## *Biology 482* – Capstone Studies: Natural Sciences Research Experience Abroad

**General Course Information**

Course: Biology 482 – Capstone Studies: Natural Sciences Research Experience Abroad
Lecture/Lab Location & Time: DBH 268, 10:00 am start time
Field Trip: **Jan 4-13** (logistics discussed on Day 1)

Instructor Information: Darren Sandquist; CSUF office**: MH313**; phone: **(657) 278-2606**
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Office Hours TBA

**Prerequisites:** Completion of BIOL 274 (254) and 314 or 325 with a "C" (2.0) or higher; or by instructor permission

**Course Objective**

The goal of this course is to build on your fundamental knowledge of biology and apply that knowledge to a more synthetic (capstone) research experience in conservation and restoration biology. The research will take place during a 9-day field trip to the La Paz region of Baja California Sur. Prior to the trip your understanding of restoration ecology and conservation practices will be reinforced and we will examine the socio-political implications of such practices. During the trip we will study a forest restoration program and a sea turtle conservation operation in Baja California Sur. After the field trip, we will summarize our observations and data to produce group posters suitable for presentation at the CSUF undergraduate research symposia, and a professional meeting (e.g., Southern California Academy of Sciences).

**Student Learning Objectives**

By completing this course you will:

1. Reinforce your fundamental understanding of conservation biology as an ecological discipline.
2. Become familiar with restoration ecology and learn applications in this discipline.
3. Recognize socio-political impacts of conservation programs and their impact on traditional resource uses.
4. Enhance your understanding of natural ecosystem functions vs human-influenced ecosystems.
5. Become familiar with common fauna and flora of the southern Baja region.
6. Design and apply appropriate experimental measures for quantifying restoration progress/success.
7. Synthesize and summarize research data for development of a professional-quality poster presentation.

**COURSE MATERIAL**

**Textbook** – Required: *Foundations of Restoration Ecology* 2016 by Palmer, et al. ISBN: 13:978-1-61091-697-4. There are also many optional books that might benefit your success in this course, e.g., *Baja California Plant Field Guide* by J.P Rebman and N.C. Roberts. You will also be given a list of reading materials (available via Titanium) that will range from journal articles to books regarding the research topics.

**On-campus Lectures and Labs** – There will be introductory lectures and lab exercises **Jan 2-3**. Following the field trip, lecture/lab will resume **Jan 15-18**. See course schedule for lecture/lab topics, assignments and meeting locations. Constructive questions and comments are encouraged during all portions of the course, including lectures.

**Field Trip** – A substantial part of the class is the ***mandatory field trip***. During the field trip there will be lectures, student presentations, and research activities. Other informal lectures are anticipated throughout the field trip. Details of the field trip will be provided during the orientation meeting at the end of Fall semester. In short, the field trip will include two nights in La Paz, BCS and six nights camping at eco-camps run by a third-party provider (e.g., REDTravel Mexico Academic Tours).

- Expenses associated with the field trip will include roundtrip airfare to San Jose del Cabo, passport renewal (if not up to date), meals and entertainment when in La Paz, and field clothing/gear as needed. A program fee for the study abroad provider will also be required per student. This fee will cover all other program expenses including camping, guide services, catering, permits, insurance, boat & van services, equipment rental and professional speakers. If IRA funds are available, some of these expense will be covered for CSUF students. Scholarships for study abroad may be available via the CSUF Study Abroad office.

**Disruptive class behavior of any kind will not be tolerated**. Please have the courtesy and respect for your fellow classmates to turn off your cell phone during class time. There is no cell reception at the field sites in BCS. Persistent disruptive behavior and other unacceptable behavior (see CSUF Student Conduct web site) will be reported to Student Affairs.

**TESTING AND GRADING**

**Reading Assignments:** These assignments, some of which may be administered on-line, are intended to assist you with assimilating the reading material and prepare you for research in Baja.

**Field Participation and quizzes:** You may be quizzed during the field trip. These quizzes are intended to enhance your retention of information learned during our time in the field. The quiz questions will be a mixture of multiple choice, matching, and true-false. Quizzes and field stops will usually be followed by group discussions to which students are expected to contribute in order to earn full participation credit. Be sure to take notes regularly during all field activities.

**Exams** – There will be one exam at the end of the course. It will test your understanding of conservation and restoration based on your understanding of the foundation material and field practices experienced during the field trip.

**Make-up Policy**

**Make-up exams/quizzes and assignments** are not given without a reasonable confirmed, valid reason. For on-line assignments, "my computer crashed" is not a valid reason. On-line assignments will be open a sufficiently long time that anyone may find an alternative computer to complete the work.

**Make-up Field Trip:** There is no make-up for the mandatory field trip and the work related to the field trip.

**Journal:** Each student will complete a journal during the field trip. The journal is essentially your field notebook. Minimum note-taking practices will include an entry for each field trip stop. Good note-taking practice includes summative descriptions of concepts discussed, accounts of daily activities, and cataloging of field observations. Journals will be graded twice – once during and once at the end of the field trip. Guidelines for field journals and note-taking will be reviewed during the first week of class.

**Peer-Presentations and Day-in-Review Discussions:** Every student will prepare a field presentation related to some aspect of Baja conservation. One=page handouts will be completed and photocopied *before* departure from CSUF. Presentations will be done in the field, usually at meal times. Day-in-review summaries will take place each night during the field trip. One group will provide an oral overview of the day's activities and learning outcomes. All presentations will include some form of informal assessment to check knowledge and understanding of your peers.

**Field Trip Research:** The research project is the core of this capstone course. Collectively students will design their field research project and implement it when at the forest restoration site. The project will be of a monitoring nature, and will draw from your skills of observation, data collection, data synthesis and summary. (1) A written, two-page project development overview will be due after the second day at the field site. (2) An oral presentation and discussion of your field project will be given the evening prior to project implementation. (3) Data collection will be graded after day three. (4) Data analyses and summaries will be completed when back at CSUF.

**Field project report and poster:** A project report will be a 6-7 page summary (excluding figures, tables and literature cited) of the project, written in a scientific format. Reports will be graded on grammar and style, appropriate graphics, observations and conclusions. Each project group will produce a professional-quality poster summarizing their observations and conclusions from the field project. Posters will be graded on grammar and style, appropriate graphics, observations and conclusions. Funds may be available for presentation of posters at professional meetings during the following semester. So aim high!

**Grades:** Your grade in the class will be determined by the following points:

| | |
|---|---|
| Reading Assignments | 20 |
| Exam | 20 |
| Field Quizzes and Participation | 30 |
| Field Trip Journal | 30 |
| Field Trip Presentation | 20 |
| Daily Summary | 10 |
| Field Research Development | 20 |
| Field Project Written Report | 30 |
| Poster | 20 |
| Total | 200 |

Final Grade determination will be as follows:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| A+ | 100 | - | 98 | % | C+ | 79 | - | 77 | % |
| A | 97 | - | 92 | % | C | 76 | - | 72 | % |
| A | 91 | - | 90 | % | C- | 71 | - | 70 | % |
| B+ | 89 | - | 87 | % | D+ | 69 | - | 67 | % |
| B | 86 | - | 82 | % | D | 66 | - | 62 | % |
| B- | 81 | - | 80 | % | D- | 61 | - | 60 | % |
| | | | | | F | | < | 59.5 | % |

**EXTRA CREDIT** – There are no anticipated extra credit options for this course.

**WITHDRAWL POLICY** – The CSUF policy regarding withdrawal from classes (UPS 300.016 and 300.018) will be followed.

**SPECIAL NEEDS**

**If you have a disability that requires special conditions for testing or participation, please register with the appropriate campus office and inform the instructor before the first day of class so that the arrangements can be made. See http://www.fullerton.edu/disabledservices/**

**ACADEMIC INTEGRITY**

Students are expected to maintain a high standard of academic integrity. Policies on academic integrity will be strictly enforced. Familiarize yourself with the academic dishonesty policy, which can be found in the current student handbook or at: http://www.fullerton.edu/senate/documents/PDF/300/UPS300-21.pdf. All incidents related to academic integrity will be reported.

**EMERGENCY INFORMATION AND ACADEMIC FIELD TRIP POLICY**

Students should familiarize themselves with the actions they should take in an emergency at: http://prepare.fullerton.edu.

Each student will be required to attend a travel orientation (in class) and provide emergency contact and health information before the field trip including an Academic Field Trip Waiver and sign the Participant List.

Students must comply with all State laws regarding possession, sale and use of alcohol or controlled substances while participating in CSUF related activities. Field trip guidelines may be reviewed at http://ehs.fullerton.edu/academicsaftey/FieltTripsGuidelines.asp

**In-Class Schedule**

| Date | Topic | Elements | Readings | Location |
|---|---|---|---|---|
| W 1/2 | Course Logistics; Revisit Conservation Ecology | Course overview, field trip logistics, misc. assignments<br>Lecture: Fundamentals of Conservation Ecology<br>Lab: Note taking & GPS primer | SER 2017 | CSUF, DBH-268 |
| Th 1/3 | Restoration practices | Lecture: Restoration and forest recovery<br>Lab: Case Study of restoration and the cultural of BCS | Palmer et al Ch 1, 2 | CSUF, DBH-268 |

1/4 – 1/12: Field Trip Days (See Schedule below)

| | | | | |
|---|---|---|---|---|
| M 1/14 | No Class | MLK Holiday | | |
| T 1/15 | Project | Lecture/Lab: Data review and analyses | | CSUF, DBH-268 |
| W 1/16 | Project | Lecture/Lab: Elements of poster presentations, Exam | | CSUF, DBH-268 |
| Th 1/17 | Project | Lecture/Lab: Final poster reviews. Print Posters | | CSUF, DBH-268 |
| F 1/18 | Poster Session | Project Written Report due | | CSUF, DBH-268 |

**Field Trip Itinerary**

| | | | |
|---|---|---|---|
| F 1/4 | Depart | Fly: SNA to Los Cabos<br>Transfer: Los Cabos to San Jose de la Laguna ranch, Sierra de la Laguna Biosphere Preserve;<br>Camp Orientation | Sierra Camp |
| Sa 1/5 | Sierra Laguna Restoration site (RED Baja Academy) | Field discussions: BCS ecosystems, history of ranching, overgrazing<br>Research: site introduction, restoration practices, design development studies<br>Cultural: ranch history | Sierra Camp |
| Su 1/6 | Sierra Laguna Restoration site (RED Baja Academy) | Field discussions: Sierra Laguna natural history, external threats, regional biodiversity<br>Research: implement research project, data collection<br>Cultural: ranch families | Sierra Camp |
| M 1/7 | Sierra Laguna Restoration site (RED Baja Academy) | Field discussions: cultural threats, ecotourism<br>Research: complete project, start analysis<br>Cultural: ranch life, milk cows, make tortillas | Transfer to La Paz |
| T 1/8 | La Paz ecotourism site (RED Baja Academy) | Lecture: La Paz ecotourism, whale shark industry<br>Field trip: La Paz City Tour, whale shark/sea lion excursion | La Paz |
| W 1/9 | Transfer to Sea Turtle research site (RED Baja Academy) | Field discussions: marine biodiversity, marine threats<br>Research: assist with sea turtle data collection and monitoring<br>Cultural: poachers-turned-conservationists | Bahia Magdelena Camp |
| Th 1/10 | Sea Turtle research site (RED Baja Academy) | Field discussions: marine protection areas, challenges of local life<br>Field trip: dune habitat, sea turtle monitoring<br>Cultural: local aquaculture | Bahia Magdelena Camp |
| F 1/11 | Transfer to La Paz (RED Baja Academy) | Field discussions: gray whale migration, mangrove forests<br>Field trip: mangroves and aquaculture | Transfer to La Paz |
| S 1/12 | Return to CSUF | Morning natural history hike<br>Transfer: La Paz to Los Cabos<br>Fly: Los Cabos to SNA | |