. *Life Through Time*** for
Ohio Articulation Number OSC 012

Date April 6, 2006 Course _____ of a _____ Course OAN mapping.

Name and title of individual submitting on behalf of the college/university

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Credit Hours 4 qtr _____ sem x

Lecture Hours 3

Laboratory Hours 2 (if applicable)

Pre-Requisites(s) Course work (if applicable)

Placement Score (if applicable)

(Name of test)

(Domain) (Score)

Catalog/Course Description (Includes Course Title and Course #)

GEOL 105. *Life Through Time* (4). Introduction to the origin, evolution, and extinction of major fossil groups in relation to a changing Earth through time. Three lectures and one two-hour lab. Applicable to the BG Perspective (general education) natural sciences requirement. Extra fee.

Texts/Outside Readings/Ancillary Materials

Stanley, Steven M. *Earth System History*, 2/e. WH Freeman and Co., New York.

Course Objectives and/or Plan of Work

Detailed list of course objectives and learning outcomes are listed on the syllabus, which is attached (could not paste from the syllabus into this form!). In brief, the objectives are: To master several key concepts in historical geology (see attached syllabus) and learn how science and scientists operate, how scientific evidence is obtained and evaluated, and how research questions are formulated and tested.

Description of Assessment and/or Evaluation of Student Learning

Weekly lab exercises involving hands-on work with geological specimens, practice with quantitative techniques, group collaboration and class presentations; biweekly short “pop” quizzes; in-class small-group activities; four homework assignments involving outside readings and writing essays; two essay-style midterms; an essay-style final exam that includes questions designed to assess mastery of each of the course’s key concepts.

Master Syllabi and Working Syllabi (if both are used)

GEOLOGY 105
Life Through Time

Welcome to Geology 105! This course is designed to introduce you to the events and processes that have shaped our planet and its life over Earth’s 4.6 billion year history. We will address all the questions on the previous page, and many more!

We can organize our approach in this course around a number of specific goals:

GOAL 1:

Scientific knowledge is part of being a well-educated person, and in this course you will come to master several key concepts in historical geology (see the list below). You will learn how science and scientists operate, how scientific evidence is obtained and evaluated, and how research questions are formulated and tested.

GOAL 2:

General education science classes have an obligation to do more than just teach you some scientific facts. Much of “doing science” involves skills that have uses outside of scientific inquiry, such as accurate and concise communication, analytical and creative thinking, formulation of insightful questions, and perception of connections between disparate ideas. This course will help you develop these types of skills. The lab activities and writing assignments are designed with this goal in mind.

GOAL 3:

Many students arrive in a gen-ed science class intimidated by science. Science seems to have this forbidding mystique around it – it is not something that “ordinary” people do, or should even understand. In this course, we will work together to erase this stereotype and recast science as something that everyone does every day, and in which everyone has a vested interest. By the end of the semester, you should feel comfortable hearing about and evaluating scientific ideas.

Key Concepts

By the end of the course, you will understand these concepts and be able to provide a few specific examples reflecting them:

- Earth has a history.
- Historical sciences are valid sciences, with their own assumptions and methods.
- The rock and fossil records provide useful and accurate information about Earth's past.
- The fossil record contains compelling evidence for evolution in general, and for specific evolutionary changes.
- Not all changes in Earth systems are gradual or progressive.
- Contingent and unpredictable events like mass extinctions play important roles in defining the long-term pattern of life's history.
- Earth is a system – tectonic, climatic and biological components interact and affect one another in complex ways over geologic time.

GEOLOGY 105
Spring 2006
BG Perspective Goals

In addition to being a Geology course, *Life Through Time* is part of the BG Perspective, Bowling Green State University's general education program. BG Perspective: 21st Century Liberal Studies is the foundation for a premier liberal arts education leading BGSU students to graduate prepared for self-reliant learning throughout life and effective participation in a democratic society. BG Perspective classes are taken by all students at BGSU, reflecting a deep conviction by the BGSU faculty, as well as leaders in all professions, that successful, satisfying lives require a wide range of skills and knowledge. Ethical integrity, reflective thinking, and social responsibility are characteristics of a liberally educated person. The BG Perspective program at BGSU provides a solid foundation for active learning by providing students with both broad intellectual skills and breadth of knowledge to be more successful in their major area of study and later in their chosen professions. These skills include the ability to think critically and communicate effectively; the ability to understand different cultures, modes of thought, and multiple values; and the ability to investigate forces that shape the social, scientific and technological complexities of contemporary culture.

A BG Perspective Natural Science course is intended to provide some understanding of science, what it is about, and how it works, whether you are pursuing a professional or avocational interest in a scientific field. This basic knowledge is essential for any person who strives to be an informed citizen in a democracy. Knowledge of basic science is important for rationally analyzing many of the political issues that will face you as a citizen in the future. The world in which you function continues to become more science and technology based. The goal of the General Education Natural Science requirement is to help you cope with this ever-growing complexity. It will enable you to educate yourself about issues of energy and the environment; health, drugs and medicine; the nature and composition of the Universe; and the physical laws by which nature operates.

Learning Outcomes

- You will develop the skills and practice of using quantitative and qualitative approaches to study scientific concepts.
- You will learn to understand the nature of scientific evidence, how it is obtained, and how it is used in the scientific process.
- You will learn how to solve problems using the logical approach of science.
- You will be able to communicate effectively by gaining proficiency in reading, writing, and presenting.
- You will be able to think critically through investigating and creative problem solving.
- You will be able to effectively participate and to lead through active engagement with diverse groups and teams of individuals.

☺ Please take the time to read and think about all these course goals – then decide which of them YOU want to concentrate on. Plan your own work in the course accordingly, and you are guaranteed to walk away in May with a real sense of accomplishment!

GEOLOGY 105

Course Logistics

Instructor

Dr. Peg Yacobucci
189 Overman Hall (enter through Room 185)

419-372-7982
mmyacob@bgsu.edu

Office Hours: Monday, Tuesday & Wednesday 11:30 AM – 12:30 PM; and by appointment.

Class meetings

Class meetings are M-W-F from 2:30-3:20 PM in Overman 095, and will involve a combination of lectures, discussions, and group activities. Please note that some material and exercises for which you will be responsible will only be presented during these sessions, so **attendance is expected**.

Text and readings

The textbook for the course is Steven M. Stanley's *Earth System History*, 2nd edition (2005, W. H. Freeman and Co.). Specific reading assignments will be announced in class and posted on the course website. The text's publisher provides an excellent website with chapter outlines, interactive exercises, review quizzes, and other study material: <http://bcs.whfreeman.com/esh2e/>. Occasional supplementary readings will be placed on BGSU's E-reserve (<https://reserve.bgsu.edu>).

Labs

You are required to participate in one two-hour lab session per week. Lab sections meet in Overman 064. A lab schedule is attached. Lab activities constitute a significant portion of your course grade, and missed work will often be impossible to make up, so be sure you are able to attend each week. You will need to read the relevant lab manual chapter, available on the Blackboard site, and bring it to lab each week.

Homework

Short written and creative assignments will be given, based on the readings or other course material. These provide an opportunity for you to practice your communication skills and explore central issues in more detail.

Quizzes and Group Work

Work during class will include short unannounced quizzes and group activities. These will help reinforce key points, and give you immediate feedback on your understanding of the course material.

Exams

Graded work for the course includes two midterm exams and a final exam. Scheduled dates for all three exams are given in the attached lecture schedule. Please note the exam dates (especially the final exam) and be sure you will be able to take them when scheduled.

Course grades will be calculated as follows:

Labs	25%	Midterm 1	10%
Homework	25%	Midterm 2	10%
Quizzes/Group Work	10%	Final Exam	20%

Course site on Blackboard: <https://my.bgsu.edu>

Visit early, visit often! The course website includes the lecture and lab schedules, reading assignments, course announcements, lecture outlines, review materials, lab manual, a list of resources you can use if you need help, and links to websites where you can explore the course material further.

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Received(time)	10:52 AM
Date	7/11/2006

GEOLOGY 105 **Class Schedule**

I. Histories of the Earth

Introduction to Historical Science

What is Science?

Deep Time—James Hutton and his Cyclic Theory of the Earth

Catastrophism and Uniformitarianism—Georges Cuvier and Charles Lyell

Stratigraphy and the Geologic Time Scale

Radiometric Dating

II. The Geological and Paleontological Records

Sedimentary Rocks

Sedimentary Environments

Carbon Isotopes and Climate Change

Wandering Continents and Plate Tectonics

Fossils

Paleoecology

III. Evolution

Evolution and Creationism

Midterm Exam 1

The Fact of Evolution and Darwin's Theory of Natural Selection

Natural Selection vs. Intelligent Design

IV. The Precambrian Era

Origin of Earth and of Life

The Oxygen Revolution and the Advent of Multicellularity

The Neoproterozoic—Ediacarans and Snowball Earth

Science Funding and Life on Mars

V. The Paleozoic Era

The Cambrian Explosion

The Burgess Shale Fauna

Paleozoic Plants Take Root

Paleozoic Life and Times in the Sea

Paleozoic Vertebrates—From Fins to Toes

The Assembly of Pangea and Its Consequences

The Permo-Triassic Mass Extinction Event

VI. The Mesozoic Era

Triassic Recovery

Early Mesozoic Vertebrates—From Jaws to Ears

Midterm Exam 2

The Mesozoic Marine Revolution

Ammonites

Dinosaurs and Birds

The Commercialization of Fossils

The Cretaceous-Tertiary Event—Evidence for Extraterrestrial Impact

The Impact of Alvarez *et al.*'s Work

VII. The Cenozoic Era

The Cenozoic—A Cooler, Drier World

The Radiation of Mammals

The Quaternary Ice Age

Milankovitch Cycles and Woolly Mammoths

Human Evolution I – Lucy and the Boy from Nariokotome

Human Evolution II – *Homo sapiens*

Human Evolution III – Human Equality?

The Importance of History and a Review

Final Exam

GEOLOGY 105

Lab Schedule

Introductory readings for each lab are available at the course Blackboard site:
<https://my.bgsu.edu>

Please be sure to read each “pre-lab” *BEFORE* you come to the week’s lab, and bring it with you to lab!

Labs meet in **Overman 064** .

Lab 1 Introduction to Historical Objects

Lab 2 Geologic Time—Relative and Absolute Dating

Lab 3 Sedimentary Rocks and Environments

Lab 4 Carbon Isotopes and Plate Tectonics

Lab 5 Fossil Preservation and Paleoecology

Lab 6 Classification and Evolution

Lab 7 Paleozoic Invertebrates of Ohio

Lab 8 Paleozoic Terrestrial Life

Lab 9 Mass Extinctions and the Permo-Triassic Event

Lab 10 The Mesozoic Marine Revolution

Lab 11 Dinosaurs and Birds

Lab 12 The Cretaceous-Tertiary Mass Extinction

Lab 13 The Closing of the Isthmus of Panama

Lab 14 Discussion on Human Evolution

Additional Documentation

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OBR Use

Action

Approved	
Additional Information Requested	
Rejected	
Date	