Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

This course is available for student registration only after the approval process has been completed.

SUBJECT: Bio
COURSE NO. 4030
CREDIT HOURS 3
TERM TO BE ADDED TO THE FILE Fall 2010

CLASS HOURS 45
LECTURE HOURS 45
LAB HOURS
CONTACT HOURS (CEU ONLY)

DEPARTMENT: Biological Sciences
SCHEDULE TYPE: Lecture

☐ COLLEGE OF AERONAUTICS-23
☐ COLLEGE OF PSYCHOLOGY AND LIBERAL ARTS-25
☐ COLLEGE OF BUSINESS-24
☒ COLLEGE OF SCIENCE-26
☐ COLLEGE OF ENGINEERING-01
☐ UNIVERSITY COLLEGE EXTENDED STUDIES-27

COMPUTER TITLE: Restricted to 25 characters, including spaces
Conservation Biology

CATALOG TITLE: Conservation Biology

CATALOG DESCRIPTION OF COURSE
Limited to 350 characters, including spaces
Provides an overview of biodiversity patterns and their susceptibility to human activity. Investigates the science underlying conservation of plant and animal communities (terrestrial and marine) and ecosystems. Pays special attention to the need to develop conservation strategies that accommodate climate change.

In addition, you may attach a course syllabus and/or more detailed description.

RESTRICTIONS
☒ Prerequisite: Bio 4410
☐ Corequisite

☐ Prerequisite
☐ Corequisite

☐ Prerequisite
☐ Corequisite

GRADES TO BE ISSUED
☒ A, B, C, D, F
☐ A, B, C, D, F, CEU
☐ CEU
☐ S, U
☐ P, F
☐ Other

ADDITIONAL RESTRICTION
(e.g., Major, Class Level, Department Head Approval)

If this course replaces a course currently offered in BANNER, please indicate old course information

SUBJECT: Alpha Prefix (e.g., CSE) COURSE NO. (e.g., 1301)

APPROVALS: Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Director.

Originator

Date 3/18/09

Chair, Graduate Council

Date

Department Head/Program Chair

3/18/09

Dean or Associate Dean

Date 3/20/09

Chair, Undergraduate Curriculum Committee

Date

CATALOG DIRECTOR
These changes/additions have been made for the University/Extended Studies Catalog and entered into the BANNER term named above.

Catalog Director

Date

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RG-271-906
Proposed class

**Conservation Biology**

**Bio 4030**

Pre-req: Bio 4410 Community Ecology.

**Course description:**
Provides an overview of biodiversity patterns and their susceptibility to human activity. Investigates the science underlying conservation of plant and animal communities (terrestrial and marine) and ecosystems. Pays special attention to the need to develop conservation strategies that accommodate climate change.

Conservation genetics will be dealt with in a subsequent class Bio 4xxx, and so is reduced to one introductory lecture in this class.
Anticipated enrollment in Bio 4030 c. 10 students
Co-taught with Bio 5030 c. 15 students

(Difference between the two courses is in reading assignments, grad students required to write a 2 page NSF pre-proposal, and separate exams).

**Specifically lecture topics will include:**

The theory of Conservation Biology
Week 1: Biogeographical primer on patterns of biodiversity and their trajectories through time (from local to global scale).
  - Metapopulation theory
  - Island Biogeographic theory

‘Conventional’ conservation problems
Week 2: The perils of small population size
  - Patterns of landuse and human demand for resources.
  - Loss of habitat.

Week 3: Habitat fragmentation
  - Influence of fire in fire prone systems
  - Influence of fire in fire-resistant systems

Week 4: Exotic species introduction
  - Attributes of invasive exotic species
  - Case studies in exotic species

Week 5: Overexploitation of fisheries 1
  - Overexploitation of fisheries 2
  - The concept of shifting baselines

Week 6: Excess nutrients and other pollution
Eutrophication
Acid deposition
Trophic cascades of failure

‘Conventional’ solutions
Week 7 Nature reserves, design and implementation
   Local reserve design in Brevard County
   Exotic species removal

Week 8 Midterm exam
   Marine Protected Areas 1
   Marine protected areas 2

Week 9 Protection by legislation and the Endangered Species Act
   Reintroductions
   Rewilding of America debate

‘Less conventional’ solutions
Week 10 Funding through ecotourism
   Debt-for nature swaps
   Cap and trade programs

Climate change
Week 11 Climate change: What is it,
   How unusual is it?
   Quality of models and projections

Week 12 Impacts of climate change on physiology
   Impacts of climate change on behavior and phenology
   Projections of biome responses

Climate change solutions
Week 13 The human population crisis and the case of Easter Island
   Carrot and stick or Cap and trade
   Rethinking reserve design

Solutions to the impacts
Week 14 Engineered approaches, e.g. ocean fertilization
   Podcasts
   Webcasts 1 (assuming 4-5 per class)
Week 15 Webcasts 2
   Webcasts 3
   Webcasts 4

Readings and assignments
No single text will cover these areas, but each lecture will have one primary literature paper assigned. New texts are emerging all the time as this is a very hot area of study and if one meets the needs it will be adopted. As papers are discussed 10% of grade will be for participation.

Students will be assigned to write a Sigma-Xi-style proposal (500 words plus references) detailing an experimental project relevant to conservation; 15% of grade.

Midterm exam 20%

90 second presentation in audio format (as a podcast) 10%.

8 minute video format (webcast) 15%.

Final exam 30%

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