

# Minor in Paleobiology

The minor in paleobiology is sponsored by the Department of Biology and is designed to provide students a solid foundation in the evolution and ecology of life in deep geologic time. In addition to classwork in paleontology, geobiology, astrobiology, and paleoanthropology, the minor provides opportunities for fieldwork and independent research. This is an excellent minor to accompany an Earth and Space Sciences, Biological Anthropology, or Biology major as a way of adding additional dimensions to your coursework and academic experience.

Required coursework \_\_\_\_\_/30 cr

18 credits in the minor **must** be from outside your major.

At least 15 credits **must** be completed at UW.

\_\_\_\_ 3 cr. BIOL 354 (AUT and SPR) – *Foundations in Evolution and Systematics*

\_\_\_\_ 1 cr. BIOL 483 – *Senior Seminar in Paleobiology*

## **Choose one:**

\_\_\_\_ 5 cr. BIO A 388 - *Human Fossils and Evolution*

\_\_\_\_ 5 cr. BIO A 488 - *Primate Evolution*

\_\_\_\_ 5 cr. ARCHY 470 – *The Archaeology of Extinction*

## **Complete at least two from this list:**

\_\_\_\_ 5 cr. BIOL 438 – *Quant. Appr. to Paleobio, Morphology, and Systematics*

\_\_\_\_ 5 cr. BIOL 443 - *Evolution of Mammals and Their Ancestors*

\_\_\_\_ 3/5 cr. BIOL 447 - *Greening the Earth*

\_\_\_\_ 5 cr. BIOL/ESS 452 - *Vertebrate Paleontology*

\_\_\_\_ 5 cr. BIOL/ESS 451 - *Invertebrate Paleontology*

## **Complete at least one from this list:**

\_\_\_\_ 2 cr. ESS 100 - *Dinosaurs*

\_\_\_\_ 3 cr. ESS 104 - *Prehistoric Life*

\_\_\_\_ 5 cr. ESS 115 – *Astrobiology: Life in the Universe*

\_\_\_\_ 5 cr. ESS 204 – *Paleobiology and Geobiology of Mass Extinctions*

\_\_\_\_ 5 cr. ESS 213 – *Evolution of the Earth*

## **Complete at least one from this list:**

\_\_\_\_ 5 cr. ESS 313 - *Geobiology*

\_\_\_\_ 3 cr. ESS 450 - *Paleobiology*

\_\_\_\_ 4 cr. ESS 455 - *Stratigraphy*

\_\_\_\_ 4 cr. ESS 456 - *Depositional Environments*

Additional classes to reach 30 credits may be taken from classes in the **areas listed above** or from BIO A 389 or BIO A 491.

***Minimum cumulative 2.00 GPA in all minor coursework.***

## Paleobiology Mentoring Profiles

**Roger Buick.** Professor in ESS and Astrobiology. Research on life and environments on the early Earth as an analogue to other possibly habitable planets, including early Mars. This includes research projects on microbial nitrogen cycling and "laughing gas" greenhouses, measuring past atmospheric pressure using geological proxies, hydrocarbon biomarker evidence for eukaryotic evolution, using stromatolites and oncolites for studying microbial mineralization and carbon isotope studies of the Paleocene-Eocene Thermal Maximum. I am also a Co-PI in the Isolab (<http://depts.washington.edu/isolab/>) for measuring hydrogen, oxygen, nitrogen and sulfur isotopes in rocks and water.

**Patricia Kramer.** Associate Professor (Research) of Anthropology. My principal research interest is the study of locomotion from the perspective of mechanical engineering. Locomotion is a fundamental, defining adaptation of the taxonomic group to which humans belong. Consequently, it is imperative to understand the entire suite of locomotor behaviors--including burden transport, group mobility strategies and the locomotion of juveniles--in both modern humans and in our hominin ancestors. Opportunities exist in my lab for undergraduates to gather the energetic and motion data of modern humans, to simulate the biomechanics of bipeds, and to evaluate the spinal function of extant and extinct primates. Current graduate students: 2

**Estella B. Leopold,** Professor emeritus in Biology. Adjunct in Quaternary Research Center. I work with fossil pollen and spores, currently trying to use late Tertiary (pre Ice-Age) floras of eastern and western Washington to determine when the Cascade Range of Washington became elevated. When did the rain shadow of arid eastern Washington develop? The work involves preparing sediments in the lab to remove fossil pollen, identifying these microscopically and comparing a set of floras of the State in an east-west line, to interpret the climate pattern that these floras imply. One undergraduate in my lab is doing taxonomic research on the pollen of *Rhododendron* genus.

**Liz Nesbitt,** Curator of Invertebrate Paleontology and Marine Micropaleontology in the Burke Museum, Associate Professor in ESS. Research interests focus on the fauna and geologic settings of fossil hydrocarbon seeps; paleoecology of the Cenozoic extinction events recorded on the Pacific Rim; investigating the health of Puget Sound waters using microbiota as environmental and pollution indicators. I am involved in museum exhibits, educational and public programs that make complex scientific topics accessible to a K-8 teachers, students and the general public, and in training students for museum curatorial positions.

**Christian Sidor,** Associate Professor of Biology, Adjunct Associate Professor in ESS, Curator of Vertebrate Paleontology at the Burke Museum. My research interests: 1) Evolutionary morphology, including quantifying large-scale evolutionary trends and patterns of morphological diversification, particularly in non-mammalian synapsids. 2) Evolution of the Permo-Triassic vertebrate faunas, especially the establishment of regional differentiation and provincialism following the end-Permian mass extinction. Current graduate students: 2.

**Caroline Strömberg,** Assistant Professor in Biology, Adjunct in ESS, and Curator of Paleobotany at the Burke Museum of Natural History and Culture. I work primarily on trying to understand the causes and consequences of the evolution of grass and the spread of grassland ecosystems during the Late Cretaceous and Cenozoic. This research uses mainly plant silica (phytoliths) and encompasses fieldwork, lab work, microscopy, and greenhouse experiments. We are also involved in public outreach and education through the Burke Museum. Current graduate students: 2.

**Peter Ward.** Professor in Biology and ESS, adjunct professor in Astronomy and the Burke Museum. Ongoing research into the biology of living nautilus, the cause of mass extinctions, past climate change, invertebrate taxonomy and phylogeny, Upper Cretaceous stratigraphy of the globe. Other applicable interests specific to Paleobiology minors include outreach, teaching science writing to undergrads, fossil photography, geochemistry of fossils in the Stable Isotope Lab (ESS) and political consequences of climate change. Current grad students: five.

**Greg Wilson,** Assistant Professor in Biology, Adjunct Assistant Professor in ESS, and adjunct Burke Museum curator. Research interests focus on early mammal evolution, diet reconstruction in recent and extinct mammals, paleobiogeography of early mammals, and the impact of the Cretaceous-Paleogene mass extinction on terrestrial ecosystems. I use methods for quantitative analysis of diversity dynamics, biostratigraphy, dental morphology, phylogeny, and community structure. I also work closely with educators to bring scientific research to K-12 classrooms. Current grad students: four.