Master Course Syllabus Outline

Department: Chemistry, Geosciences and Environmental Science  Course Prefix/Number: ES 210-3

Official Course Title: Earth Systems Science

Master Syllabus Approved by Department on:　　Month　　date　　year

I. Catalog Description (50 words; brief synopsis of course content, emphases)

Earth Systems Science. (2-3). Introduction to the nature and evolution of the Earth, hydrosphere, atmosphere and Solar System. The focus of the course will be on content enrichment for science teachers. Lab Fee $10. Course Fee $5.

II. Prerequisites

None

III. Expanded Course Description (150 words; primary course content, intended student level and role(s) course is to play in the curriculum)

This course is designed as a support area for Teacher Certification. The course is one of four 3-hour courses designed to better prepare teachers in the sciences (other courses in the group include elementary reviews of Chemistry, Physics and Biology). Upon completion of the course, the student should have a sound knowledge of general Earth Science, better understand the process of scientific investigation, and formulate ideas and materials that they can use in their own classroom settings.

Earth Systems Science will emphasize four disciplines: geology, oceanography, meteorology and astronomy. The geology portion of the course will primarily review Earth materials and Earth processes, with some discussion of Earth history included. The oceanography section of the course will primarily cover physical and chemical oceanography, with minor discussion of ocean life and ecosystems. The meteorology portion of the course will review the structure of the atmosphere and analyze weather patterns, storms, climate and pollution. The astronomy part of the course will primarily involve an exploration of our Solar System. There will also be minor discussion of stars, galaxies and cosmology.

IV. Intended Student Learning Outcomes:

Knowledge and Value Outcomes:

1. The Student will formulate ideas and develop strategies that will better prepare them for teaching Earth Science in their future classroom.

2. The student will understand the uses of geologic materials, and better appreciate the importance of minerals, rocks and energy sources in the development of human culture.

3. The student will learn how geologic processes have shaped the Earth, and how they continue to impact humans.

4. The student will comprehend the concept of "deep time" in Earth history, and better understand how the Earth has changed through time.

5. The student will understand basic physical, chemical and biological properties of the ocean.
6. The student will understand the intimate relationship between the atmosphere and ocean, and how the ocean influences weather and climate.

7. The student will understand the interrelationship between ocean ecosystems and organisms, and the importance of healthy marine ecosystems for human survival.

8. The student will understand atmospheric processes, and how the basic variables of atmospheric temperature, pressure and humidity are interrelated.

9. The student will understand the nature of storm systems, how to best prepare for surviving weather catastrophes, and how these systems greatly impact human existence.

10. The student will learn the basic causes of pollution, and how phenomena such as global warming may affect civilization.

11. The student will understand the basic features of climate, and how World climates affect World cultures.

12. The student will understand the basic structure and components of our Solar System.

13. The student will explore the creation of the universe, and learn how cosmologists formulate the past history (and future probability) of cosmic evolution.

V. Course Requirements.

A. Grading

Grading is based upon lecture tests, lab exercises and laboratory practicals, and student presentations of demonstrations and/or experiments.

B. Texts

A lab manual and lecture textbook will be required for this course.

Department Head Signature/Date: