New Undergraduate Course Proposal Form

1. Department and Contact Information

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<th>Tracking Number</th>
<th>Date &amp; Time Submitted</th>
<th>Budget Account Number</th>
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<tr>
<th>Department</th>
<th>College</th>
<th>Contact Person</th>
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<tr>
<td>Integrative Biology</td>
<td>Arts &amp; Sciences</td>
<td>Dr. Phil Motta</td>
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<tr>
<th>Phone</th>
<th>Email</th>
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<tbody>
<tr>
<td>4-2878</td>
<td><a href="mailto:motta@cas.usf.edu">motta@cas.usf.edu</a></td>
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2. Course Information

Prefix | Number | Full Title                                      |
--------|--------|-------------------------------------------------|
ZOO     | 3407L  | Biology of Sharks and Rays Laboratory           |

| Is the course title variable? | N |
| Is a permit required for registration? | N |
| Are the credit hours variable? | N |

Credit Hours | Section Type | Grading Option |
-------------|--------------|----------------|
1            | Laboratory   | Regular        |

Total Clock Hours | Abbreviated Title (30 characters maximum) |
15               | Bio of Sharks and Rays Lab               |

Prerequisites

Corequisites
ZOO 3xxx , Biology of Sharks and Rays

Co-Prerequisites

Course Description
The Laboratory portion of 3xxx, Biology of Sharks and Rays

3. Justification

A. Indicate how this course will strengthen the Undergraduate Program. Is this course necessary for accreditation or certification?

There are currently few courses that are organismal level courses. Ichthyology and Herpetology cover the biology of fishes, amphibians and reptiles, but other than that there are few if any courses dedicated to the study of a particular group of animals. The study of sharks and rays is useful to biology undergraduates because it gives them a better appreciation of the diversity of marine life, and educates them on a group of animals that are threatened by overfishing and exploitation. The course also provides a vital course to the Marine Biology track in the IB dept. There is a huge interest in the biology of sharks at the undergraduate level. It is not necessary for accreditation or certification.

B. What specific area of knowledge is covered by this course which is not covered by courses currently listed?

This course explores the diversity, taxonomy, anatomy, behavior, ecology, functional morphology, physiology, reproductive biology, growth, life history, fisheries, conservation, and habitat use of sharks and rays. No other course in the university covers this group to this extent. Few if any courses cover the complete biology and
conservation of one group of animals, especially top level predators in aquatic ecosystems.

C. What is the need or demand for this course? (Indicate if this course is part of a required sequence in the major.) What other programs would this course service?

The Biology of Sharks and Rays course is approved as a major’s elective requirement for the marine biology concentration. Since there are limited options in the concentration, the addition will strengthen the degree. The course is a major’s elective requirement for the biology major. Since there are limited zoology/organismal course options, the Biology of Sharks and Rays course will enhance the degree for students interested in exploring this area of biology. There is evident demand for the course as it is generally filled to its capacity of 60 students when offered with numerous students turned away.

D. Has this course been offered as Selected Topics/Experimental Topics course? If yes, what was the enrollment?

Fall 2008 Enrollment 15

E. How frequently will the course be offered? What is the anticipated enrollment?

Every other Fall semester Anticipated Enrollment 20

F. Do you plan to drop a course if this course is added? If so, what will be the effect on the program and on the students? (Please forward the nonsubstantive course change form regarding the course to be deleted to the Council secretary.)

No

G. What qualifications for training and/or experience are necessary to teach this course? (List minimum qualifications for the instructor.)

A Ph.D. or equivalent degree in Biology, or related discipline.

4. Other Course Information

A. Objectives AND Outcomes

This course explores the diversity, taxonomy, anatomy, behavior, ecology, functional morphology, physiology, reproductive biology, growth, life history, and habitat use of sharks and rays. The goal of this course is to provide students with a broad but in-depth view of the biology of sharks and their relatives. The lecture is primarily based on the text reading, and the student discussion on the scientific paper(s) assigned for that day. Students divide into focus groups and work together to accomplish their set task of leading the paper discussion. However, discussion is primarily at the individual level and all students are expected to participate. The lab portion of the course explores the diversity, anatomy, fisheries, functional morphology, habitat use, and some current aspects of shark and ray research. The goal of the lab is to provide students with a broad but in-depth view of the biology of sharks and their relatives, and to expose students to elasmobranch research. The lab also teaches good, scientific note taking and observation. This lab is designed to supplement the lecture portion of the course and is restricted to a subset of the students enrolled in the lecture/discussion course. Preference is given to Marine Biology track students. This is primarily a hands-on and interactive learning based lab. Each week students are exposed to another aspect of shark and ray biology, with emphasis on sharks. Students attend labs on campus where they will dissect sharks and rays, travel off campus to visit elasmobranch research facilities, and partake in a shark tagging expedition off the Florida coast. Professor Motta leads each lab, and a variety of guests make presentations or tours. Student may occasionally be assigned scientific papers to read and discuss.

B. Major Topics

Introduction and goals of the class Evolution, structure, diversity of Chondrichthyes
Locomotion and movement  Predator-prey behavior and ecology  Feeding and endothermy  Homeostasis  Reproduction  Sensory biology  Age and growth  Life history and genetics  Habitat use  Conservation

C. Textbooks

Professor will provide lab material

5. Syllabus

Your college will forward an electronic copy of your syllabus to Undergraduate Studies when your course is approved for submission.
Biology of Sharks and Rays lab, ZOO 3407L Section 001; 1 credit
Dr. P. Motta Department of Integrative Biology, College of Arts and Sciences
Office SCA 304 phone 813-974-2878 Fax 813-974-3263 motta@usf.edu
Lab location and time: LSA 105 W 1-5
Office Hours Monday 12-5 pm

<table>
<thead>
<tr>
<th>Date</th>
<th>Revised Lab &amp; Topic</th>
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<tbody>
<tr>
<td>Sept 3</td>
<td>Lab 1 General external and internal morphology of sharks</td>
</tr>
<tr>
<td>Sept 10</td>
<td>Lab 2 Myology of sharks</td>
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<tr>
<td>Sept 16 or 17 of 18 or 19</td>
<td>Research Cruise</td>
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<tr>
<td>Sept 24</td>
<td>Lab 3 Muscles/Nervous and sensory systems of sharks</td>
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<tr>
<td>Oct 1</td>
<td>Lab 4 Nervous and sensory systems</td>
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<tr>
<td>Oct 8</td>
<td>No lab</td>
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<tr>
<td>Oct 15</td>
<td>TBA</td>
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<tr>
<td>Oct 22</td>
<td>Shark research at USF Tampa</td>
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<tr>
<td>Oct 29</td>
<td>Florida Aquarium</td>
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<tr>
<td>Nov 5</td>
<td>FL Nat Hist Museum – leave early</td>
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<tr>
<td>Nov 12</td>
<td>Mote Marine Lab tour – leave early</td>
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<tr>
<td>Nov 19</td>
<td>TBA</td>
</tr>
<tr>
<td>Nov 26</td>
<td>Whale shark research overview</td>
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<tr>
<td>Dec 3</td>
<td>Turn in log book by 5 PM</td>
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Course description and learning objectives.

This lab portion of the course explores the diversity, anatomy, fisheries, functional morphology, habitat use, and some current aspects of shark and ray research. The goal of the lab is to provide students with a broad but in-depth view of the biology of sharks and their relatives, and to expose students to elasmobranch research. The lab also teaches good, scientific note taking and observation. This lab is designed to supplement the lecture portion of the course and is restricted to a subset of the students enrolled in the lecture/discussion course. Preference is given to Marine Biology track students. This is primary a hands-on and interactive learning based lab. Each week students are exposed to another aspect of shark and ray biology, with emphasis on sharks. Students attend labs on campus where they will dissect sharks and rays, travel off campus to visit elasmobranch research facilities, and partake in a shark tagging expedition off the Florida coast. Professor Motta leads each lab, and a variety of guests make presentations or tours. Student may occasionally be assigned scientific papers to read and discuss.

Course outcomes
At the completion of this lab course students will have a good working knowledge of the evolution, diversity and anatomy of sharks. Utilizing dissection and observation, students will understand how the anatomy and sensory biology of sharks and rays has led to their evolutionary success. Detailed note taking and journal logs of the observations, expeditions, and dissections will provide the students a valuable tool for future research or teaching on the biology of sharks. Students will also learn how to fish for, tag and release large sharks in their natural setting.
Students will learn how to illustrate and take scientific notes of various aspects of shark biology. The lab discourages just taking digital pictures of anatomical structures, instead the students will learn how to illustrate in detail, what they observe.

**Organization**
This is primary a hands-on and interactive learning based lab. Each week students will be exposed to another aspect of shark and ray biology, with emphasis on sharks. Students will attend labs on campus where they will dissect sharks and rays, travel off campus to visit elasmobranch research facilities, and partake in a shark tagging expedition off the Florida coast on the R/V Bellows. The R/V Bellows is a research vessel supported and operated by the Florida Institute of Oceanography. Professor Motta will lead each lab, and a variety of guests will make presentations or tours. Student may occasionally be assigned scientific papers to read and discuss. These papers will be posted on Blackboard. Students may perform the dissections in groups but will keep their individual notebooks from which their individual grade will be assigned. There are no tests; however students are expected to attend all labs.
**Class format**
Each lab period varies, but for the first few labs Professor Motta will direct students in dissection of dead sharks or rays acquired as by-catch from commercial or scientific fishers. After this, students will accompany Dr. Motta on a variety of field trips or lab visitations. The research cruise is optional but highly encouraged as it offers the unique ship-board experience of catching, tagging and working with large, live sharks. More details will be discussed in lab.

**Field trips**
When the class goes on a field trip we will endeavor to provide transportation through USF vehicles, but this may not always be possible as only Dr. Motta can drive the state vehicles and there are no teaching assistants in this course. Therefore, some students may have to meet the rest of the class at the destination, driving their own vehicles or car pooling with other students. Before each field trip we will meet at the loading ramp on the west side of the Science Center (SCA). Students are required to complete a mandatory waiver form before attending any field trip. You will be told what to bring and how to dress for each field trip prior to that trip in the lab session preceding it. Be aware that the state ships have a zero drug tolerance policy so do NOT bring any contraband. If you even have medication drugs you will have to inform the ship’s captain.

**Notebooks**
Each student must keep a hard cover, lined notebook. Students will take copious notes and make illustrations of every lab experience in this notebook, with each lab notated under a separate chapter. This notebook will serve as an educational and scientific logbook of the student’s experiences, dissections, observations, ship-board experiences, animal data, and anything scientifically or educationally related to the lab. Students are required to make, hand drawn quality illustrations of all dissections and anatomical structures. Pictures may not replace these illustrations. The notebook is not a “photo album” of the lab, it must be a scientific and accurate logbook of the experiences, terminology, anatomy, and biology of sharks and rays as encountered during the lab. Students must hand in the neat and well organized notebook by December 3rd at 5 pm for grading and they MUST pick it up in person before the grade is recorded. The notebook should be ready for pick up by approximately December 10th. Do not plan on leaving campus before this is given back to you in person and do not send anyone to pick it up on your behalf. If you are not there to pick it up in person you will be given a grade of I for Incomplete. The incomplete will not be converted to a grade until it is picked up in person. Make a photocopy of the notebook each week in case it is lost. There are no other ways to “bring up your grade” and there is no “extra” work at the end of the semester to elevate your grade. If the notebook is not turned in you will receive a grade of F for the lab.

**Reading:**
Dr. Motta will provide dissection guides for the first few labs. A variety of shark texts will be available in the lab. Students may read a variety of scientific papers and discuss them in lab.

Religious observance
Students who anticipate the necessity of being absent from class due to the observation of a major religious observance must provide notice of the date(s) to the instructor, in writing, by the second class meeting.

Students with disabilities
University and College policies specify that all programs are open to students with disabilities. We will make every attempt to accommodate the special needs of students with documented disabilities. Students with such special needs must provide Dr. Motta with a Memorandum of Accommodations from the Office of Student Disability Services. Students with special needs should meet with Dr. Motta, preferably during the first week of the semester, to make arrangements to accommodate those needs.

Academic dishonesty
The Biology Department does not tolerate academic dishonesty of any kind. Engaging in plagiarism is a form of academic dishonesty, even though a student may plagiarize without any intent to be dishonest. **If you copy even one sentence or one illustration from another student's notebook that constitutes cheating and you will receive a grade of F for the lab course.** A brief, yet informative, discussion of plagiarism may be found at: http://www.tarleton.edu/~mkerr/Avoid_Plagiarism.htm (also see the current Undergraduate Catalogue). If you are not sure what constitutes cheating then read the USF catalog.

Lab decorum
Students are expected to act in a mature and respectful manner to each other and the instructor, and not disrupt the class. Disruption of academic process is defined by the University as an act or words of a student in a classroom or teaching environment which, in the reasonable estimation of a faculty member, (a) directs attention from the academic matter at hand (e.g., noisy distractions; persistent, disrespectful or abusive disruptions of lecture, exam, or academic discussions) or (b) presents danger to the health, safety, or well being of the faculty member or students. University and College guidelines specify that the penalty can range from a verbal reprimand to dismissal from class (with a “W” grade, if passing, or an “F” grade, if not), depending upon the seriousness of the misconduct. During the ship-time field trip on the R/V Bellows students must conform to all FIO rules and regulations. Absolutely no contraband, illegal drugs, or alcohol is allowed on board. Students are allowed to tape the lab lectures.

Departmental policy concerning laboratory participation. This laboratory course requires the use and dissection of preserved or fresh dead fish as an indispensable part of the laboratory exercises. By enrolling in this course, a student agrees to participate in the laboratory experiments that involve dead animals. Although a student who objects on the basis of religious or moral grounds need not participate directly in the dissection of tissues, if no acceptable alternative is available, as determined by the faculty member in charge of the course, the student is expected to participate in data collection from the preparation or dissection, to monitor/manipulate experimental devices involved in the experimental set-up, to participate in discussion related to the data collection, to write lab reports involving the preparation or dissection, and to be examined on material involving the dissection. Failure to participate in any of these activities will have a negative impact on the final grade in the course. It is the student’s
responsibility to bring any concern that may limit participation to the attention of the instructor by the completion of the first laboratory session. All such concerns will be addressed by Professor Motta. All protocols for the use of animals in Department of Biology courses have been approved by the USF IACUC and adhere to all State and Federal regulations.

**Grading**

The final grades are "curved". A letter grade A denotes excellent work, B represents good work, C average or fair work, D means poor, and F is a fail. We do not use the +/- grade system. There are no fixed percentages for A, B, C, D, F. Professor Motta will give the class an ongoing opinion of what constitutes A, B, C etc work after viewing your individual notebooks any time you so request. In general, notebooks should be through, detailed, well organized and neat. The students should clearly and carefully illustrate all dissections and animal structures. Pictures taken with a camera are not a substitute for a good illustration. On the field trips students should take notes pertaining to the sharks or rays observed, as well as their behavior and ecology. On fisheries expeditions students should take detailed notes of the fishing protocol, catches, and any biological facts provided by the staff. You will receive 5 points for attending each lab until its completion. The research cruise is optional but if you attend it you receive 5 points of the 45 possible. If you miss labs you not only forfeit the points for attendance but you will lose points for a partially incomplete notebook. Copy the lab notes from another and you get a grade of F.

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<tr>
<td>Notebook</td>
<td>100 points</td>
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<tr>
<td>Attendance</td>
<td>9 labs at 5 pts per lab = 45 points</td>
</tr>
<tr>
<td>Total</td>
<td>145 points</td>
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**General rules about grading**

Missing lab will therefore affect your grade. Failure to read the assigned readings will affect your grade. Not participating in the lab discussions and dissections will affect your grade. If you morally object to dissecting dead animals speak to Dr. Motta at the beginning of the class and you will be accommodated and not punished. If you miss a lab you MUST have a valid excuse (medical, funerary, police report) and contact Dr. Motta immediately. Coming unduly late to lab (~ 10 minutes) or leaving before lab is done may result in the loss of 5 points unless it’s pre-approved by Dr. Motta. There is absolutely no "make up" work or “extra credit” allowed at the end of the semester. This course may never be taught again so don’t plan on grade forgiveness to replace a bad grade. Incomplete grades (I) for failure to keep a notebook or not attending lab is not an option as there is no possibility of making up the work in subsequent semesters.

**Emergency suspension of classes**

In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: Blackboard, Elluminate, Skype, and email messaging and/or an alternate schedule. It’s the responsibility of the student to monitor Blackboard site for each class for course specific communication, and the main USF, College, and department websites, emails, and MoBull messages for important general information.