# *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 (*Alpha Prefix (e.g., CSE)*) COURSE NO. 4904 (*Number Choice (e.g., 1301)*) CREDIT HOURS 3 TERM TO BE ADDED TO THE FILE Summer 2010 (*e.g., Fall 2006*)

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

DEPARTMENT Biological Sciences (*e.g., Computer Sciences*) SCHEDULE TYPE Field Projects (*e.g., Lecture, Lab or Special Project*)

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

COMPUTER TITLE *Restricted to 25 characters, including spaces* Field Biology/Galapagos

CATALOG TITLE Field Biology and Evolution of the Galapagos Islands

CATALOG DESCRIPTION OF COURSE *Limited to 350 characters, including spaces*

Field biology course in the Galapagos Islands. Emphasizes climate and evolution processes and patterns. Includes both terrestrial and marine investigations of the unique biota of the islands. A field fee is required.

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

RESTRICTIONS

- ☒ Prerequisite BIO 3410 (*Course Number*) ☐ Corequisite ____ (*Course Number*)
- ☐ Prerequisite ____ (*Course Number*) ☐ Corequisite ____ (*Course Number*)
- ☐ Prerequisite ____ (*Course Number*) ☐ Corequisite ____ (*Course Number*)

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.***

| | | | |
|---|---|---|---|
| [signature] | 6/29/09 | | |
| *Originator* | *Date* | *Chair, Graduate Council* | *Date* |
| Richard B. Aronson | 7/1/09 | OR | |
| *Department Head/Program Chair* | | | |
| Hamid K. Ramal | 7/1/09 | | |
| *Dean or Associate Dean* | *Date* | *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*

**REGISTRAR'S USE ONLY**

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# Field Biology and Ecology/Galapagos Islands (summer 2010)

**Instructors:** Mark Bush and Richard Aronson (Biological Sciences)

A summer field course in the Galapagos Islands that emphasizes the climatic and evolutionary underpinning of modern ecological processes and patterns of this unique biota. Investigations will take place in both terrestrial and marine settings. Pre-requisite Bio 3410.

Provisional course number **Bio 4904**

**Syllabus**
The 10-day field component will be preceded by a week of intensive lecture activity. Lecture component (each topic is 1 hr).

Students will be expected to read pages 3-116 of the Beak of the Finch (J. Weiner) prior to the start of class.

*1st Campus component*

Day 1 am:
1) Geological and climatological setting
2) Darwin's discoveries and uncertainties

pm:
3) Ecology and endemism of tortoises and lizards
4) Identification of common fish
5) paper discussion

Day 2 am :
1) Climate change in the Eastern equatorial Pacific
2) Biogeography and ecology of Pacific corals

pm:
3) Darwin's finches adaptive radiation and response to climate change
4) Identification of common seabirds on the Galapagos
5) paper discussion

Day 3: am
1) Terrestrial biogeography of the islands: natural plant communities
2) Conservation of Galapagos ecosystems

pm
3) Elements of field botany
4) Identification of common plants
5) paper discussion

Day 4: am
1) Marine biogeography of the islands: corals
2) Marine biogeography of the islands: Fish
3) Nearshore survey techniques
4) Identification of corals
5) paper discussion

Day 5: am
1) Exam I
2) Notebook advice, departure briefing and organization

*Field Component*
Day 6-15 Travel to Galapagos for field studies to include on-site lecturing on natural history of assorted ecosystems on 3 islands, floral survey along elevational gradients, rockpool and nearshore invertebrate diversity studies, project work. Project work or readings will be assigned for each evening. A field notebook will be prepared by each student detailing daily activities and observations.

A typical day will be breakfast at 6 am, depart to field at 7 am. Conduct terrestrial surveys 8-noon, lunch, 1-2 pm prepare for evening discussion. 2-5 pm afternoon survey activity (terrestrial or marine). Dinner 7-8 pm. Evening discussion or night survey 8.30-9.30 pm.

*2nd Campus component*
Day 16 Study day
Day 17 Final Exam
Day 19 Hand in field notebook

**Evaluation**

| | |
|---|---|
| Exam I | 25% |
| Participation | 25% |
| Final Exam | 25% |
| Field notebook | 25% |

**Readings (preliminary list)**

Conroy et al. 2009 Unprecedented recent warming of surface temperatures in the eastern tropical Pacific Ocean. *Nature Geoscience* **2**, 46- 50.

Darwin, C. 1839 *Voyage of the Beagle*. chapter 17 p. 271-292.

*Edgar et al. 2004* Regional biogeography of shallow reef fish and macro-invertebrate communities in the Galapagos archipelago. *J.Biogeogr* **31**, 1107–1124.

Glynn et al. 1979 Coral Reef Growth in the Galapagos: Limitation by Sea Urchins. *Science* **203**, 47-50

Grant, P. & Grant, R. 2002. Adaptive Radiation of Darwin's Finches. *American Scientist*.

Jordan & Snell 2008. Historical fragmentation of islands and genetic drift in populations of Galápagos lava lizards (*Microlophus albemarlensis* complex) *Molecular Ecology* **17**, 1224–1237.

Palacios, Daniel M. 2004. Seasonal patterns of sea-surface temperature and ocean color around the Galapagos: regional and local influences. *Deep-Sea Research II* **51**, 43–57.

Rendle, A.B. 1903. Flora of the Galapagos Islands. *New Phytologist* **2**, 135-138.

Vargas et al. 2005. Population size and trends of the Galápagos Penguin *Spheniscus mendiculus. Ibis* ***147****, 367-374.*

Weiner, J. 1995. *Beak of the Finch. 3-116.*