

Instructor: **Dr. Kristy A. Lewis**
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Office: SH 214
Office hours: By appointment via Google Calendar

TA: Hannah Starnes
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Details: Lecture, Tuesday/Thursday 8:00AM – 10:50AM
River Center Classroom (**DO NOT PARK AT THE RIVER CENTER**)
Lab, Tuesday 1:00PM – 3:50PM
Schaefer Hall 112 (Location likely to change depending on lab, see Blackboard Calendar)

Prerequisite: BIOL 271 (Ecology and Evolution)

Website: All course info will be uploaded to BlackBoard

Course Description and Goals: This course is an overview of the ecology of coastal systems including rocky coasts, salt marshes, mangroves, seagrasses, and beaches. There will be an emphasis on estuaries, in particular, Chesapeake Bay. During the course, students will examine the physical, chemical, and biological processes and their interrelationships. Students will learn concepts in coastal geomorphology, physical oceanography, biogeochemistry, biology, ecosystem ecology, and anthropogenic impacts as related to estuaries and coasts. These topics will be examined through lecture, discussion, student presentations, laboratory/field work, and student research projects in order to develop an understanding of the function of coastal systems and their significance to the marine ecosystem as a whole. After completion of the course, students should have knowledge of the physical, chemical, and biological processes operating in this system. Student should understand how these systems are formed, and why and how they are important. In addition, students should understand that anthropogenic factors affect these systems. Through this course, students will also strengthen their presentation and discussion skills, and their ability to interpret scientific literature and think critically.

Because of the location of the College on the tidal St. Mary's River, the primary emphasis in the laboratory will be on estuarine systems. Through lab and field exercises, you will learn methods used to measure and describe the physical, chemical and biological characteristics of the broader Chesapeake Bay and the St. Mary's River estuary. We will analyze and discuss water quality, nekton, plankton, and benthic macroinvertebrate data for the St. Mary's River and other Chesapeake Bay estuaries in order to gain a better understanding of estuarine function and to develop analytical skills. In addition, you will participate in a team research project based on some aspect of coastal ecology. As part of these projects, you will review the relevant literature, develop appropriate methods, collect and analyze data, write papers and present your results to the class. Other objectives of the laboratory include reinforcing field and laboratory skills.

Student Learning Objectives

- At the completion of BIOL 463, students will be able to recall scientific names and ecological niches of common Chesapeake Bay organisms as demonstrated by identifying them with practical lab exams.
- At the completion of BIOL 463, students will be able to execute statistical analysis of ecological data.
- At the completion of BIOL 463, students will be able to design novel research project by asking an original research question using hypothesis testing.

- At the completion of BIOL 463, students will be able to present scientific data in a manner appropriate to a specific audience.

Course Content and Instructional Methods: The course consists of lectures, student presentations, social media assignments, labs and various other assignments associated with either lab or lecture. Below you will find a list of lecture topics by week along with the associated chapters that you are responsible for reading prior to lecture. Lectures will consist of power point presentations that will be posted to our BlackBoard the day before lecture. All students will give a 15-minute (max) presentation in class on a scientific paper chosen from the given options (the topic does not have to correspond with the lecture topic of that week). Each presentation will be followed by a 15-minute question and discussion session about the presentation and the assigned paper. Reading and interpreting scientific papers is part of the course; your grade will be based your ability to communicate the science in a way that a lay audience can understand it. Students will also host a class Twitter account, see Blackboard for more details. There will be various small assignments giving intermittently during the semester and those will be given during lectures and details posted to Blackboard.

Lab: In first three labs of the semester, students will form research groups, learn sample designs and methods, and identify a research question(s) they wish to answer during the semester. Over the next four labs, the entire class will participate in data collection at two different field sites: St. Mary’s River and Point Lookout State Park, with two sample stations per site. In the remaining labs, students will process samples, record data, prep data, and analyze data using EXCEL, R and the ecological software, Primer-E with PERMANOVA (don’t worry, I’ll be teaching you everything you need to know in terms of statistical analyses!). Each research team will host their own website, where their results will be constantly uploaded and updated after processing and analyzing the data. Each team will create a poster that will be presented at the Student Research Symposium the last week of classes. As individuals, you will write a short term paper modeled after a scientific journal article. We will write the term paper iteratively throughout the semester so that it doesn’t feel like a huge assignment, as that is how papers are developed anyway, iteratively.

Grading:	2 midterm exams	100 pts each
	Cumulative Final	150 pts
	Term Paper	100 pts
	Poster	100 pts
	Student Presentations	100 pts
	Current Event Tweets	40 pts
	Small Assignments	50 pts
	Lab Assignments/Participation	60 pts

A culture of mutual respect: It is the St. Mary’s way to respect your peers, and I have a zero tolerance policy for disrespect, injustice, or any form of oppression in the classroom. With your help I aim to create a safe classroom space for all who inhabit it, where we are free to make mistakes in the pursuit of knowledge, and where we can trust each other to be a part of a supportive community. Please do your part!

Accommodations: It is college policy to provide reasonable accommodations to students who have disabilities as well as being in compliance with The Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. If you have a disability for which a Letter of Accommodations has been developed with the Coordinator of Disability Support Services please make an appointment with me as early as possible (Add your Office Number and Building, phone number, office hours) in order to discuss those accommodations. If you have a documented disability and have not met with the Coordinator of Disability Support Services you are encouraged to contact the Office of Academic Services, Glendening Hall, Suite 230, (240) 895-3153 as early as possible for a confidential review of supporting documentation.

Student Code of Conduct:

Students are expected to abide to the policies on academic honesty as stated in the College Catalog and the Code of Student Rights and Responsibilities.

In all assignments and communications, **plagiarism** will not be tolerated. This applies equally to oral and written communications in the context of any evaluated (graded) course assignments. Work submitted for credit in a different class cannot be resubmitted for credit in this class. In presenting quotes, paraphrasing statements or logical arguments from others in any medium (on-line, oral or written), students should properly cite their source. Any public usage of original material from this course (e.g., presentations, images, etc.) without explicit permission of its creator shall be construed as stealing. As stated in the Student Code of Conduct, infractions may result in invalidated credit for dishonorable work and lowered grade, including failure from the class, suspension or dismissal. Inquiries for clarification from the professor are welcome. Thank you in advance for your conscious attention to these issues.

Absenteeism Policy: Please inform your instructor via email in advance if you will be absent from class due to sickness or other reasons.

Lecture Topics

Week	Topic	Readings
8/30 9/1	Intro to Class and Coasts; Coastal and Estuarine Processes	Ch. 1
9/6 9/8	Geomorphology Student Presentation 1	Ch. 2
9/13 9/15	Biogeochemistry; Student Presentation 2 Student Presentation 3	Ch. 3
9/20 9/22	Microbial Ecology; Student Presentation 4 Student Presentation 5	Ch. 9 and 10
9/27	Exam 1: Physical and Biogeochemical Considerations	
9/29	Phytoplankton and Benthic Algae; Student Presentation 6	Ch. 4 and 8
10/4 10/6	Phytoplankton and Benthic Algae, continued Student Presentation 7 & 8	Ch. 8
10/11 10/13	NO CLASS NO CLASS	
10/18 10/20	Zooplankton, Zoobenthos and Bay Inverts; Guest Lecture: Saltmarshes, Mangroves and SAV; Student Presentation 10	Ch. 11, 12 Ch. 5, 6, and 7
10/25 10/27	Estuarine Nekton & Fisheries; Student Presentation 9 Review for Test; Student Presentation 11	Ch. 13
11/1 11/3	NO CLASS Exam 2: Biological Life in Estuaries	
11/8 11/10	Estuarine Food Webs; Student Presentation 12 Multivariate Statistics for Research Projects; Student Presentation 13	Ch. 16 Primer, Ch. 1 & 2
11/15 11/17	Global Warming and other Human Impact; Student Presentation 14 Guest Lecture in LAB: Adrian Dahood-Antarctic Ecosystems Project work and website development-(<i>Meet in Ecology Lab for lecture and lab</i>)	Ch. 19
11/22 11/24	NO CLASS NO CLASS	
11/29 12/1	Term Paper/ Poster Prep-(<i>Meet in Ecology Lab for lecture and lab</i>) Term Paper/ Poster Prep-(<i>Meet in Ecology Lab for lecture and lab</i>)	
12/6 12/8	Project and Poster Final Preps-(<i>Meet in Ecology Lab for lecture and lab</i>) In class Poster Presentations-(<i>Meet in Ecology Lab for lecture and lab</i>)	
12/8	Student Research Symposium 4:00PM – 5:30PM	

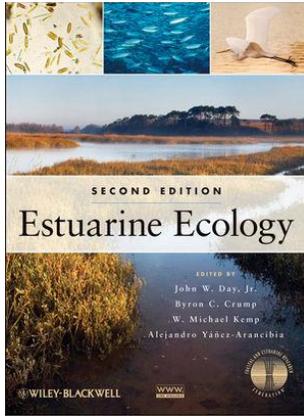
Final Exam (Coastal Ecosystem and Global Change Symposium)

Date: Monday, December 12, 2016

Time: 9:00AM – 11:15AM **Details to come before Thanksgiving Break

Readings:

Assigned textbook:



Day, J. W. Jr., B. C. Crump, W. M. Kemp and A. Yáñez-Arancibia (eds). 2012. *Estuarine Ecology*, second edition. Wiley-Blackwell, New Jersey. ISBN: 978-0-471-75567-8.

This book is accompanied by a companion website:

www.wiley.com/go/day/estuarineecology

Other suggested readings for this class:

Bertness, M. D., S. D. Gaines and M. E. Hay (eds). 2001. *Marine Community Ecology*. Sinauer Associates, Inc. Sunderland, MA.

Woodroffe, C. D. 2002. *Coasts: Form, process and evolution*. Cambridge University Press, Cambridge, UK.