MCB 4203: Bacterial and viral pathogens, Section 3372-Fall 2010 (3 credits)

MCB is an upper division course on pathogens, particularly those of viral or bacterial origin. We will cover a variety of infectious diseases with a strong focus on human pathogens. This course will provide a conceptual background in host-pathogen interactions to enable students to pursue further studies in related fields.

Student Learning Outcomes – After successful completion of this course, students will be able to:

1) Compare and contrast basic groups of pathogenic microbes.
2) Compare and contrast major mechanisms of pathogenicity.
3) Evaluate the impact of infectious diseases on public health.
4) Understand public health measures to reduce disease burden.
5) Summarize mechanisms of host defenses to infection and understand the special concern of pathogen exposure in immune compromised individuals.
6) Compare and contrast the genomic basis of pathogenicity using web based genome analysis tools.
7) Describe the major mechanisms of resistance to antimicrobials.
8) Explain factors facilitating the acquisition and spreading of genes encoding novel antimicrobial resistance mechanisms including de novo mutations and genetic exchange.
9) Describe how pathogens can adapt to their host environment.
10) List different types of symbiotic interactions between microbes and other organisms, including commensalism, mutualism, and parasitism, and provide examples of each.
11) Compare and contrast examples of beneficial host-microbe interactions.
12) Compare and contrast beneficial and harmful use of organisms, including applications in biotechnology and bioterrorism.

Lectures: McCarty-MCC100  M, W, F  7:25 AM to 8:15 AM Period 1

Instructor: Dr. Volker Mai  Office: Emerging Pathogens Institute, Room 373

- Email (the most efficient): Use the e-learning mail in priority, including both, instructor and TA.
- Phone: 273 9398 (please leave a message).
- Office hours:
  - Wednesday: 2:30 to 3:30 PM in EPI lobby (have guard call me).
  - Friday: 8:20 to 9:00 AM at the Bagel shop near the CSE building (The Friday office hour will start 9/27).
  - By appointment: send me a mail (through e-learning) if you have conflicts with the office hour times we will set up an appointment.

Teaching Assistants: Mr. Tyler Culpepper, will help with assignments and exam preparations.

- Email (the most efficient): Use the e-learning mail FIRST!
  In emergency: tygerguy@ufl.edu
- Office hours for TA Tyler: TBA

  https://elearning.courses.ufl.edu/webct/logon/5671562287031

Prerequisite: "C" grade or better in General Microbiology Biology (MCB3020, 3023).

Communication: For questions regarding class and textbook content use the Discussion Board. For issues on Homework Assignments and their grading, contact the TA. For all other issues, contact instructor.
- **Discussion Board:** A discussion board is available in e-learning. It is very useful, please post and answer your questions on class content and organization there. Postings and answers are monitored by the instructor to make sure mistakes don’t get propagated. There are several discussion themes. Please post your questions in the adequate section. The discussion board will also be used for certain graded assignments to prepare for lecture and for the exam study guide.

**Material**

- **Textbooks:** The textbook used in this course is “Microbiology, a Human Perspective”, Nester 6th edition, McGraw Hill. A recommended textbook that will be a good resource in the future is: “Medical Microbiology”, Murray 6th edition, Mosby. Online study materials are available with both books and although not required, they will benefit you in the course.

**Evaluation of learning**

- **Exams (560 points):** Exams will test your understanding of the main concepts covered in this class. Exams will be taken in class or online in a location to be determined.
  - **Exams (360 points):** There will be two one hour exams testing your ability to connect class material and one exam testing your ability to recall details of pathogens on the “most wanted” pathogen list. One of the three exams can be dropped. Exams will test learning and understanding of material presented in the textbook, in lectures and in assignments as well as integration and application skills.
  - **Final (200 points):** The final exam will be comprehensive and mandatory.

**Make-Up policy:** No make-up exams. The lowest score of the three term exams can be dropped. If one exam is missed, the other two exams will count. The final exam is mandatory.

**After the exam:** The grades will be available on the e-learning platform. The exams will not be returned.

- **Assignments (100 points).** Detailed descriptions will be provided via e-learning assignment tab.
  - **Pathogens in the news (40 points).** Students will write a brief summary of a news article (newspaper, journal or online news source) related to a disease outbreak, characterize the causative agent, how it is diagnosed and treated and if possible provide a web link for other students on the e-learning discussion board. Students will receive extra credit points if their news article is mentioned in class, AND if they are present in class when the news article is mentioned. This assignment will test the student’s researching abilities, capacity to synthesize ideas and his/her ability to write clearly. The summary has to be handed in within one week of publication date (12/03).
  - **Lecture summary (10 points).** Microbial growth control (09/03).
  - **Video taped lectures summary (15 points).** Students will submit a written evaluation (11/29).
  - **Genome sequencing project (25 points).** Based on potential impact on public health and knowledge on what pathogens have already been sequenced students will recommend the next important pathogen genome to be sequenced (12/08).
  - **Online self–testing quiz (5 points).** At the beginning of the semester a mandatory quiz will be given on line that can be taken at home. The “What You Should Already Know” quiz will help students evaluate their foundations in Microbiology and helps the instructor evaluate student learning during the semester. The quizzes are graded but you ONLY NEED TO COMPLETE IT FOR FULL CREDIT (09/01).
  - **Short essay on “Emerging pathogen” (5 points).** A short essay describing i) what you understand under the term “Emerging pathogen”, ii) what pathogen you consider the biggest threat, and iii) a paragraph on your motivation for taking this course, will be due the first class after the Labor Day holiday (09/10/09).

- **Extra credit:** There will be a variety of extra credit opportunities (up to 40 points total, max 20 points from tasks other than pop quizzes).
  - **Attending seminars** about pathogens and submitting short written summary of what you have learned within one week (EPI seminars are usually Wed 4pm, https://www.epi.ufl.edu/?q=episeminars, MCS seminars Mon 4pm) - 5 points each/ max 10 points
  - **Pop quizzes:** Reading assigned materials before class will help students to be prepared for discussions. Random pop quizzes will be on note cards or online - max 20 points
  - **Class participation**, especially during case discussions - max 10 points
  - **Active participation in discussion boards** - max 10 points
- The Pandemic Game: successful completion (to be defined) - 5 points

**Grading:**

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**Punctuality and class etiquette:** The class will begin at 7:25 pm. Please be on time and in place. Please do not forget to shut cell phones off.

**Recommendation letters:** Many of you need recommendation letters. Students who both achieve a B+ or higher grade AND show active participation in and outside the class can request letters. Students requesting letters need to attend the last lecture of the semester with a folder containing a picture, resume and GPA, then contact the instructor by e-mail (vmai@ufl.edu not the e-learning e-mail) DURING the 2010 spring semester.

**Academic Honesty:** As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University.

**Software Use:** All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

**Accommodations for Students With Disabilities:** Students requesting classroom accommodation must first register with the Dean of Students Office. This office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

**UF Counseling Services:**
- [University Counseling Center](#), 301 Peabody Hall, 392-1575, personal and career counseling
- [Student Mental Health](#), Student Health Care Center, 392-1171, personal counseling.
- [Sexual Assault Recovery Services](#) (SARS), Student Health Care Center, 392-1161, sexual assault counseling
- [Career Resource Center](#), Reitz Union, 392-1601, career development assistance and counseling