Cluster Course Addition
(New Course to UNST clusters)
(When addressing questions, please attach a separate sheet)

Course name and number: G430U: Life of the Past

Cluster: Global Environmental Change Cluster

PROPOSING FACULTY (Name and Department)
Michael L. Cummings, Professor and Chair, Geology
Thomas Lindsay, Ph.D. student in Environmental Sciences and Resources/Geology Ph.D. program.

Designated Instructor: Thomas Lindsay
Course Offered: Once per year with possible additional offerings during summer terms.

1. COURSE DESCRIPTION
Origin and development of plants, animals and man on Earth, as interpreted from the study of fossils and the sedimentary rocks in which they occur. Includes integrated laboratory and field experience. (Existing course description in PSU Bulletin, 2001-2002).

A. COURSE DEVELOPMENT:
G 430, Life of the Past, was developed by Dr. Richard Thoms while he was a member of the PSU faculty. The course was offered twice/year for ten years or more. When Dr. Thoms retired in 1998 the course was no longer offered because of changes in faculty interest with a new hire (Dr. Sherry Cady) and change in emphasis of the Department of Geology. In January, 2002, Thomas Lindsay entered the Ph.D. program in Environmental Sciences and Resources/Geology from a career of teaching in high schools in several parts of the state. His background during graduate work included considerable course work and research in paleontology and this topic remained an avid interest during his teaching career. Mr. Lindsay is well qualified in background and interest to instruct this course as a cluster course.

B. COURSE AVAILABILITY:
G 430U will be offered each year starting in the 2002-2003 academic year and continuing at least over the length of Mr. Lindsay’s career as a Ph.D. student at PSU.

C. PREREQUISITIES:
There are no prerequisites for this course. However, some knowledge of geology and/or biology will be helpful.

2. COURSE OUTLINE:
Basic Concept in paleontology
History of paleontology
Organic evolution
Modern controversies in vertebrate and invertebrate evolution
Taphonomy, environmental reconstruction and other methods of study
Patterns of invertebrate evolution
Vertebrate evolution
Evolution of dinosaurs and birds
Evolution of horses
Evolution of primates

Readings: Oregon is blessed with well-known examples of biological evolution in the context of climatic evolution. Readings will be selected from general texts and accessible professional research papers that provide students with a depth and breadth of understanding of life of the past, particularly as it is illustrated in sites that are available for field study. Additional experiences may be gained through guest lectures.


Supplementary readings include:
W. N. Orr and E. L. Orr, Geology of the Pacific Northwest.

Instructor:
Thomas Lindsay, Environmental Sciences and Resources/Geology Ph.D. student.

3. GENERAL EDUCATION GOALS
A. CONTENT
The world-famous paleontological resources of the Pacific Northwest provide an outstanding laboratory in which to introduce students to the relations between life forms and the changing global environment. The records are vast for two world-wide episodes of dramatic climate change. Dramatic climate change at approximately 33 million years ago from lush sub-tropical conditions to drier and colder temperate climate is wonderfully recorded in rocks of the Clarno and John Day Formations in central Oregon. The other period of great change is during the transition between the Pliocene and Pleistocene epochs (1.6 million year ago) and between the Pleistocene and Holocene epochs (10,000 years ago). The onset of world-wide glaciation and the change to the modern climate pattern provides another outstanding opportunity to explore the content of this course. Students will be introduced to the methods by which geoscientists study past life forms and reconstruct the environments in which they lived and died. Since Dr. Thoms retirement, this aspect of Global Environmental Change has been underserved in the Department of Geology and the University. With Mr. Lindsay entering the
Ph.D. program we have the opportunity to reintroduce this important topic into the cluster environment.

B. UNST GOALS

1. Inquiry and Critical Thinking.
The interplay between classroom and field experiences provide students an outstanding opportunity to explore their world through different scales of observation and through the complex dimensions of time. The evolution of life is one of the great dimensions of planet Earth and provides students with a wealth of opportunities to engage in inquiry and critical thinking through laboratory activities and to apply concepts in the challenging environment of field settings. The classroom reconstructions and hands-on experience in field settings will challenge students to inquire about the nature of the evidence that supports the theory of biological evolution and how it relates to the evolution of climate on Earth.

2. Communication
The course will utilize informal discussions centered on critical concepts dealing with world-wide climate change, biological evolution, and the fossil record. In the field, these discussions are usually rich because students are interacting with primary materials upon which such theories are developed. Student in-class oral and written presentations based on field investigations and reports based on library/Internet resources provide the basis for development of communication skills.

3. Human Experience
The human experience is richly mixed with the quest to understand origins and how things have come to be the way they are. More recently, the human experience is focused on the impacts of climate change and the implications for future generations. Interactions with life of the past and its intersection with changing climate on Earth should provide a rich basis for examining the human experience.

4. Ethical Issues and Social Responsibility
Although ethical issues and social responsibility may not be direct topics of investigation in this course, students may become interested in the broader issues centered on choice and responsibility to the community.

C. CLASSROOM ENVIRONMENT
The classroom will include the traditional classroom surrounded by walls and its various technological devices, but more importantly the “classroom” will include field experiences where the evidence upon which the relation between climate and life forms can be investigated first hand. The classroom will include visits to museum facilities such as Cant Ranch on the John Day National Monument and such widely known sites as the Clarno nut beds. Student interactions will be encouraged as students investigate field sites and examine classroom samples. The classroom environment is expected to be a
rich mixture of activities and interactions among students working on projects and developing understanding of the basic concepts of the course.

D. Sustainability
The Department of Geology is committed to developing sustainable courses offered through the Global Environmental Change Cluster. This course will be offered for at least the next three years as Tom Lindsay works his way through the Ph.D. program. If successful during these years, efforts will be made to find a new instructor and to develop the offering further. The course fits well with the goals of the Global Environmental Change Cluster and is an excellent compliment to the Life in the Universe (G399U soon to be G 334U) course that deals with broader issues of the origin of life and finding life in other parts of the Universe.

COURSE APPROVED FOR CLUSTER INCLUSION BY:

DEPARTMENT CHAIR(S): DATE: 2/11/02

CLUSTER COORDINATOR: DATE: 2/14/02

CHAIR, CLUSTER COORDINATORS: DATE: 

CHAIR, UNST COMMITTEE: DATE: 