Administrative Unit: Science Department

Course Prefix and Number: BIOL 300

Course Title: Evolution

Number of: Credit Hours: 3  Lecture Hours: 3  Laboratory Hours: 0

Catalog Description: Examination of the basic mechanisms of evolution and the importance of evolution to our understanding of life on earth. Genetics, natural selection, adaptation and the history of life will be considered. Crosslisted as ENVS 300. Prerequisite: BIOL 112; BIOL 222 and/or 342 recommended.

Prerequisite(s)/Corequisite(s): BIOL 112; BIOL 222 and/or 342 recommended.

Text(s): Most current editions of the following:


Course Objectives:

- To describe the basic evidence for evolution.
- To explain how Darwinian natural selection and Mendelian genetics contribute to evolutionary theory.
- To describe the mechanisms of evolution.
- To apply the concept of adaptation to life history characteristics.
- To demonstrate mechanisms and results of speciation.

Measurable Learning Outcomes:

- Define evolution.
- Outline the history of evolutionary theory and the modern synthesis.
- Apply molecular and Mendelian genetics to evolutionary theory.
- Describe the major lines of evidence for evolution.
- Explain how natural selection and variation explain evolution and adaptation.
- Apply population genetics to evolution.
- Explain the importance of the Hardy-Weinberg equilibrium.
- Explain how random events affect evolution.
- Defend the argument that natural selection is required for adaptation.
- Describe the various levels at which selection occurs.
- Detail the various ways speciation may occur.
- Distinguish between macroevolution and
microevolution.
- Explain the effects of co-evolution, extinction and radiation.

Topical Outline (major areas of coverage):
- Evidence for evolution
  - Historical context
  - Darwin
- Mechanisms of Change
  - Mutation and variation
  - Population genetics
- Adaptation
  - Sexual selection
  - Kin selection
  - Life history characteristics
- History of Life
  - Speciation
  - Origin of life
  - Human evolution

Recommended maximum class size for this course: 25

Library Resources: Online databases are available at http://www.ccis.edu/offices/library/resources.asp. You may access them from off-campus using your eServices login and password when prompted.

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Name ___________________________ Signature ___________________________

Date: March 8, 2005

NOTE: The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.

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