

SEMESTER AT SEA COURSE SYLLABUS
University of Virginia, Academic Sponsor

Voyage: Fall 2014

Discipline: Biology

BIOL 1559-501 and 1559-502: Marine Biology (Sections 1 and 2)

Lower Division

Faculty Name: Sergei A. Polozov

Credits: 3, Contact hours: 38

INTRODUCTION

WELCOME!

Please address me as: “Dr. Polozov”

It is my plan and my hope that we will have an interesting and meaningful experience working together in this class. Success of this work will be determined by several factors, and your participation is one of the most important among them. Constant active involvement in the class work will contribute to a productive and stress-free environment where everybody in the class are equal colleagues sharing the same goals. I offer you as much authorship in shaping this class as you are ready to accept: any of your productive suggestions will be considered and implemented if it can improve our work. This syllabus provides general framework for our class; some adjustments are possible during the voyage, and students will be informed about them in class in a timely manner.

Pre-requisites:

1. Comfortable use of Metric System and World Map;
2. Ability to use a digital camera;
3. Ability to resize, e-mail, and incorporate digital images into Word documents.
4. Ability to take written test in English without dictionary/electronic translator.
5. Additional Resources as indicated below.

COURSE DESCRIPTION

This introductory course will explore the structure of marine ecosystems, how they function, and what forms of life inhabit them. Uniqueness of salt-water environment; local and global oceanic patterns of salinity, currents, three-dimensional stratification, etc. will be addressed through the scope of abiotic factors shaping biodiversity within different marine zones. Major groups of marine organisms will be studied including phylogenetic relationships, organization, ecology, and behavioral adaptations. Special attention will be given to human dependency and impact on marine resources and ecosystems. Diverse field experiences will be incorporated into the course providing a variety of opportunities to learn about the marine world following individual preferences and interests.

COURSE GOALS AND OBJECTIVES

COURSE GOALS:

1. To provide a strong background to the student who wishes to understand the nature of marine ecosystems, marine life, and the biosphere in general; interactions between living things and their environment and of general natural laws determining diversity, distribution, and survival of life in the ocean.
2. To demonstrate how human impact on marine environment interacts with fundamental laws of nature.

COURSE OBJECTIVES:

- A. The students who successfully complete this course will, in the area of attitudes,
1. increase in their appreciation of the nature of the scientific process.
 2. recognize precise ways in which marine organisms are adapted to their environment.
 3. understand that personal individual input in the form of service to the world and community is a critical component of human life.
- B. The students who successfully complete this course will, in the area of knowledge,
1. be able to characterize major groups of marine organisms; describe the role of natural selection in the development of species and traits observed within different taxonomic groups.
 2. demonstrate the manner in which adaptation allows organisms to respond to the physical features of their environment.
 3. be able to differentiate between biological success and morphological complexity; between ecologically and evolutionary flexible and conservative taxonomic groups of marine organisms.
 4. identify major abiotic factors shaping the marine environment and the evolution of aquatic life.
- C. The students who successfully completes this course will, in the area of skills,
1. develop their skills in field observations of marine life.
 2. develop ability to identify organisms encountered during the course.
 3. participate actively in biological discussions.
 4. carry out an individually-designed field assignments and present their results in class.

REQUIRED TEXTBOOKS

AUTHOR: Peter Castro, Michael E. Huber

TITLE: Marine Biology

PUBLISHER: McGraw-Hill

ISBN-13 #: 978-0-07-3524207

DATE/EDITION: 2013, 9th ed.

TOPICAL OUTLINE OF COURSE

This is a seminar-based course and every student should expect to participate in it actively.

You should always have one question and one comment relevant to the topic we discuss at any given moment, and you may be invited by the professor to share your question and/or comment with the class at any time. Doing anything in class that is not related to the ongoing discussion will automatically cause an unexcused absence.

All assigned reading from our textbook, as well as learning of all terms in bold font should be completed *before* we meet in class. Class discussions will address main concepts from home reading as well as questions you may have, but they will not duplicate content of the book, so your good preparation is essential. Students are responsible for knowledge and comfortable use of the vocabulary and identification of all major concepts from the assigned chapter(s). Order of chapters covered in the course may be different from the order of chapters in the textbook, so students should be prepared for cross-reference and cross-reading between chapters as required, and based on individual learning curve.

It is strongly recommended to use hard copy textbook in this class.

Our usual work in class on an average day will include:

Terminology quiz (all vocabulary quizzes will be comprehensive, i.e. they can include all previous terms in addition to currently assigned reading; quizzes may be offered at any time of the class period, or twice per day, depending on curriculum and workflow);

Small group discussion when you clarify any questions you may have after independent homework;

Whole class discussion to address questions your small group did not handle;

Lecture from professor on the most challenging and/or important concepts;

Articles, news, video reviews.

Attendance is required, and the attendance roster should be signed personally by every student before the beginning of class (not when class is already in session). Every student can miss one class, and can be late (within 5 min) once without questions asked, but after that points will be deducted from the final grade (please see Grading section below).

All assignments except quizzes and tests in this class should be submitted (via email, or local intranet, or in hard copy as specified in class) as single spaced (Times New Roman, 12 font, standard margins) Word document attached to the message and copied inside the message itself, and/or printed on both sides of the page.

All homework assignments should be submitted before class on day due, and no points will be offered for late submissions.

All assignments should be completed to pass this class.

No laptops, tablets, smart phones, smart glasses, etc. can be used in class, and no audio or video recording is permitted; so no electronic activity is expected on the students' side unless they do specific assignment requiring use of an electronic media.

The day before arrival to a specific port, review of the **Country Data Profile and Ocean Health Index** on Coastal/Marine Ecosystems and Related Economic Activities for this particular country will be due in addition to the reading from the textbook (these documents and/or assignments will be available for students on intranet or in class). Follow-up review of this document will take place after returning from this country, and students will reflect on what they learned when exploring it.

Review of country-related content should be performed within a Local, Regional and Global perspective, and it can include independent reading/analysis in form of written/oral assignments submitted before class; field study on location, and work in class after the visit

(brief presentations, reflections, quizzes, etc.).

COURSE OUTLINE (may be adjusted at any time depending on class work-flow, learning curve, dynamics of the voyage, weather, etc., and in any of these cases students will be informed in advance about any adjustments):

Depart Southampton- August 23:

B1- August 26: INTRODUCTION.

B2-August 28: The Science of Marine Biology (Chapter 1).

Country Data Profile & Ocean Health Index Review: Russia

St. Petersburg: August 30- September 1

B3-September 2: Reflections on Russia. The Sea Floor (Chapter 2).

B4- September 4: Chemical and Physical Features of Seawater and the Ocean (Chapter 3).

Country Data Profile & Ocean Health Index Review: Poland, Germany

Gdansk, Rostok: September 5-9

B5- September 11: Reflection on Poland, Germany. An Introduction to Marine Ecology (Ch. 10).

B6- September 13: Between the Tides (Chapter 11).

Country Data Profile & Ocean Health Index Review: Belgium

Antwerp: September 14-16

Le Havre: September 17-19

B7-September 21: Reflections on Belgium. Estuaries: Where Rivers Meet the Sea (Chapter 12).

B8- September 23: Life on Continental Shelf (Chapter 13).

Country Data Profile & Ocean Health Index Review: Ireland

Dublin: September 24-27

B9- September 29: Reflections on Ireland. Coral Reefs (Chapter 14).

Country Data Profile & Ocean Health Index Review: Portugal, Spain

Lisbon: October 1-2

In transit: October 3

Cadiz: October 4-5

B10- October 6: Reflections on Portugal and Spain. Life Near the Surface (Chapter 15).

Country Data Profile & Ocean Health Index Review: Morocco

Casablanca: October 8-11

B11- October 12: Reflections on Morocco. The Ocean Depth (Chapter 16).

Country Data Profile & Ocean Health Index Review: Senegal

B12-October 14: MIDTERM EXAM (Chapters 1, 2, 3, 10-16)

Dakar: October 16-19

B13- October 20: Reflections on Senegal. The Microbial World (Chapter 5).

B14- October 22: Seaweeds and Plants (Chapter 6).

B15- October 24: Multicellular Primary Producers: Marine Animals Without a Backbone-1 (Chapter 7).

Country Data Profile & Ocean Health Index Review: Ghana

Takoradi: October 25-26

Tema: October 27-28

B16- October 30: Reflections on Ghana. Marine Animals Without a Backbone-2 (Chapter 7).

B17- November 1: Marine Reptiles, Birds, and Mammals-1: Body plan, Anatomy & Morphology (Chapter 9).

STUDY DAY: November 2

B18-November 4: Marine Reptiles, Birds, and Mammals-2: Diversity, Ecology & Behavior; (Chapter 9).

B19- November 6: Marine Reptiles, Birds, and Mammals-3: Reproduction & Populations; Human Impact (Chapter 9).

Country Data Profile & Ocean Health Index Review: Brazil

Field Lab Orientation

Rio de Janeiro: November 7-9

In-transit: November 10-11

Salvador: November 12-14

(Field Labs: Group-1 -- November 13, and Group-2 – November 14)

B20- November 16: Reflections on Brazil. Marine Fishes-1 (Chapter 8).

B21- November 18: Marine Fishes-2 (Chapter 8).

Study Day: November 19

B22-November 21: Field Lab Reports are Due. Resources from the Sea (Chapter 17)

Country Data Profile & Ocean Health Index Review: Barbados

Bridgetown: November 22-24

B23-November 26: Reflections on Barbados. Human Impact on Marine Environment (Ch. 18).

B24- November 28: The Oceans and Human Affairs (Chapter 19). REVIEW

Country Data Profile & Ocean Health Index Review: Cuba

Havana: November 29- December 2:

Study Day- December 3

B25-December 5 (B Day Finals): COMPREHENSIVE FINAL EXAM

FIELD WORK

Attendance and participation in the Field Lab is Mandatory.

FIELD LAB

One 8-hour Field Lab is required in this class with follow-up Field Journal based on specific parameters provided in class before this lab (70 points total: 20 p – involvement and participation, 20 p – Field Notes, and 30 points -- Field Journal).

The Field Journal is based on your *Field Notes* that you take in a pocket size notebook on the go during the day. It is one of the most important parts of any field work and it should be considered a major priority of your learning work-load.

Guidelines below outline the main aspect of journaling on the field trip (details will be explained during orientation before the field lab).

1. All entries should be 100% honest, factual, and with no extrapolation, stretch, or making things up.

2. Field journal entries should be totally completed at the end of the following day when all your memories are fresh, sharp, and not mixed with the new following information. Under extraordinary circumstances journaling may be postponed, but never longer than for 30 hours.

3. Habitats visited should be described in terms of landscape and vegetation every time when moving from one of them to another, and photographed.

4. Every specific observation should be separated from the previous and from the following one with double space and should include:

1- time (military time format only);

2- self-sufficient description of the phenomena addressed with:

a- as many numerical parameters as reasonably possible, and

b- answering as many potential questions about this particular observation as possible.

5. Names of the species should be correctly spelled and underlined every time when they are used. Latin names are only required on a species lists.

6. A Species List is built in a chronological order of observation/identification for the taxonomic groups specified in class before the lab.

Field Lab attendance is mandatory for all students enrolled in this course. Please do not book individual travel plans or a Semester at Sea sponsored trip on the day of our field lab.

Specific Field Lab for this course is:

ECOLOGY AND CONSERVATION OF SEA TURTLES (TAMAR Sea Turtle Project)

This field lab is planned for Salvador de Bahia.

Group 1: Thursday, 13 November

Group 2: Friday, 14 November

This lab is 70 points (Participation -- 20 points; Field Notes – 20 points, and Field Journal – 30 points).

As a preparation to this lab students will create and review data sheets on sea turtles. During the introductory field lecture by the professor, students will learn firsthand about sea turtles ecology, anthropogenic impact on their populations, and major problems related to conservation within the context of the specific site.

Field work on the site will include two parts:

1. Exploration of different aspects of the TAMAR project related issues: research behind of the conservation; facilities; educational work; management of tourism; sequence of practical steps on implementation of the entire conservation procedure. This work will incorporate independent observations; collection of factual data from available published, printed, and posted sources; interviewing of staff members and visitors.
2. After the break group will be assembled on the ocean shore and will explore part of the coast as an example of the coastal ecosystem, diversity of biotic and abiotic conditions, biodiversity, and anthropogenic impact. Conclusive part of the lab will include independent observation on the coast as a part of the sea turtle environment.

Collection of data during independent observations will be performed in accordance with specific protocols provided before the lab. Results will be collected when taking Field Notes on the site, and on return will be assembled into a Field Journal in accordance with instructions provided in class.

Field Lab Academic Objectives:

1. Study of Tamar project including biological, social, cultural, and economic aspects of conservation of rare marine species;
2. Study of ecology, reproduction, incubation, and reintroduction of young turtles into the wild;
3. Study of specific coastal environment, and of anthropogenic impact on coastal ecosystems;
4. Development of independent field observational skills, and field data processing.

FIELD ASSIGNMENTS

In addition to the Field Lab one Independent Field Assignments (IFA, 3+ h of the field work; 30 points,) should be performed during the voyage and documented in the form of a IFA Report (3 pages of text; 2,000 words) including:

Date, time;

Location (Country, city, specific location/facility)

Goal of the assignment;

Weather conditions;

Data & Discussion:

detailed description of the activities performed;

all major facts gathered/observed and with pictures (resized to 320 x 240 pixels)

illustrating all major meaningful points of interest;

independent comments and analysis of the collected information.

Conclusion: conclusive statement on: a- your analysis of the collected information; and b-

on the efficiency and logistics of this IFA.

Students are encouraged to perform IFA in small groups but with clear understanding and planning how they will produce strictly individual reports.

In every port students will have diverse opportunities to do their IFA while exploring a broad spectrum of course-related problems (within the context of the particular location, and depending on availability of resources):

1. Diversity of coastal ecosystems;
2. Terrestrial and aquatic environmental factors shaping observed coastal and marine ecosystems;
3. Vertical zonation and biodiversity within intertidal zones;
4. Biodiversity of the coastal areas (with emphasis on the taxonomic group of interest);
5. Biodiversity in aquatic ecosystems (snorkeling research);
6. Human impact on coastal ecosystems;
7. Fishing (whaling, aquaculture) practices;
8. Fish markets as reflections of both natural and social/economic aspects;
9. Local fishing communities (villages, towns);
10. Natural exhibits (aquarium, zoo, museum, etc.);
11. Conservational initiatives (national parks, preserves, ecological trails, educational centers, etc.);
12. National mass media involvement/participation in coverage of the management of coastal ecosystems and ocean resources.

Rubrics above represent general fields of inquiries, and students will be encouraged to plan their IFAs in advance specifically in accordance with their personal interests.

Every student should be ready to present (and several students will be randomly selected to do it) about his/her IFA in class in form of 5-min Power Point Presentation providing description of IFA, collected facts, and meaningful critical analysis of collected data.

METHODS OF EVALUATION / GRADING RUBRIC

GRADE SCALE (including both objective and subjective components):

A	95%-100% + <u>outstanding</u> performance class
A-	90% -94.9% + <u>outstanding</u> performance class
B+	87%-89.9% + <u>above average</u> performance in class
B	84%-86.9% + <u>above average</u> performance in class
B-	80% -83.9% + <u>above average</u> performance in class
C+	77%-79.9% + <u>average</u> performance in class
C	74%-76.9% + <u>average</u> performance in class
C-	70% -73.9% + <u>average</u> performance in class

- D+** 67%-69.9% + **below average** performance in class
- D** 64%-66.9% + **below average** performance in class
- D-** **60%**-63.9% + **below average** performance in class

Performance standards:

Outstanding – consistent efforts on improvement, consistent participation and full attention in class; never late, never missing class without excuse;

Above average – tangible trend to improvement, often participation and good attention in class; never late, never missing class without excuse;

Average – periodic efforts and periodic participation and passive attention in class, meeting all deadlines; never late, never missing class without excuse;

Below average – not enough efforts to improve; lack of participation and attention in class; being late; missing class without excuse;

It is extremely important to pay full attention to these *performance standards* (above), because students too often are fully focused only on points, forgetting that their own motivation, general attitude, working ethics, and the overall working mode are much more important and are actually the main factors determining efficiency of learning and final grade.

ELEMENTS OF EVALUATION

ATTENDANCE & PARTICIPATION	10% (50 points)
FIELD EXPERIENCE	20% (100 p: 70 p Lab +30 p IFA)
QUIZZES & HOME ASSIGNMENTS	30% (150 p)*
MIDTERM EXAM	20% (100 p)
FINAL EXAM	20% (100 p)
TOTAL:	100% (500 p)*

(* = approximately; it can vary depending on the amount and nature of specific assignments)

As indicated above, all homework assignments should be submitted before class on day due, and no points will be offered for late submissions. All assignments should be completed to pass this class.

Attendance is required in this class, and only extraordinary circumstances can cause you to miss the class. Every student can miss one class with no questions asked, but after that every absence should be individually documented with written signed explanatory note provided before the class you are intended to miss (any recording is prohibited in this class, so if missing the class please do not plan to ask somebody to record it). In case of sickness note from the medical personnel serving this voyage is required.

Undocumented absences (as well as falling asleep, or any activity in class which is not related to the ongoing discussion/assignment) will be considered as an unexcused absence and will result in a 10-point deduction from the final grade for each case. Students missing three classes without an excuse, or five classes total (including excuses) cannot pass this class.

Student missing Field Lab cannot pass this course.

Please do not be late. Second and subsequent tardy will result in deduction of 5 points each from the final grade (being late for 20 min or more will be considered an absence). If you are late and come to class when a terminology quiz is already in session, you cannot take it.

In the very improbable case of student behavior representing any obstacle for teaching/learning process, this student may be asked to leave the class and it will be considered as

unexcused absence. Breaking any rules/policies approved for this class/voyage can cause penalties in the form of deduction of points for participation from final grade based on professor's discretion.

Any cheating or plagiarism (including copy/paste without quotation) will result in "F" grade for this class with no right to audit this course after that.

Please remember that in case of any complications, concerns, problems, etc. you always address them to your teaching professor first. Do it as soon as possible, do not let it grow; the sooner you deal with it, the easier it is to fix.

RESERVE LIBRARY LIST

AUTHOR: Randall R. Reeves, Brent S. Stewart, Phillip J. Clapham, James A. Powell

TITLE: Guide to Marine Mammals of the World

PUBLISHER: Alfred A. Knopf, NY

ISBN #: 0-375-41141-0

DATE/EDITION: 2002, 1st ed.

AUTHOR: Peter Harrison

TITLE: Seabirds of the World. A photographic Guide

PUBLISHER: Princeton

ISBN #: 0-691-01551-1

DATE/EDITION: 2003

ELECTRONIC COURSE MATERIALS

Data sheets for specific countries and topics; handouts and other supporting materials for the approved field labs prepared by professor will be available on the ship's intranet.

Students are encouraged to utilize resources available at the textbook related Student Center Online: http://glencoe.mcgraw-hill.com/sites/0076651851/student_view0/ when doing homework.

ADDITIONAL RESOURCES

1. INTRO CARD: Standard white 3 x 5" index card with nicely glued or taped (no staplers, please) official current passport picture (no selfies, please), and typed (no handwriting, please; use font 16 for your name, and smaller font as required to fit the rest of the information on the card) and formatted to fit the size of the card answers to the following questions (feel free to use both sides of the card):

- a. Your name (bold font 16), and the number of this course;
- b. Where you are from;
- c. Your school (name, city, state), and your status as a student (freshmen-senior);
- d. Any Biology and/or Environmental Science courses you have taken earlier;
- e. Previous trips outside of the US (if any, where, when, for what purpose);
- f. Other courses you are taking on this voyage;
- g. Your ideal career 5 years after graduation;
- h. Hobbies; what makes you special (optional);
- i. The one thing you do best;
- j. Your e-mail address.

Please prepare this card before the trip, and bring it with you to our first class (it will be graded as a part of your participation). These cards will be used in class every day (only the professor will have access to them and will see them, so your privacy never will be compromised).

2. Digital camera;
3. Binoculars (optional; minimal recommended magnification 10 x 40)
4. Pocket-sized all-weather notebook with waterproof paper
(like Rite in the Rain: <http://goo.gl/qAzI7O>)
4. Watch with stopwatch.

HONOR CODE

Semester at Sea students enroll in an academic program administered by the University of Virginia, and thus bind themselves to the University's honor code. The code prohibits all acts of lying, cheating, and stealing. Please consult the Voyager's Handbook for further explanation of what constitutes an honor offense.

Each written assignment for this course must be pledged by the student as follows: "On my honor as a student, I pledge that I have neither given nor received aid on this assignment." The pledge must be signed, or, in the case of an electronic file, signed "[signed]."

Please remember that you always will be considered as an equal colleague by your professor in this class, and nobody will watch your behavior, but in case of cheating or any other obvious breach of academic integrity you will be immediately expelled from the class with "F" grade, and you will not be permitted to audit this course after that.

FINAL WORD

Certain items in this syllabus can be interpreted as strict disciplinary requirements, and they are not. They are simply some tools helping all of us to be successful in our work during this amazing opportunity, and with our common positive and responsible attitude they will not be even implemented. The whole purpose of this experience is to provide you with creative freedom in your productive learning, when you contribute to the class work while learning and helping others to learn (I expect to learn a lot from all of you). We will all have extraordinary adventure in our lives while participating in this voyage, and I very much look forward to working with you this semester.

Thank you.

Dr. S.P.