College of Public Health & Health Professions

*Syllabus*

**Aquatic Systems and Environmental Health**

PHC 6301; Section xxx - Spring Semester Mondays Periods 4-7

***Coursemaster*:**

Andrew S. Kane, Ph.D.

Department of Environmental and Global Health

College of Public Health and Health Professions

Aquatic Pathobiology Laboratories, Building 1379

(352) 273-9090; kane@ufl.edu

Office hours: After class and by appointment

**Course overview:**

This team-taught course will provide an overview of aquatic resources including oceans, estuaries, rivers, lakes, streams and ponds, with focus on respective biotic communities and environmental health. We will address the physical and chemical nature of water, and the hydrologic cycle in order to understand water and land usage, and an overview of contaminant effects in different ecosystems. The course will provide a taxonomic and ecological summary of aquatic biota, from algae and invertebrates to vertebrates and pathogens. A case study approach will be used to provide resources pertaining to contaminant input, other anthropogenic activities, harmful algae, and changes in the environment such as climate change. Biotic indices of environmental change, including application of bioindicators, will be discussed and evaluated relative to both environmental and human health.

Students are expected to participate in all modules by reviewing all resources provided and interacting with the instructor and fellow students on-line though discussion boards and email. Each student is required to lead a critical discussion of a journal article as assigned. Each student is also required to give an oral presentation on an assigned/approved topic that will be recorded and posted to the course website for “in-class” discussion. The approved topic will focus on some aquatic aspect of environmental and public health. A PowerPoint “notes” presentation on the same topic will also be developed and uploaded by the student as the written component of this assignment.

**Learning objectives:**

*Upon successful completion of this course students will be able to:*

1. Describe the different types of aquatic environments and respective biota;
2. Discuss outcomes, in a broad sense, of natural and anthropogenically-accelerated environmental change on aquatic systems;
3. Exhibit competence using the terminology, jargon, and acronyms that are commonly used to describe water quality and aquatic systems;
4. Describe sources and understand mechanisms of infection for various waterborne diseases;
5. Describe biological and water quality factors that influence environmental contaminant exposure, uptake and toxicity to aquatic organisms
6. Describe a variety of contaminants that can enter aquatic systems and understand the mechanism by which a variety of biota may be affected;
7. Critically review scientific literature pertinent to aquatic and environmental health; and
8. Organize and present well-synthesized scientific discussions, using oral, written and visual formats, on topics relevant to aquatic biology, and environmental and public health.

**Course materials:**

Handouts for lectures and other reading materials will be distributed via the course website.

**Course requirements and grading**:

Grades will be based on class participation and discussions (10%), the critical discussion of journal articles (10%), quizzes (14%), a midterm (20%) and a final (20%) exam, and both an oral and written presentation of an assigned topic on aquatic environmental health (25%).

Critical review assignment. Journal article titles will be offered within the first three weeks of the course. Student presentations of the articles will take place during weeks 8-12.

Midterm exam will take place midway through the course – date to be announced within first three weeks of course. Final exam will be administered during the final week of the course or during finals week.

Oral presentation assignments will take place during class during the last 2 weeks of class. It is the student’s responsibility to make an appointment with the instructor to discuss presentation content, use of visuals for PowerPoint, and overall formatting at least 4 weeks prior to the presentation date. Additional appointments for discussion relative to developing these presentations should be made are greatly encouraged. The written “notes” version of the assignment must be reviewed with the instructor, and electronically submitted to the instructor (dates for review and submission will be announced).

Course evaluations will be completed prior to the administration of the final exam.

Letter grades will be assigned according to the following scale:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Percentage or points earned in class** | **93%-100%** | **90%-92%** | **87%-89%** | **83%-86%** | **80%-82%** | **77%-79%** | **73%-76%** | **70%-72%** | **67%-69%** | **63%-66%** | **60%-62%** | **<60%** |
| **Letter Grade equivalent** | A | A- | B+ | B | B- | C+ | C | C- | D+ | D | D- | E |

Letter grades for this course translate to the following grade points at the University of Florida:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Letter****Grade** | **A** | **A-** | **B+** | **B** | **B-** | **C+** | **C** | **C-** | **D+** | **D** | **D-** | **E** | **WF** | **I** | **NG** | **S-U** |
| **Grade****Points** | 4.0 | 3.67 | 3.33 | 3.0 | 2.67 | 2.33 | 2.0 | 1.67 | 1.33 | 1.0 | 0.67 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

#### Topical Outline *(as listed for traditional classroom delivery)*

|  |  |  |
| --- | --- | --- |
| Date | Topic(s) | Instructor(s) |
| Week 1 | Introduction, policies, assignments, journal reviews; Physical & chemical nature of water | KaneKane |
| Week 2 | No class | MLK Day |
| Week 3 | Hydrogeology of watersheds, wetlands, groundwater contamination; Aquatic Biota: overview and plants | JawitzKane |
| Week 4 | Aquatic Entomology;Mosquito-and vectorborne diseases | CudaOkech |
| Week 5 | Fish diversity, anatomy & adaptations; Aquatic stress and pathology | KaneKane |
| Week 6 | Scientific communications; Review of oral & written presentation assignment; Introduction to aquatic toxicology | Kane |
| Week 7 | “Field Class” – Natural Area Teaching Lab (UF/Other) | Kane |
| Week 8 | Endocrine disruption; MIDTERM EXAM | Kane |
| Week 9 | No class | Spring Break |
| Week 10 | Toxicity of metals and pesticides (journal article reviews) | Kane/Barber |
| Week 11 | Biomarkers; Aquatic microbiology (journal article reviews) | Kane/Barber; Johnson |
| Week 12 | Aquatic zoonotic diseases (journal article reviews) | Kane |
| Week 13 | Aquatic amphibians and reptiles; Birds; Mammals | Kane/Spalding |
| Week 14 | Epidemiology case studies | Kane/Morris |
| Week 15 | Student final presentations; Case studies (con’t) | Kane |
| Week 16 | FINAL EXAM | Kane |

**Course Modules** (as listed for online delivery)

Introduction and communication methods (week 1):

Course overview and expectations

Journal article assignment

Student project assignment

Scientific communication methods

Water environments (weeks 2-4):

Physical and chemical nature of water

Freshwater, estuarine and marine environments

Aquaculture systems, production and water quality

Sampling and testing water

Hydrology of watersheds, wetlands and groundwater

Biotic diversity (weeks 4-6):

Aquatic Plants

Aquatic Entomology

Fish diversity, anatomy and adaptations

Aquatic birds

Aquatic mammals

Aquatic amphibians and reptiles

Journal article discussion (weeks 1 and 7):

Methods and expectations (week 1)

Student-led discussions (week 7)

[Midterm exam (week 8)]

Contaminant stressors in the aquatic environments (weeks 8-11):

Introduction to aquatic toxicology

Endocrine disruption

Toxicity of pesticides

Toxicity of metals

Biomarkers of exposure and response

[Critique of draft environmental health presentations (week 11)]

Dis-ease associated with the aquatic environment (weeks 12-14):

Mosquito and vector-borne diseases

Aquatic microbiology

Aquatic stress and pathology

Aquatic zoonotic diseases

Case studies

Environmental health student presentations:

Methods and expectations (week 1)

Scientific communication techniques (week 1)

Critique of draft presentations (week 11)

Student project presentations, critiques and submission of notes (week 15)

[Final exam (week 16)]

Statement of University’s Honesty Policy (cheating and use of copyrighted materials):

All students are expected to abide by the University of Florida’s honor code and code of conduct. Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior, Information pertaining to these codes can be viewed via the two website below, respectively:

http://www.dso.ufl.edu/judicial/honorcode.php

http://www.dso.ufl.edu/studentguide/studentconductcode.php

**Policy related to class attendance, make-up exams and other work:**

Students are expected to attend and be prepared to participate in all class sessions. Personal issues with respect to class attendance or fulfillment of course requirements will be handled on an individual basis.

#### Statement Related to Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, you must first register with the Dean of Students Office (<http://oss.ufl.edu/>). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

#### Counseling and Student Health

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with an instructor and to seek confidential assistance at the University of Florida Counseling Center, 352-392-1575, or Student Mental Health Services, 352-392-1171. Visit their web sites for more information: <http://www.counsel.ufl.edu/> or <http://www.health.ufl.edu/shcc/smhs/index.htm#urgent>

The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services, including primary care, women's health care, immunizations, mental health care, and pharmacy services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: [www.health.ufl.edu/shcc](http://www.health.ufl.edu/shcc)

Crisis intervention is always available 24/7 from:

Alachua County Crisis Center: (352) 264-6789.

BUT – *Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance*.

#### Final Note

An updated course syllabus will be posted online by the end of the first week of class; Canvas links to modular course content will be updated the week prior to scheduled content access.