

MCB 5205: MICROBIOLOGY OF HUMAN PATHOGENS Fall 2015 section 24H5

Hybrid Course Delivery: Online (Asynchronous lectures; Canvas course website) and Mondays period 1 (7:25 am – 8:15 am, MCCC 0100; “live” lectures recorded and posted to Mediasite)

Instructor: Dr. Kelly Rice

Office: Room 1147, Microbiology and Cell Science Bldg.

Ph: 352-392-1192, email: kcrice@ufl.edu (*****please use this email for all correspondence, as I check this more often than email through the Canvas course website*****)

Office hours: Wednesdays 9:30 am – 11:30 am

****For off-campus students, please arrange office hour appointments by email (kcrice@ufl.edu). Skype or Canvas will be the communication tool for these appointments.**

Course Description: Survey of advanced topics and current scientific literature related to human host-pathogen interactions and microbial pathogenesis, focusing on emerging bacterial and viral pathogens as agents of human disease, biosecurity, molecular identification methods, spread of multi-drug resistance among bacterial pathogens, drug discovery and alternative treatment research.

Course Objectives: At the completion of this course, students should be able to:

1. Recognize the complex nature of microbial virulence, especially with respect to the multi-faceted interplay between the host immune system and pathogen
2. Describe (using specific examples) the strategies used by bacterial and viral pathogens that are required for host manifestation of disease (attachment and entry into host tissues, evasion of host immune defenses, multiplication in vivo, dissemination and transmission)
3. Identify strategies of treatment and prevention of host infection (ie. vaccines, antibiotics, antivirals, protective role of normal microbiota) and the ensuing response of the pathogen
4. Analyze hypothetical medical case studies using the knowledge gained from objectives 1-3 above.
5. Relate objectives 1-3 above to contemporary research literature in the field of microbial pathogenesis
6. Research, design and create a comprehensive recorded lecture outlining the history, pathogenesis, current treatment strategies, and unanswered questions of a historic, emerging or re-emerging pathogen.

Required Textbook:

1. Wilson et al. Principles of Bacterial Pathogenesis, A Molecular Approach (3rd Edition), ISBN 978-1-55581-418-2

Optional/Recommended Textbook:

1. Jawetz et al. Medical Microbiology, 26th Edition, ISBN 978-0-07179-031-4 (**eBook* available through UF libraries:** <http://uf.catalog.fcla.edu/uf.jsp?st=UF031735546&ix=pm&l=0&V=D&pm=1>)

**Please note that you MUST be logged on to UF library website or Gatorlink VPN to access this eBook off-campus)*

Bibliography of Assigned Readings and Presentations (available online or through UF libraries):

****an online synchronous discussion group for each of these readings/presentations will be scheduled before each exam throughout the semester****

1. Gibson, G. (2011), "Probiotics and prebiotics", in Finlay, B. (ed.), *Microbiota: Agents for Health and Disease*, The Biomedical & Life Sciences Collection, Henry Stewart Talks Ltd, London (online at <http://hstalks.com/bio>) (**EXAM 1**)
2. Daniel J. Hassett, Mark D. Sutton, Michael J. Schurr, Andrew B. Herr, Charles C. Caldwell, Joseph O. Matu. (2009), *Pseudomonas aeruginosa* hypoxic or anaerobic biofilm infections within cystic fibrosis airways, *Trends in Microbiology*, 17: 130-138, doi: 10.1016/j.tim.2008.12.003. (**EXAM 2**)
3. Walker, B. (2007), "How HIV Causes Disease", in Gallo, R. (ed.), *Retroviruses: Biology, Pathogenic Mechanisms and Treatment*, The Biomedical & Life Sciences Collection, Henry Stewart Talks Ltd, London (online at <http://hstalks.com/?t=BL0401757>) (**EXAM 3**)
4. Schultz, G. (2014), "Biofilms and chronic wounds: winning the war in wounds", in Schultz, G. (ed.), *Wound Healing*, The Biomedical & Life Sciences Collection, Henry Stewart Talks Ltd, London (online at <http://hstalks.com/?t=BL1863835>) (**EXAM 4**)

Overview of Course Format:

- MCB5205 is co-taught with the undergraduate course MCB4203 (Bacterial and Viral Pathogens). In addition to the lecture material and exams that are shared with MCB4203, **students enrolled in MCB5205 are required to complete the following: (1) 10% of each proctored exam 1-4 will be drawn from a pool of questions specifically associated with an additional series of four assigned readings/presentations (see Bibliography above); (2) Research and prepare a recorded online lecture (see below for more details).**
- **Email will be primary mode of course correspondence.** Each student is responsible for checking their "ufl.edu" email accounts and Canvas for course messages and announcements.
- Course syllabus, lecture notes, and other tools will be available through the Canvas Learning Support System homepage [<http://lss.at.ufl.edu/>]. You will need to enter your Gatorlink username and password to access the system. If you do not have an active GatorLink ID, cannot remember your GatorLink login information, or if your ID does not work, please refer to the GatorLink website [<http://gatorlink.ufl.edu>] or to the UF Computing Help Desk (The Hub, 392-HELP) for assistance.
- All weekly course lectures (pre-recorded), modules, and assignments will be posted on the Canvas course website. Additionally, in-class weekly review sessions (attendance is optional but encouraged) will be held on **Mondays during period 1 (MCCC 0100)**. These live review sessions will be recorded by Mediasite and will be accessible through Canvas. Questions regarding lecture and other online material should be addressed during weekly review sessions or during office hours. Additionally, you are highly encouraged to participate in the Canvas course chat room and discussion boards that will be scheduled periodically throughout the semester. The course instructor will not be able to answer emails related to course content or study questions the night before a scheduled exam, so please make sure to take advantage of all the options mentioned above.

- **A note regarding course materials and copyright:** All course materials posted on the Canvas course website are assembled and intended for students taking MCB4203/MCB5205 ONLY, and this is why they are only available for student use from our secure Canvas course website. Currently, the format is such that you may download most course materials (lectures, notes, etc) from Canvas for “offline” study purposes while you are enrolled in the course. However, re-posting of any of these materials to websites such as “course-hero”, You Tube, or Facebook is strictly forbidden by the course instructor and is considered a violation of copyright policies. If such “re-posting” is found to occur, lecture videos will no longer be available in a downloadable format. Likewise, re-posting textbook pdfs is an infringement on the publisher’s copyright, so please do not get yourself in trouble by doing this. Unauthorized re-posting of all course materials (including textbook pdfs) infringes on UF’s copyright policies and the "Fair Use" Act (<http://www.generalcounsel.ufl.edu/fag/Copyright.pdf>).
- **Weekly “homework”:** There will be 15 weekly online quizzes or mini-assignments, based on the weekly lecture material, posted readings and/or case-studies. Each quiz is worth 10 points and will typically consist of 5 multiple-choice questions OR 1-2 short answer (1 paragraph) essay-style questions. ***At the end of semester your lowest 5 quiz scores will be dropped from your grade calculation. In other words, the top 10 quiz scores will be used in calculating your grade (10 x 10 points = 100 total points).*** These are open-book quizzes (administered through Canvas) that are meant to help you review the course material and practice for the exams. Students are welcome to study together and in fact collaboration is encouraged on many assignments. However, each student is responsible for submitting his/her own quiz by the posted due date.
 - IF A STUDENT FAILS TO COMPLETE A QUIZ PRIOR TO THE DUE DATE, THEY WILL RECEIVE 0 POINTS FOR THAT ASSIGNMENT OR QUIZ. EXTENSIONS OR “MAKE-UP” QUIZZES WILL NOT BE GIVEN UNDER ANY CIRCUMSTANCE, WITH THE EXCEPTION OF PROOF OF TECHNICAL DIFFICULTY (see below) THAT PRECLUDES ON-TIME SUBMISSION. The structure of the final course grade calculation with respect to the quizzes (dropping the 5 lowest quiz scores) is designed to give you a “buffer” for those rare occasions where a quiz cannot be completed due to illness, absence, or random forgetfulness. Therefore please do not ask the instructor to accept late quizzes or re-open quizzes, the answer will always be “no”...
 - CANVAS HINTS for ONLINE QUIZ AND ASSIGNMENT SUBMISSION (provided by UF Computing Help Desk): It is recommended that you take online assessments during Help Desk hours whenever possible. If you have a problem while taking an Assessment, log out and log back in as quickly as possible. If the assessment is timed, the timer will continue to run while you are logged out. ***If you still encounter difficulties, take a screen shot of the problem (Hit the “Print Scrn” button on your keyboard and paste “CTRL+V” into a program like Word or Paint) so the Help Desk can investigate and you will have “proof of technical difficulty” of the problem for your Instructor.*** Call the Help Desk (352-392-4357) immediately. When you submit an Assignment/Assessment you get a confirmation screen that contains a confirmation number. You might want to make a habit of capturing a screen shot or printing it for your records. The Assignment/Assessment list will also show this Assignment/Assessment as "submitted" including the date and time of your submission. If you do not get the confirmation screen and your Assignment/Assessment is not listed as "submitted," you have not submitted the Assignment.
- **Presentation:** Each student enrolled in MCB5205 will be responsible for choosing a historic, emerging, or re-emerging pathogen (bacterial or viral) of interest, and will research and preparing a recorded online lecture (to be submitted through Canvas course website) outlining the history, pathogenesis (both host and pathogen aspects), current treatment strategies (if any), and

unanswered questions in the field of study. 15 multiple-choice questions will also be submitted with the recorded lecture, and the instructor will choose questions from these that will appear on MCB4203 Exam 4. This presentation will be due towards the end of the semester (to be announced).

- **Reference Letter Policy:** Academic reference letters may be provided at the instructor's discretion to students ranking in the top 20% of the final course grades. Please keep in mind that these letters will be strictly academic letters (i.e. your scholastic abilities and participation in the course) and will not elaborate on other things like personal attributes, leadership and research potential, since these are qualities that are very difficult for the instructor to assess in a large-class environment. For more tips on reference letters please refer to the first lecture of the semester (Monday Aug 24th "live"/mediasite lecture). Letters must be requested no later than 6 months after the end of the course.
- **Online Course Evaluation Process:** Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.
- Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See <http://distance.ufl.edu/student-complaints> for more details.

Overview of Exam Testing:

- All exams for this course will be administered through Canvas and students will take them online through ProctorU.
 - In order to maintain a high standard of academic integrity and assure that the value of your University of Florida degree is not compromised, course exams are proctored online by ProctorU. You will take your exam electronically using the Canvas course website, but you will register with ProctorU early in the semester, and then sign up for a time for a certified proctor in a testing facility to observe you on your computer while you take your exam. You need a webcam, speakers, microphone and reliable Internet connection to be able to take your exams. **Wireless Internet connections have been found to cause issues with online exams and it is therefore strongly recommended to NOT use a wireless Internet connection when taking an online, proctored exam. You will also need a mirror or other reflective surface.**
 - [Sign up for an account with ProctorU](#) during the first week of the semester. If you already have a ProctorU account, you can use the same account. [Register with ProctorU](#) for your exam appointment times early in the semester. You must sign up at least **72 hours** before an exam. Failure to do so will result in additional fees and reduce the likelihood that the time you want will be available. You should receive a confirmation email from ProctorU. If you experience any trouble with online registration, you can call **855-772-8678**.

- Prior to each exam, go to the [ProctorU Test Page](#) to ensure your computer is ready for online proctoring. After you get the following 6 checks that your system is ready:



Take the extra step to connect to a live person:



- This process takes just a few minutes and is completely free.
- If you are unable to take an exam because of a technical glitch on your end, that is your responsibility. However, if you do experience technical difficulties during the exam, ProctorU will document those difficulties and communicate with your instructor to make alternative arrangements.
- ***For additional questions, please review the Proctored Exams Student Handout (available under “General Course Resources” Module on Canvas course website).***
- The window for completing each exam will begin at 6 AM on each scheduled exam day (Wednesday) and last through 6 AM on the Friday (Total window for each exam = 2.0 days).
- Although each exam is designed to be completed in 50 minutes or less, **the time-limit on each ProctorU exam will be set at 75 minutes.**
- **Make sure you sign-up for the correct exam course number – MCB5205 + your section number (24H5).**
- Exams are closed-book. Materials such as cell phones, scratch paper, books, notes, calculators, etc. will NOT be allowed during the exam and should not be readily accessible.
- **MAKE-UP EXAMS:** If a student has a legitimate reason for missing an exam, the exam can be made-up at an alternative time as arranged with the course instructor. Documentation supporting the inability to write the exam within the scheduled exam window may be requested by the course instructor. Excused absences follow UF criteria (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor prior to the missed exam whenever possible.

GRADES - The grading scheme for this course is as follows:

Weekly “homework” - 10 points each (100 points total)

EXAMS 1-4: 100 points each (400 points total)

Presentation: 100 points

TOTAL POINTS = 600

Final letter grades will be assigned based on the number of points earned, as follows:

A = 552-600 points	C+ = 462-479.9 points	E = 0-359.9 points
A- = 534 – 551.9 points	C = 438-461.9 points	
B+ = 522 – 533.9 points	C- = 420-437.9 points	
B = 504 – 521.9 points	D+ = 390-419.9 points	
B- = 480-503.9 points	D = 360-389.9 points	

For information on current UF policies for assigning grade points, see

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Should you have any complaints with your experience in this course please visit

<http://www.distance.ufl.edu/student-complaints> to submit a complaint.

Academic Honesty, Software Use, Campus Helping Resources, Services for Students with Disabilities

Academic Honesty:

In 1995 the UF student body enacted an [honor code](#) and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge:

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the university, the following pledge is either required or implied: "**On my honor, I have neither given nor received unauthorized aid in doing this assignment.**"

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office. *(Source: 2012-2013 Undergraduate Catalog)*

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor.

These policies will be vigorously upheld at all times in this course.

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.

Campus Helping Resources:

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

□ *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,*
www.counseling.ufl.edu/cwc/

Counseling Services Self-Help Library
 Groups and Workshops Training Programs
 Outreach and Consultation Community Provider Database
 Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc

TENTATIVE SCHEDULE OF WEEKLY LECTURE TOPICS:

WK	TOPIC(S)	TEXTBOOK CHAPTERS
1	Introduction to Course, Koch's Postulates, Barry Marshall guest lecture (<i>Helicobacter pylori</i> part 1)	Wilson Ch. 6
2	First Lines of Host Defense (<i>Helicobacter pylori</i> part 2)	Wilson Ch. 2
3	Normal Flora/Quantitative and Qualitative Microbial Census ("microbial shift disease")	Wilson Ch. 5
4	Innate and Adaptive Host Immunity	Jawetz Ch. 8
	<u>EXAM 1 WINDOW: WED. SEPT. 23 @ 6 AM – FRI. SEPT. 25 @ 6 AM.</u>	Weeks 1-4
5	Measuring Infectivity and Virulence	Wilson Ch. 8
6	Identification of Bacterial Virulence Factors (bacterial and host approaches)	Wilson Ch. 9-10
7	Bacterial Evasion of Host Defenses (<i>Listeria monocytogenes</i> , <i>Streptococcus pyogenes</i>)	Wilson Ch. 11
8	Bacterial Toxins (<i>Corynebacterium diphtheriae</i> , <i>Clostridium botulinum</i>)	Wilson Ch. 12
	<u>EXAM 2 WINDOW: WED. OCT. 21 @ 6 AM – FRI. OCT 23 @ 6 AM.</u>	Weeks 5-8
9	Introduction to Viruses, Human Cancer Viruses	Jawetz Ch. 29-30, 43
10	Influenza, Smallpox Virus, Vaccine controversies	Jawetz Ch. 34, 39, & TBA reading
11	Measles, Mumps, Rubella	Jawetz Ch. 40
12	Ebola, "Two Favorite viral diseases" (student-voted topics)	TBA
	<u>EXAM 3 WINDOW: WED. NOV. 18. @ 6 AM – FRI. NOV. 20 @ 6 AM.</u>	Weeks 9-12
13	Antibiotics: Modes of Action and Bacterial Resistance (<i>MRSA "superbug"</i>)	Wilson Ch. 15 and 16
14	Biosecurity (<i>Bacillus anthracis</i> , <i>Yersinia pestis</i>)	Wilson Ch. 20
15	Opportunistic Infections (<i>Clostridium difficile</i> , <i>Pseudomonas aeruginosa</i> ,	Wilson Ch. 18-19

	<i>Acinetobacter baumannii</i> , <i>E. coli</i>)	
16	"Two Favorite bacterial diseases" (student-voted topics)	TBA
	<u>EXAM 4 WINDOW: DURING WEEK 16 or FINALS WEEK (to be voted on by students)</u>	Weeks 13-16