

## 420.625 ECOLOGY AND ECOSYSTEM MANAGEMENT IN COASTAL AND ESTUARINE SYSTEMS

### Spring 2018: Course Information and Syllabus

#### Instructors:

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#### Meeting times:

Wednesdays 6:00 PM – 9:00 PM tentative  
Saturdays 10:00 AM – 1:00 PM tentative  
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 19-22. 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 19-22. 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/>.

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.

**Field Trip Report:** Students will write up their experiences during the extended field trip as a short report. The report must be submitted electronically by midnight on Friday April 27. 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.

### Grading:

Field trip report	10 points
Online discussion threads on	
Required readings	15 points
Class discussion/participation	25 points
Student Presentation	25 points
Final Exam	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 19<sup>th</sup> and return by 10 PM on Sunday April 22. 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 13, 2018**

LOCATION: Washington DC Center (10 AM – 1 PM)

TOPICS/OBJECTIVES: Introduction to course, **Lecture 1** - Physical and Chemical Characteristics and how they affect estuarine and coastal ecosystems

ASSIGNMENT:

**Class 2: January 20, 2018**

LOCATION: Washington DC Center (10 AM – 1 PM)

TOPICS/OBJECTIVES: **Lecture 2** - continuing the topic of Physical and Chemical Characteristics

ASSIGNMENT:

**Class 3: January 24, 2018**

LOCATION: Washington DC Center (6 PM – 9 PM)

TOPICS/OBJECTIVES: **Lecture 3** – Biological Characteristics of Estuarine and coastal ecosystems

ASSIGNMENT:

**Class 4: January 31, 2018**

LOCATION: Washington DC Center (6 PM – 9 PM)

TOPICS/OBJECTIVES: **Lecture 4** – Resources and Resource Management

ASSIGNMENT:

**Class 5: February 3 (Feb. 10 is backup), 2018**

LOCATION: Field Trip to National Aquarium in Baltimore (10 AM – 3 PM)

TOPICS/OBJECTIVES: Coastal and Estuarine Biota

ASSIGNMENT:

**Class 6: February 24, 2018**

LOCATION: Washington DC center (10 AM – 1 PM)

TOPICS/OBJECTIVES: **Lecture 5** – Nutrient Dynamics and Impacts to Estuarine Ecosystems

ASSIGNMENT:

**Class 7: March 7, 2018**

LOCATION: Washington DC Center (6 PM – 9 PM)

TOPICS/OBJECTIVES: **Lecture 6** – Resource Management Case Studies

ASSIGNMENT:

**Class 8: March 17, 2018**

LOCATION: Washington DC Center (10 AM – 1 PM)  
TOPICS/OBJECTIVES: Special Topic Student Presentations  
ASSIGNMENT:

**Class 9: March 28, 2018**

LOCATION: Washington DC Center (6 PM – 9 PM)  
TOPICS/OBJECTIVES: **Lecture 7** – Contaminants and Contaminant Impacts  
ASSIGNMENT:

**Class 10: April 7, 2018**

LOCATION: Washington DC Center (10 AM – 1 PM)  
TOPICS/OBJECTIVES: **Lecture 8** – Resource Management Case Studies cont.  
ASSIGNMENT:

**Class 11, 12, 13, 14: Field Trips April 19 - 22, 2018**

LOCATION: TBD  
TOPICS/OBJECTIVES:  
ASSIGNMENT:

**Class 15: April 25, 2018**

LOCATION: Washington DC Center  
TOPIC/OBJECTIVES: Take Home Final exam