College of Public Health & Health Professions

PHC: 6937

Special Topic: Environmental Infectious Diseases: A Molecular Approach

#### Instructor’s Information Class days, times, and locations

|  |
| --- |
| **John A. Lednicky, PhD**  Mon: 12:50 PM - 1:40 PM; HPNP 4170  Wed: 10:40 AM – 12:35 PM, HPNP 4170  Associate Professor  Environmental and Global Health  College of Public Health & Health Professions  Po Box 100188  Gainesville, FL  32610-0188  Tel: 352-273-9204  [jlednicky@PHHP.UFL.edu](mailto:jlednicky@PHHP.UFL.edu)  **Office hours arranged** |

#### Course Description

This course will provide the graduate student with an overview of environmental microbiology and review the latest tools in microbial ecology. The course will emphasize innovative methods in studying microbial diversity. The course is designed for students preparing for careers in public health.

#### Course Objectives and/or Goals

At the end of this course the student will:

* Possess an introductory understanding of environmental microbiology
* Possess an introductory understanding of molecular amplification, sequencing, and sequence alignment
* Understand the principals of genomics, metagenomics, and proteinomics
* Be familiar with innovative techniques for pathogen discovery and pathogen characterization
* Be familiar with tools used to study pathogen diversity
* Be familiar with methods to study communities of pathogens

#### Topical Outline

| Class No. | Lecture Title | Date |
| --- | --- | --- |
| 1 | Introduction to Environmental Microbiology | Aug. 24 |
| 2 | Introduction to Infectious Diseases | Aug. 26 |
| 3 | Gastrointestinal Diseases | Aug. 31 |
| 4 | Gastrointestinal Diseases (cont’d) | Sept. 2 |
|  | Labor Day – no classes | Sept. 7 |
| 5 | Arthropod-Borne Diseases - 1 | Sept. 9 |
| 6 | Arthropod-Borne Diseases - 2 | Sept. 14 |
| 7 | Legionellosis and Fungal Diseases | Sept. 16 |
| 8 | **Assessment (Practice test)**; General concepts | Sept. 21 |
| 9 | Classic Diagnostic Microbiology-1 | Sept. 23 |
| 10 | Diagnosis of pathogens at different body sites | Sept. 28 |
| 11 | Prions | Sept. 30 |
| 12 | Review for exam 1 | Oct. 5 |
| 13 | **Exam-1** | Oct. 7 |
| 14 | Molecular Techniques – DNA Sequencing and Alignment | Oct. 12 |
| 15 | Molecular Techniques – RNA and Protein Methods | Oct. 14 |
| 16 | Applied Diagnostic Molecular Microbiology | Oct. 19 |
| 17 | Basic aerobiology with emphasis on airborne microorganisms | Oct. 21 |
| 18 | Detection and isolation of microorganisms from environmental surfaces | Oct. 26 |
| 19 | Non-Culturable Microorganisms | Oct. 28 |
| 20 | Molecular Pathogen Discovery Methods | Nov. 2 |
| 21 | **Examination 2** | Nov. 4 |
| 22 | Pathogen Diversity and Virulence Factors | Nov. 9 |
|  | Veteran’s Day – no classes | Nov. 11 |
| 23 | Biofilms and Complex Microbial Communities | Nov. 16 |
| 24 | Persistence of Pathogens in the Environment | Nov. 18 |
| 25. | Metagenomics | Nov. 23 |
|  | Thanksgiving break | Nov. 25 – 28th |
| 26. | Proteinomics | Nov. 30 |
| 27. | Integration of Molecular and Omics Information | Dec. 2 |
| 28. | New Developments and Future Directions | Dec. 4 |
| 29 | **Final Examination** | Dec. 9 |

#### Course Materials

Optional text: [Accessing Uncultivated Microorganisms: from the Environment to Organisms and Genomes and Back](http://estore.asm.org/viewItemDetails.asp?ItemID=760)**.** Editor: Karsten Zengler, University of California, San Diego, ASM Press, April 2008, Book ISBN or Item Number: 978-1-55581-406-9

#### Course Requirements/Evaluation/Grading

Students will be graded on a standard letter scale of A to F. Students will be evaluated by their class participation (20%), 3 regular examination scores (15% each), student presentation (15%), and a final examination (20%). Students who fully participate and attend every session will earn at least a B for the class participation portion of the overall grade. To earn an A in class participation, students must attend each session and demonstrate that they prepared for lectures beforehand (through reading assigned text, interacting with the lecturers,and actively participating in group exercises).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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%** | **Below 60%** |
| **Letter Grade equivalent** | A | A- | B+ | B | B- | C+ | C | C- | D+ | D | D- | F |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 |

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar’s Grade Policy regulations at <http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

#### Attendance Policy

Attendance is mandatory.

#### Policy Related to Make-up Exams or Other Work

***Attendance and Make-up Work*** *–* I expect you 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

**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://www.dso.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.

**Critical Dates for Examinations and Other Work**

On the first day of class the instructor will distribute an updated syllabus and class schedule that will indicate the specific dates of examinations and other class activities.

**Expected Student Demeanor**

Students are expected to arrive in class ready to learn before the class begins. The use of cell phones, pagers or laptop computers (except for class assignments) is not permitted in class!

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

Each student is bound by the academic honesty guidelines of the University and the student conduct code printed in the Student Guide and on the University website. The Honor Code states: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." Cheating or plagiarism in any form is unacceptable and inexcusable behavior.

**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*.