Biology of Sharks & Rays Northern Gulf of Mexico

Dr. Dean Grubbs, FSUCML & Dr. Gavin Naylor, FLMNH, UF

July 8 - 21, 2018

BSC4933 & BSC5936 Biology of Sharks and Rays (4 credit hours)

Instructors: Dr. Dean Grubbs, FSUCML & Dr. Gavin Naylor, FLMNH, UF

Prerequisites: BSC2010, BSC2011 lecture & labs or their equivalent

Dates: July 8 -21, 2018 Days 1-7 FSU Coastal & Marine Lab - Days 8-13 Seahorse Key Marine Lab

Fees: The program fee is $1,100 plus university fees. The last day to pay or defer tuition, housing, or fees for all students, without a $100.00 late fee is July 6th.

Registration: FSU students may register on their myFSU portal. If you are a UF student, please contact E’lexis Brewer at ebrewer@fsu.edu for your transient application.

For more information: www.marinelab.fsu.edu

FLORIDA STATE UNIVERSITY COASTAL & MARINE LABORATORY - SEAHORSE KEY MARINE LAB, NATURE COAST BIOLOGICAL STATION

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Course Information

BSC4933 & BSC5936 - Biology of Sharks & Rays - 4 Credit Hours Program Fees $1,100, plus University Fees
Instructors: Dr. Dean Grubbs, FSUCML & Dr. Gavin Naylor, FLMNH, UF (352-273-1954) Dates: July 8-21, 2018
Prerequisites: BSC2010, BSC2011 lecture & labs or their equivalent

Course Description: Biology of Sharks and Rays is an immersion course geared towards upper level
undergraduates and graduate students wishing to pursue research involving sharks, skates, rays and chimaeras.
Information will be disseminated through a combination of lectures, laboratory assignments, and field exercises.
The course will focus on the extant diversity of elasmobranch fishes, their evolution and zoogeography. We will
cover form, function, physiology, and behavior of different species of elasmobranchs emphasizing adaptations to
different habitats. Toward the end of the course we will cover contemporary challenges associated with fisheries
management of elasmobranch populations and their conservation. The course will have a strong field
component, introducing students to some of the species of elasmobranchs that inhabit the varied estuarine,
marine, and deep-sea habitats of the northern Gulf of Mexico. Students that complete this course will gain an
understanding of (1) The evolutionary history of sharks and rays (2) The forces that have shaped their diversity
and biogeographic patterns, (3) The variation in life histories that is exhibited across the group (4) The
physiological, behavioral and morphological adaptations that have allowed elasmobranchs to colonize different
habitats. At the conclusion of the course, students will be able to identify the species that occur in NW Florida
waters, become familiar with a variety of sampling and tagging methods that are used to study their biology, and
explain major environmental and historical influences that have shaped species abundances and distributions.

REGISTRATION: FSU students may register on their myFSU portal. If you are a UF student, please contact E'lexis
Brewer at ebrewer@fsu.edu for your transient application. The program fee is $1,100 plus university fees. The last day
to pay or defer tuition, housing, or fees for all students, without a $100.00 late fee is July 6th.

PLACE: Days 1-7 FSU Coastal & Marine Lab - Days 8-13 Seahorse Key Marine Lab

TEXT: No text. All handouts and readings will be provided in class or made available over the web

READINGS: Students will be given reading assignments which will be posted on the course website or handed out in
class. The lecture presentations and outlines will be posted on the website.

FISH IDENTIFICATION: Students will be expected to be able to identify and understand the taxonomy and
phylogenetic relationships among species studied in the lab.

FIELD TRIPS: We will sample marine, and estuarine habitats over a series of field trips (weather permitting) based
out of the FSU Coastal and Marine Lab (days 1-6) and Sea Horse Key (days 7-13).

LAB ASSIGNMENTS: Laboratory assignments will center around two main topic areas: (1) species identification
and (2) comparative anatomy. Students will carry out dissections and prepare an articulated skeleton and evaluate the
utility of anatomical features for studying adaptation, ontogeny, and evolutionary relationships. These are time
consuming projects that will take up most of the labs during the first half of the course (at FSU Marine Lab)

JAW PRESENTATIONS: Dr. Grubbs is building an elasmobranch jaw collection to be housed at the FSU Coastal
and Marine Lab. The work you carry out during the course will contribute toward this effort. You will be assigned a
species for your jaw preparation, based on availability, during the first evening's lab. Time is built into the schedule to
complete the assignment though it will require work after hours. You will be expected to review the primary literature
associated with the species you work on. At the end of the class, you will present your preparation to the class
describing the skeletal features that are distinctive and interpret these in light of the evolutionary history, life history,
ecology, physiology, and behavior of the species.

LAB PRACTICAL: Lab practical format will be short answer and fill in the blanks. You are expected to be able to
identify any shark or ray examined in lab to species. Also, you should be able to identify selected internal and external
structures of those fish and their basic functions. Questions about habitats and ecology may also be asked.

EXAMS: There will be one lecture exam, a final that will cover all the material covered in the two-week period.

GRADING: Grading will be based on the final exam score (30 pts), lab practical (30 pts), osteological presentation
(20 pts), and lab
This first six days of this course is taught at the Florida State University Coastal & Marine Laboratory, which is 50 miles from the main campus and is located on the coast in St. Teresa, Florida. The lab is remotely located from any shopping - no fast food, no pharmacy, or major grocery stores within a 30 minute drive.

**TRANSPORTATION** -- For FSU Students a shuttle van is provided on the first and last days of class at FSUCML. The van will depart from the King Life Sciences Building, 319 Stadium Drive. Contact Durene Gilbert at degilbert@fsu.edu if you need a ride.

**DORMITORY LIVING** -- Required to get the whole immersion experience. TA’s will be staying as well. **LINENS** -- Twin sheets, pillow case, blanket, towel, and washcloth are provided. Dorm quiet hours are from 10 PM to 7 AM.

**DINING** -- All the cooking and meals will take place in the housing, where you will have access to a kitchen. Every student or faculty member has to fend for him/her/them self. Bring your own food and whatever you want to drink (no alcohol). Please mark everything with your name since you will be sharing refrigerator and cooler space. There is a visitor’s guide in the dorms with a list and directions to restaurants and grocery stores.

**CLOTHING AND FIELD GEAR** -- Field clothes, rain jacket, bathing suit, shoes that can get wet and dirty (flip flops are NOT acceptable; only close-toed and heeled shoes are worn in the field and on boats), hat, sun block, insect repellent. Bring towels with you that you can take in the field since the FSUCML does not provide additional towels.

**WASHER & DRYER** - located outside of Dorm 5 on the waterfront. You must bring your own washing supplies. Please ONLY use HE detergent in the washer.

**WIFI**: Free WIFI via the GUEST connection. If your college or university is a member of EduRoam, then you can connect using your EduRoam credentials. No TV is available.

**For weather and tide conditions**, please see the Waves & Weather section on our website: https://marinelab.fsu.edu/research/waves-weather

**RESTRICTIONS**. No pets are allowed on the property.