University Studies
Cluster Course Addition
Adding a previously unapproved course to a cluster

(When addressing questions, please attach a separate sheet)

PROPOSING FACULTY (Michael L. Cummings, Geology)

1. THE COURSE

A. COURSE TITLE, NUMBER, AND CATALOG DESCRIPTION
Life in the Universe, G 345, Focus on issues surrounding the origin and evolution of life on earth, the environmental conditions required for life elsewhere, and the potential for life on other planets and satellites in our solar system. Additional topics include the discovery, occurrence and habitability of extrasolar planets, and the philosophical and societal implications of searching for life beyond Earth. Prerequisite: Upper division standing.

B. DEVELOPMENT
Is the course based upon an existing course, or is it a new course under development?
Life in the Universe was developed by Dr. Melinda Hutson as G 399U after it was approved by the University Studies Committee in 2001-2002. The course was first offered as G 399U in Summer, 2002, 2003, and winter, 2003. The Department of Geology is submitting a parallel proposal to the University Curriculum Committee to establish this course with a discrete number, G 345 Life in the Universe.

AVAILABILITY
With what regularity has the course been—or will the course be—offered?
As indicated, the course has been offered three times since summer, 2002. The course will be regularly offered during summer term by Dr. Melinda Hutson and will be offered on a fund-available basis and staff available basis during the academic year. Dr. Hutson is a tenured faculty member at Portland Community College. If Dr. Hutson is not available, the course could also be offered by Dr. Sherry Cady, a faculty member in the Department of Geology.

D. PREREQUISITES
List any course prerequisites beyond the cluster Sophomore Inquiry course.
There are no prerequisites beyond the Global Environmental Change Sophomore Inquiry. A general prerequisite is Upper Division Standing.

2. COURSE OUTLINE
Provide a detailed outline of the proposed course, also including its preliminary reading list, and the name(s) of instructor(s) committed to teaching the course.
Week 1: Overview – What constitutes evidence of life?
Week 2: Astrobiology – a new scientific discipline
Week 3: Geology and Chemical aspects of life on earth
Week 4: Biology and Planetary aspects of life on earth
Week 5: Meteorites, Asteroids and Comets
Week 6: Strategy for searching for life on Mars; Concept of Analog ecosystems, e.g., hydrothermal ecosystems.
Week 7: Energy and Life in the Universe; Requirements for ET Life
Week 8: Meteorites and impacts
Week 9: Student presentations and papers
Week 10: Student presentations and papers


Astrobiology, a peer-reviewed scientific journal published by Mary Ann Liebert, Inc.

Instructor committed to teaching the course: Dr. Melinda Hutson, Adjunct faculty member in geology. Melinda is committed to teaching the course in the summer. If agreements can be reached with PCC Sylvania campus, the course will be offered during the academic year.

3. GENERAL EDUCATION GOALS.

A. COURSE CONTENT & SUITABILITY FOR CLUSTER

Discuss the course content in relationship to the thematic focus of the cluster.

The content of G 345 Life in the Universe expands existing themes in the Global Environmental Change Cluster. At present, G 456U Astrogeology and G 399U (G345) Life in the Universe provide a perspective on planetary evolution. The G 399U (G345) Life in the Universe also compliments the content of G430U Life of the Past. These three courses (G345, G456, and G430) form a group that encourages students to explore the origin and evolution of life and places these fundamental topics in the context of planetary evolution.

In addition to the above mentioned courses, the Department of Geology offers G 351 Oceanography, G 455 Minerals in World Affairs, G 452 Geology of the Oregon Country, G 344 Geology and the National Parks, and G 457 Volcanoes and Earthquakes (proposed fall 2003) in the Global Environmental Change Cluster.

B. UNST GOALS

Indicate what materials and assignments will address those University Studies goals appropriate to the course content and cluster theme (the goals are Inquiry and Critical Thinking, Communication, Diversity of Human Experience, and Ethical Issues & Social Responsibility).

1) Inquiry and Critical Thinking: The analysis of scientific data, how these data are used to construct hypotheses, and the style by which scientific argumentation is developed provide a structure for inquiry and critical thinking in this course. As the field of astrobiology evolves the criteria by which the evidence is evaluated for the existence of life in the universe becomes an important issue. Students will explore the issues surrounding the identification of life either by direct evidence of the organism or through the impact an organism produces in its environment.

2) Communication: The student presentations during the last two weeks of the term provide an opportunity for oral presentations that are grounded in written reports. The use of Internet resources as a point of discussion provides students with informal opportunities to discuss important topics in the course. One of the themes developed in the course is communication of information on astrobiology. There are great differences between information presented in the popular literature/science fiction/Internet resources and information presented in peer-reviewed scientific literature. Students will gain experience evaluating the structure of scientific arguments and how data are used to support hypotheses.
3) Diversity of Human Experience: All cultures struggle with the question of origins. How we explain the origin of life is deeply rooted in our belief systems and cultural experiences. Discussions among students and faculty on the question of life in the universe will allow students to explore this diversity of human experience.

4) Ethical Issues & Social Responsibility: Any discussion of life and its origins moves into ethical issues. As geoscientists we have always had to deal with these issues in our classes when topics of geologic time and biological evolution are introduced. Although this course is not designed to address these issues directly, instructors are relatively skilled at moving discussions in these areas when appropriate.

C. CLASSROOM ENVIRONMENT

Discuss the teaching strategies employed in the course and how they articulate with the student-centered, active-learning strategies characteristic of University Studies courses. The Department of Geology is committed to increasing appropriate technology use in cluster courses offered by the department. Nearly all cluster courses have a component of computer-based instruction or use of analytical instrumentation in student projects and presentations. The same will hold true in Life in the Universe. The breaking news in astrobiology is communicated on Internet. However, students need to gain confidence in evaluating the information that is presented in this volatile setting. Class sessions will be scheduled in a technology classroom where students use computers as part of the instruction. Students will search the web and the instructor will be able to project sites that they find and use these sites as a basis for discussion and evaluation.

Quizzes, midterm exam, and final exam in essay/short answer format will evaluate student learning in the basic concepts of the content.

Student presentations based on their own investigation of the peer-reviewed scientific, popular, and Internet literature allow students an opportunity to explore their interests and interaction with the faculty member teaching the course since these topics need to be approved and discussed with the instructor.

Lecture and in-class discussions round out the approaches used in this course.

PROPOSING FACULTY:  

COURSE TITLE AND NUMBER: 63456 Life in the Universe

OBTAIN CHAIR AND CLUSTER COORDINATOR SIGNATURES BEFORE SUBMITTING TO UNIVERSITY STUDIES OFFICE

DEPARTMENT CHAIR(S):  

DATE: 11/3/03

DATE:___________
All changes to Clusters must be approved by PSU's Senate Curriculum Committee.

THE ORIGINAL + 12 COPIES OF THE PROPOSAL MUST BE RECEIVED AT UNIVERSITY STUDIES (CH 163) BY OCTOBER 31, 2003

COURSE APPROVED FOR CLUSTER INCLUSION

CHAIR, CLUSTER COORDINATORS: ___________________________ DATE: ____________

CHAIR, UNST COMMITTEE: ___________________________ DATE: ____________