420.625.51 ECOLOGY AND ECOSYSTEM MANAGEMENT IN COASTAL AND ESTUARINE SYSTEMS

Spring 2020: Course Information and Syllabus

Instructors:

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Meeting times:

Wednesdays 6:00 PM – 9:00 PM (Room #407)
Saturdays 10:00 AM – 1:00 PM (Room #407)
Campus location: DC

Course information:

This course is part of Johns Hopkins Krieger School of Arts and Sciences (KSAS), Advanced Academic Programs (AAP) in the Environmental Sciences and Policy Program (ESP). The course examines the physical, chemical, and biological processes affecting coastal and estuarine ecosystems, with special emphasis on the Chesapeake Bay and mid-Atlantic region. Human influences on such large and critical ecosystems and the policy decisions made to manage and minimize human impact are explored in lecture and seminar formats. Topics include the hydrodynamics of shallow tidal waters; energy and material flows and transformations; diversity and adaptation of plant, animal, and microbial communities; population and pollution ecology as well as ecosystem management. Case histories illustrate problems in fisheries management and the eutrophication of coastal and estuarine systems. There is a required overnight field trip on April 23-26. Prerequisite: 420.611 Principles and Methods of Ecology, equivalent course, or experience.

Course Objectives

1. Understand the major physical, chemical, and biological processes affecting coastal and estuarine ecosystems, including water movement, nutrient cycling, energy transfer and land-water interfaces.

2. To become familiar with the major biological communities, food webs and habitats in tidal and coastal waters, including adaptations for life, life history strategies, population dynamics, and biotic interactions.

3. To understand the ecological services and economic activity associated with tidal and coastal waters and their habitats.

4. To become familiar with the impacts of human activities on estuarine and coastal ecosystems, including environmental policy and regulation, land use change, fishery management, resource extraction, energy generation, pollution, marine debris, eutrophication, sedimentation, invasive species and climate change.

5. To become familiar with historical, current and planned management activities and critical issues in estuarine and coastal waters, including mitigation, restoration and enhancement.
6. To become familiar with case histories of key living resources, including those of importance in Chesapeake Bay.

7. For students to gain experience teaching an advanced topic in a classroom setting.

Course management

The on-line part of this course uses the Blackboard course management tool. If you are enrolled in this course you are automatically included in Blackboard for this course. You will need to use your JHED ID to log in. All assignments, readings, and field trip advice will be available through Blackboard. Be sure to check Blackboard as soon as you register for the course.

NOTE: All emails to you will use the JHU system and your Johns Hopkins email account. During the course, be sure to check your email account regularly.

Course requirements:

**Attendance:** This course requires a significant time investment over the course of the semester. Students are expected to attend and actively participate in all lectures and the four day field trip on April 23-26. Students are responsible for understanding the university’s policies and procedures regarding withdrawing from the course, and being aware of the current deadlines and penalties for dropping classes.

**Code of Conduct:** Please see [http://advanced.jhu.edu/wp-content/uploads/2013/01/AAP1101_CodeofConduct.pdf](http://advanced.jhu.edu/wp-content/uploads/2013/01/AAP1101_CodeofConduct.pdf) for information on expectations. Students should also read and adhere to JHU’s policy on plagiarism: [http://advanced.jhu.edu/students/plagiarism/](http://advanced.jhu.edu/students/plagiarism/).

Proper course etiquette regarding communication verbally or electronically shall be required. This is a professional atmosphere and requires appropriate language and decorum fit for students and faculty in an educational forum.

**Chesapeake Bay Policy Panel Summary:** Students will write up a summary of their thoughts from the policy panel discussion on January 25th. The report must be submitted by the following class on February 1st. Late papers will receive a ten point per day penalty.

**Online Discussion:** Students will share their thoughts on required readings and react to the posts of others.

**Student Presentation:** Each student will investigate an emerging topic related to estuarine or coastal ecology and management and prepare/deliver a 15-minute presentation on the topic (pre-approval of topic by instructor required).

**Exam:** Students are required to take both the midterm exam and the final exam. Topics and chapters will depend on the material covered in the period prior to the exam. Late exams will receive a 10 point deduction for each day late.

**Policy Paper:** Students will prepare a policy paper or mental model paper. The student will present a policy recommendation or new mental model for the Chesapeake Bay that is at least new for the area. Further guidance will be given by the instructors. The report will be due by May 2nd.
Grading:

Policy Panel Summary 10 points
Online discussion threads on Required readings 15 points
Class discussion/participation 25 points
Student Presentation 25 points
Policy Paper 25 points

Grading scale:
98 – 100% A+
94 – 97% A
90 – 93% A-
88 – 89% B+
84 – 87% B
80 – 83% B-
70 - 79% C
<70% F

Required Text:
None; required readings will be provided electronically on Blackboard.

Additional information:
The field trip will convene in DC at 10 AM on Thursday April 23rd and return by 10 PM on Sunday April 26th. The field trip will be held rain or shine, and a recommended list of things to bring will be provided well in advance of the trip. Activities may include field sampling and touring from motorized boats, kayaking, shoreline activities such as beach seining, lectures and presentations by guest speakers.

Class 1: January 22, 2020
LOCATION: Online
TOPICS/OBJECTIVES: Lecture 1 - Introduction to course
ASSIGNMENT:

Class 2: January 25, 2020
LOCATION: Annapolis, MD Location TBD (10 AM – 1 PM) (online via Zoom if weather is inclement)
TOPICS/OBJECTIVES: Policy panel discussion on Chesapeake Bay
ASSIGNMENT:

Class 3: February 1, 2020
LOCATION: Washington DC Center (10 AM – 1 PM)
TOPICS/OBJECTIVES: Coastal and Estuarine Policy concerning the Chesapeake Bay
ASSIGNMENT: This will be a synchronous 1 on 1 consultation on policy paper topics with course instructors. Students will flesh out their idea for a policy paper (should have ideas from the panel discussion the previous week).

Class 4: February 5, 2020
LOCATION: Washington DC Center (6 PM – 9 PM)
TOPICS/OBJECTIVES: Lecture 2 – Physical Characteristics and how they affect estuarine and coastal ecosystems
ASSIGNMENT:

Class 5: February 15, 2020
LOCATION: Washington DC Center (10 AM – 1 PM)
TOPICS/OBJECTIVES: Lecture 3 – Chemical characteristics and how they affect estuarine and coastal ecosystems
ASSIGNMENT:
Class 6: February 22, 2020  
LOCATION: Washington DC Center (10 AM – 1 PM)  
TOPICS/OBJECTIVES: Lecture 4 – Nutrient dynamics and impacts to estuarine ecosystems  
ASSIGNMENT:

Class 7: February 26, 2020  
LOCATION: Washington DC center (6 PM – 9 PM)  
TOPICS/OBJECTIVES: Lecture 5 – Biological Characteristics and how they affect estuarine and coastal ecosystems  
ASSIGNMENT:

Class 8: March 4, 2020  
LOCATION: Washington DC Center (6 PM – 9 PM)  
TOPICS/OBJECTIVES: Lecture 6 – Biological Characteristics and how they affect estuarine and coastal ecosystems  
ASSIGNMENT:

Class 9: March 11, 2020  
LOCATION: Washington DC Center (6 PM – 9 PM)  
TOPICS/OBJECTIVES: Lecture 7 – Contaminants and Contaminant Impacts  
ASSIGNMENT:

Class 10: March 25, 2020  
LOCATION: Washington DC Center (6 PM – 9 PM)  
TOPICS/OBJECTIVES: Lecture 8 – Resources and resource management  
ASSIGNMENT:

Class 11: April 18, 2020  
LOCATION: Washington DC Center (10 AM – 2 PM)  
TOPICS/OBJECTIVES: Lecture 8 – Student Presentations  
ASSIGNMENT:

Class 12, 13, 14, 15: Field Trips April 23 - 26, 2020  
LOCATION: TBD  
TOPICS/OBJECTIVES:  
ASSIGNMENT:

Class 16: May 2, 2020  
LOCATION: Washington DC Center  
TOPIC/OBJECTIVES: Due date for Policy Paper