SYLLABUS –MIBO 4220-6220, Bacterial Pathogenesis
MWF 10:10-11:00am, Rm 326 Biological Sciences Bldg

INSTRUCTORS

Dr. Anna Karls
Rm 255 Biological Sciences Bldg.
Office ph.: 706-583-0822
akarls@uga.edu

Dr. Christine Szymanski
Rm 2034 CCRC
Office ph: 706-542-4439
cszymans@uga.edu

OFFICE HOURS
By appointment; please arrange with instructor by e-mail

PREREQUISITES
MIBO3500 (we will assume you have a reasonable understanding of introductory microbiology)

RESOURCES
Required textbook- *Bacterial Pathogenesis: A Molecular Approach* Third Edition by Wilson, Salyers, Whitt & Winkler.
Books on reserve at Science Library: (1) *Cellular Microbiology,* Cossart et al., ASM Press, (2) *Bacterial Pathogenesis: A molecular Approach* 3rd edition (3) *Basic Immunology,* Abbas & Lichtman, Saunders Press (4) Brock's *Biology of microorganisms*.
eLC- The eLC site is your source for assignments, lecture powerpoints, and other resources. You are responsible for making sure that you have access and know how to use the class eLC site. Check the site daily for assignments and announcements. In addition, you will submit assignments on the eLC assignment dropbox. Always check that your assignment is properly uploaded and in the correct dropbox!! If you are having technical problems with eLC, send the assignment to the instructor's e-mail and then go to this site for help: http://ctl.uga.edu/elc/student

LEARNING GOALS
Students will understand*:*
- How bacteria are integrally related to both human health and disease
- How host defenses respond to bacteria and can contribute to disease
- The process of bacterial pathogenesis from both molecular and physiological perspectives
- Experimental approaches to define bacterial pathogenesis
- The activity of antimicrobials and how resistance arises in pathogens
- Vaccine design
- The mechanisms by which new pathogens emerge
- How to examine the four macromolecules of life

Students will be able to:
- Critically read research literature and interpret experimental data on bacterial pathogenesis
- Design experimental approaches to define virulence factors and pathogenesis pathways
- Identify the bacteria causing disease and predict the progression of disease based on identified virulence factors and/or symptoms

COURSE ORGANIZATION
This course is divided into 4 units:
I. Innate/acquired immunity interactions with bacteria- Jan 9 to Feb 11 **(Exam 1- Feb 11)** –Dr. Karls
II. Vaccines, bacterial virulence strategies, antimicrobial resistance, and more!- Feb 13 to Mar 20 **(Exam 2- March 20)** –Dr. Szymanski
III. Important bacterial pathogens: regulation of virulence, pathogenesis, treatment and prevention- Mar 22 to Apr 22 **(Exam 3- April 22)** –Dr. Karls, Dr. Szymanski
IV. Group presentations on vaccine design and graduate student presentations – Apr 24 to April 29 - Dr. Szymanski, Dr. Karls **(Cumulative Final Exam- May 3, 8-11am)**

Each unit will be detailed on the eLC Course Content Page, including learning objectives, readings, and assignments. YOU are responsible for checking the Course Content Page regularly to get the unit schedules, as they are posted. Ask questions if you are unclear on any assignments or activities!

MIBO6220 or **MIBO4220 Honors:** *Contact Dr. Karls by* ***January 23*** to arrange for a graduate or Honors project. There is a separate syllabus for Grad/Honors that describes projects and grading.

COURSE ACTIVITIES AND GRADING

Group Work:

The class will be divided into groups who will work together on analysis and discussion of research articles, solving case studies, and preparing and presenting a vaccine development project. These group activities are key to your success in this class because the process of posing relevant questions and discussing possible answers leads to higher-level understanding of bacterial pathogenesis. In addition, learning how to effectively solve problems as part of a group is important for your professional development.

Responsibility and Ethics in Group Work: You will work in your group and as a class to understand the research articles, but you will turn in <u>your own</u> answers (*<u>in your own words</u>*) to worksheet questions; identical answers on work that is submitted by individuals will be investigated as academic dishonesty. In addition, when you turn in an assignment as part of a group, everyone in the group is responsible for the assignment; for example, if part of the work is plagiarized, then the whole group is guilty of plagiarism. So, everyone in the group should review and critique the full assignment before submitting it; this means each member must prepare their part of the assignment in advance, so that the rest of the group can review and discuss it before submission.

Graded Components:

Class and Group Participation- You are expected to do the assigned readings before class, be prepared for (and actively participate in) class discussions and group work. Your participation in class and in group work will be evaluated by the instructors; in addition, a rubric will be provided for group members to evaluate their cohorts at the end of the last unit (following the vaccine project). Each student will be assigned a class/group participation grade (5% of your grade) based on the instructors' observations and the evaluations from group members. *If a student receives low evaluations on the group work from their group peers, as well as the instructors, that student's grades on the group work will be lowered accordingly*.

Research Papers (Worksheets and Presentations) and Vaccine Development Presentations- These assignments will have individual and/or group components, which are graded separately. All these assignments count equally toward 20% of the final grade.

Quizzes and Case Studies - Brief quizzes covering the reading material or assigned questions and Case Studies in pathogenesis will be worth 5% of the final grade (grades will be averaged after dropping the lowest score).

Exams: There will be 3 in-class exams (each worth 15% of final grade) and a cumulative final exam (25% of final grade). A missed exam is scored as a zero *unless you have a medical excuse from a doctor that says you could not attend class or an official excuse to attend a University-sanctioned activity. You must have an acceptable excuse for <u>every day</u> you do not take the makeup exam. Any falsification of excuses will be reported as a violation of the academic honesty policy. Also, if a student who missed the exam discusses the content of the exam with another student before taking the makeup exam, both students will be reported for violations of the academic honesty policy.*

If you arrive late for an in-class or the final exam after another student has left the exam period, you may NOT take the exam and cannot take a makeup exam, unless an acceptable excuse is provided. Exams may have a mix of short answer, discussion, diagrams, multiple choice, fill-in tables, discussion, and short answer. You must use a pen to take the exams. If there is a problem with the grading of your exam, *you must submit the exam to Dr. Karls or Dr. Szymanski for consideration*

within 7 days after the exam is returned to the class; please provide a description of the problem in writing, such as "points were added incorrectly", etc.

Bonus pts for seminar write-ups: Seminars that are relevant to bacterial pathogenesis will be announced in class and/or on the eLC site (see the eLC calendar). Attending these seminars is highly recommended to reinforce the concepts that you learn in class. Up to 2 bonus points (added to the possible total 100 points for the course) may be earned by attending two seminars and submitting a write-up for each seminar following the format described in a rubric provided on eLC. Example write-ups are provided on eLC in addition to the rubric. You must follow the rubric in order to get credit for your write-up of the seminar *and the write-up must be submitted in the eLC assignment dropbox "Seminar Write-ups" within two weeks of the seminar date*. Each write-up is worth up to 1 bonus pt, and you may receive a maximum of 2 bonus points. The write up must be for a seminar that is on the seminar list for the class or approved by Dr. Karls or Dr. Szymanski.

NOTE: Acceptance of late assignments is at the discretion of the instructor and, if the assignment is accepted, the grade will be reduced by 10% for each day that it is late.

Summary of Grading:

Class/Group Participation- *5% of course grade;* **breakdown**: participation in class discussions and group work

Quizzes/Case Studies- *5% of course grade*; **breakdown:** multiple quizzes/case studies; lowest quiz/case study grade dropped

Research Article Worksheets and Vaccine Development Presentations- *20% of course grade;* **breakdown:** 3 Research articles worksheets and 1 Vaccine Presentation.

Exams- *70% of course grade;* **breakdown:** 3 in class exams (15% each), a cumulative final (25%)

Grade Scale:

A 100-90, A- 89-87, B+ 86-84, B 83-80, B- 79-77, C+ 76-74, C 73-70, C- 69-67, D 66-60, F <60. Note: grades ending in >.5 round up to the next whole number, e.g. 92.6 rounds to 93, but 92.5 counts as 92.

IMPORTANT INFORMATION REGARDING CONDUCT IN COURSE

All work is individual, i.e. without assistance from anyone, unless otherwise indicated. All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any academic work. Acts of dishonesty, such as plagiarism, unauthorized assistance, lying/tampering, and theft (of ideas, materials, etc.), will NOT be tolerated and will be reported immediately to the Office of Academic Honesty.
http://ovpi.uga.edu/academic-honesty/academic-honesty-policy

Your behavior in this class should reflect the **UGA Code of Conduct**; this includes treating your group partners and classmates with respect in your communications on eLC and in class, and fulfilling your responsibilities in group/class projects.
http://conduct.uga.edu/students/rights.html

The Code of Conduct is based on the Pillars of the Arch:

Wisdom challenges us to apply lessons received inside and outside the classroom to our everyday lives. Wisdom transcends knowledge, embracing curiosity, discovery, and expression throughout our community.

Justice leads us to be fair in our dealings, accountable for our actions, responsible for ourselves, and empathetic for others. Justice requires honesty and celebrates diversity, establishing credibility and integrity for our community and ourselves.

Moderation compels us to act with civility, bolstering our faith in others and the faith others have in us. Moderation accentuates our self-respect, promotes responsible citizenship, and enhances pride in our university."

Computers, smart phones, and electronic pads may only be used for course-related work during class.

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.