ENVR 296-01S

Special Topics: Humans and their microbiological footprint

Study Abroad Summer Session
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Teaching Assistant: Sarah Rhodes (smccormickrhodes@gmail.com)

Aims: This course will familiarize the student with basic processes in coastal systems, with a focus on human impacts including waste disposal, onsite wastewater systems, wastewater treatment processes, and transport of microbial contaminants. The student will gain an appreciation for state-of-the-art methods for quantification of pathogens and monitoring of indicators. The student will gain an understanding of the impacts of anthropogenic processes that impact complex estuarine ecosystems, especially in heavily developed coastal and island environments.

Strategy of the Class: Subject matter will be presented in the form of a series of formal lectures and classroom demonstration, and in laboratory interaction. The focus will be on coastal systems, but we will also attempt to compare and contrast coastal systems to others around the globe. There will be two exams on some of the basic concepts that are presented in the lectures and in laboratory demonstration and discussion. A final project will be due at the end of the semester and will require groups of students to give a presentation on any of a number of coastal resource issues. Field work and laboratory sessions involving experimental investigations have been designed to reinforce lecture theory and to provide hands-on experience with techniques discussed in lectures and in seminars. Research excursions will require students to work as a team and to develop the technical skills for basic scientific research.

Recommended Reading: "From Monsoons to Microbes: Understanding the Ocean's Role in Human Health", National Research Council. ISBN-10: 0-309-06569-0. Available for purchase or free download at: http://www.nap.edu/catalog.php?record_id=6368.

Course Evaluation: Midterm Exam: 30%, Final Exam: 30%, Lab Report: 10%, Class Exercise and Report: 10%, Group Presentation: 15%, Participation/Teamwork: 5%

Tardiness is built into the participation portion of the grade, multiple examples of tardiness (3), whether for field trips or lectures, will result in complete loss of participation/teamwork points toward grade.

Grading will follow straightforward guidelines: A=90-100, B=80-89, C=70-79, D=60-69. The grading will not be based upon a curve.

We will adopt the honor code in place on campus at Chapel Hill: "It shall be the responsibility of every student at The University of North Carolina at Chapel Hill to obey and support the enforcement of the Honor Code, which prohibits lying, cheating, or stealing when these actions involve academic processes or University, student or academic personnel acting in an official capacity." Adapted from a "How to Have Honor Prevail in Your Classroom", a handout prepared by Margaret Barrett, Judicial Programs Officer, UNC Chapel Hill.

Schedule: Class will meet every day except Sundays, July 2 – July 18 at 9:00am.

Date		Topic / Activity	Hours
Mon	July 2	Introduction and guest speaker from Agrocalidad	3
Tues	July 3	How do we measure microbial water quality?	3
Wed	July 4	Introduction to public health microbiology and visit from local doctor	3
Thurs	July 5	Lab Exercise: Chromogenic substrate methods to detect microbial indicators	3
Fri	July 6	Read lab results; Class exercise to identify a bacterial unknown	3
Sat	July 7	Report out from lab exercises / Test 1	2
Mon	July 9	Introduction to viral and bacterial pathogens*	3
Tues	July 10	Discussion of protozoan pathogens and helminthes*	3
Wed	July 11	Introduction to disease and virulence*	3
Thurs	July 12	What is microbial risk assessment?*	3
Fri	July 13	Field Excursion: Statistically relevant water quality monitoring, and sanitary survey approaches	8
Sat	July 14	Lab exercise: Quantification of fecal indicator bacteria	3
Mon	July 16	Treatment of wastes, transport to receiving waters, and reduction of pathogens / Walking tour of sewers	3
Tues	July 17	Report out from class exercise to identify bacterial unknown / Test 2	3
Wed	July 18	Student Presentations of their Class Projects	4

*Lessons will be led by Prof. Trueba

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