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MAY 22 2014

OFFICE OF THE SENATE COUNCIL

1. General Information

1a. Submitted by the College of: MEDICINE

Date Submitted: 11/19/2013

1b. Department/Division: Microbiology, Immunology

1c. Contact Person

Name: Sarah D'Orazio

Email: sarah.dorazio@uky.edu

Phone: 859-323-8701

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

1d. Requested Effective Date: Specific Term/Year [1] Spring 2015

1e. Should this course be a UK Core Course? No

2. Designation and Description of Proposed Course

2a. Will this course also be offered through Distance Learning?: No

2b. Prefix and Number: MI 495G

2c. Full Title: Bacterial Pathogenesis

2d. Transcript Title:

2e. Cross-listing: BIO495G

2f. Meeting Patterns

LECTURE: 3

2g. Grading System: Letter (A, B, C, etc.)

2h. Number of credit hours: 3

2i. Is this course repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester?

2j. Course Description for Bulletin: This course will examine the pathogenic mechanisms used by bacteria to cause human disease. Bacterial virulence factors &host susceptibility factors will be discussed, with an emphasis on understanding the techniques that can be used to identify these traits in newly emerging pathogens.

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2k. Prerequisites, if any: BIO308 BIO315 BCH401 recommended Or permission of instructor.

2l. Supplementary Teaching Component:

3. Will this course taught off campus? No

If YES, enter the off campus address:

4. Frequency of Course Offering: Spring,

Will the course be offered every year?: Yes

If No, explain:

5. Are facilities and personnel necessary for the proposed new course available?: Yes

If No, explain:

6. What enrollment (per section per semester) may reasonably be expected?: 30-40

7. Anticipated Student Demand

Will this course serve students primarily within the degree program?: Yes

Will it be of interest to a significant number of students outside the degree pgm?: No

If Yes, explain:

8. Check the category most applicable to this course: Traditional – Offered in Corresponding Departments at Universities Elsewhere,

If No, explain:

9. Course Relationship to Program(s).

a. Is this course part of a proposed new program?: Yes

If YES, name the proposed new program: Minor in Microbiology for B.A. or B.S. students in Biology

b. Will this course be a new requirement for ANY program?: No

If YES, list affected programs:

10. Information to be Placed on Syllabus.

a. Is the course 400G or 500?: Yes

b. The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from **10.a** above) are attached: Yes

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1.How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2.How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3.How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4.Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5.How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6.How do course requirements ensure that students make appropriate use of learning resources?

7.Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8.How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (http://www.uky.edu/UKIT/)?

9.Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10.Does the syllabus contain all the required components? NO

11.I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|BGARV0|Beth A Garvy|MI 495G NEW Dept Review|20131119

SIGNATURE|MRWH224|Melissa R Wilkeson|MI 495G NEW College Review|20140124

SIGNATURE|ZNNIKO0|Roshan N Nikou|MI 495G NEW Graduate Council Review|20140221

SIGNATURE|JMETT2|Joanie Ett-Mims|MI 495G NEW Undergrad Council Review|20140522

Courses | Request Tracking

New Course Form

https://myuk.uky.edu/sap/bc/soap/rfc?services=

Open in full window to print or save

Generate R

Attachments:

Browse... Upload File

	ID	Attachment
Delete	3248	Bacterial Pathogenesis Syllabus 031214.docx

First 1 Last

Select saved project to retrieve... Get New

(*denotes required fields)

1. General Information

a. * Submitted by the College of: MEDICINE Submission Date: 11/19/2013

b. * Department/Division: Microbiology, Immunology

c.

* Contact Person Name: Sarah D'Orazio Email: sarah.dorazio@uky.edu Phone: 859-323-8701

* Responsible Faculty ID (if different from Contact) Email: Phone:

d. * Requested Effective Date: ○ Semester following approval OR ◉ Specific Term/Year [1] Spring 2015

e.

Should this course be a UK Core Course? ○ Yes ◉ No

If YES, check the areas that apply:

☐ Inquiry - Arts & Creativity	☐ Composition & Communications - II
☐ Inquiry - Humanities	☐ Quantitative Foundations
☐ Inquiry - Nat/Math/Phys Sci	☐ Statistical Inferential Reasoning
☐ Inquiry - Social Sciences	☐ U.S. Citizenship, Community, Diversity
☐ Composition & Communications - I	☐ Global Dynamics

2. Designation and Description of Proposed Course.

a. * Will this course also be offered through Distance Learning? ○ Yes [4] ◉ No

b. * Prefix and Number: MI 495G

c. * Full Title: Bacterial Pathogenesis

d. Transcript Title (if full title is more than 40 characters):

e. To be Cross-Listed [2] with (Prefix and Number): BIO495G

f. * Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours[3] for each meeting pattern type.

3	Lecture		Laboratory[1]		Recitation		Discussion
	Indep. Study		Clinical		Colloquium		Practicum
	Research		Residency		Seminar		Studio
	Other	If Other, Please explain:					

g. * Identify a grading system:

◉ Letter (A, B, C, etc.)
○ Pass/Fail
○ Medicine Numeric Grade (Non-medical students will receive a letter grade)
○ Graduate School Grade Scale

h. * Number of credits: 3

i. * Is this course repeatable for additional credit? ○ Yes ◉ No

If YES: Maximum number of credit hours:

If YES: Will this course allow multiple registrations during the same semester? ○ Yes ○ No

j. * Course Description for Bulletin:

This course will examine the pathogenic mechanisms used by bacteria to cause human disease. Bacterial virulence factors & host susceptibility factors will be discussed, with an emphasis on understanding the techniques that can be used to identify these traits in newly emerging pathogens.

k. Prerequisites, if any:

BIO308
BIO315
BCH401 recommended
Or permission of instructor.

l. Supplementary teaching component, if any: ○ Community-Based Experience ○ Service Learning ○ Both

3. *** Will this course be taught off campus?** ○ Yes ◉ No

If YES, enter the off campus address:

4. **Frequency of Course Offering.**

a. * Course will be offered (check all that apply): ☐ Fall ☑ Spring ☐ Summer ☐ Winter

b. * Will the course be offered every year? ◉ Yes ○ No

If No, explain:

5. *** Are facilities and personnel necessary for the proposed new course available?** ◉ Yes ○ No

If No, explain:

6. *** What enrollment (per section per semester) may reasonably be expected?** 30-40

7. **Anticipated Student Demand.**

a. * Will this course serve students primarily within the degree program? ◉ Yes ○ No

b. * Will it be of interest to a significant number of students outside the degree pgm? ○ Yes ◉ No

If YES, explain:

8. *** Check the category most applicable to this course:**

☑ Traditional – Offered in Corresponding Departments at Universities Elsewhere
☐ Relatively New – Now Being Widely Established
☐ Not Yet Found in Many (or Any) Other Universities

9. **Course Relationship to Program(s).**

a. * Is this course part of a proposed new program? ◉ Yes ○ No

If YES, name the proposed new program:

Minor in Microbiology for B.A. or B.S. students in Biology

b. * Will this course be a new requirement [5] for ANY program? ○ Yes ◉ No

If YES [5], list affected programs::

10. **Information to be Placed on Syllabus.**

a. * Is the course 400G or 500? ◉ Yes ○ No

If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in **10.b**. You must include: (i) identi additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See SR

b. ☑ * The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if appl **10.a** above) are attached.

[1] Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.
[2] The chair of the cross-listing department must sign off on the Signature Routing Log.

MI 495-G/BIO495-G BACTERIAL PATHOGENESIS
University of Kentucky
Spring 2015

Course Organizer: Sarah D'Orazio, Ph.D.
sarah.dorazio@uky.edu
(859) 323-8701
Office: Medical Sciences Building Room MS417
Office hours: TBD

Credits: 3 (meets for 1.5 h twice a week)

Prerequisite: BIO 308 (General Microbiology), BIO315 (Intro to Cell Biology)
BCH 401 recommended

Textbook: Bacterial Pathogenesis: A Molecular Approach (3rd edition)
Wilson, B., Salyers, A, Whitt, D., & Winkler, M. ASM Press 2010

Course Description. This course will examine the pathogenic mechanisms used by bacteria to cause human disease. Bacterial virulence factors & host susceptibility factors will be discussed, with an emphasis on understanding the techniques that can be used to identify these traits in newly emerging pathogens.

Learning Objectives. At the end of this course, students will:

- understand the difference between pathogenic and non-pathogenic bacteria.
- understand basic concepts regarding the host immune response to infection.
- know how and why bacteria regulate gene expression in different environments.
- know how the route of transmission influences infectivity.
- be able to describe how each type of virulence factor promotes bacterial growth in the host.
- be able to describe experimental approaches used to identify bacterial virulence factors.

Instructors:

Sarah D'Orazio, Ph.D.	Room MS 417, UKMC	sarah.dorazio@uky.edu	(859) 323-8701
Alan Kaplan, Ph.D.	Room MN 408, UKMC	akaplan@uky.edu	(859) 323-8966
Carol Pickett, Ph.D.	Room MN 374, UKMC	cpicket@uky.edu	(859) 323-5313
Katerina Wolf, Ph.D		kwo227@uky.edu	

Attendance. Students are expected to attend each lecture. Although the textbook is comprehensive and contains study questions at the end of each chapter, some of the material you are responsible for will come from the scientific literature and will be presented only during the lecture. The Powerpoint files used during each lecture will be made available on Blackboard; however, a review of these presentations should not be considered an adequate substitute for attending class. A portion of your final grade (5%) will be determined by evaluating your level of participation in the classroom discussion.

> S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (B) illness or death of a family member, (c) University-related trips, (d) major religious holidays and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Classroom behavior. Information is widely available in our digital world. The reason you enroll in classes at the university is to *interact with professors* who can clarify, explain, and provide context for the things you read about in your textbook or other source materials. Accordingly, I encourage students to ask questions and engage in productive discussions during our classroom periods. I expect cell phones to be silenced and put away. Laptop computers or tablets should be used *only* to take notes. If you choose to focus on instant messaging or surfing the internet instead of the lecture topic, your behavior will be noted, and your classroom participation grade will be lowered.

Students who engage in disruptive behavior that impedes the ability of other students to learn may be directed to leave for the duration of that class period. See the Code of Student Conduct for further information: http://www.uky.edu/StudentAffairs/Code/part1.html.

Accommodations due to disability. If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym; 859-257-2754; jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

Grading Policy. Letter grades will be assigned according to the following scale:
A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; E = 59 and below

For **undergraduates**, the final grade will be determined as follows:
- Exam 1, 2, 3 = 20% each (60%)
- Final Exam = 15%
- Research paper = 20%
- Participation in classroom discussions = 5%

For **graduate students**, grades will be determined as follows:
- Exam 1, 2, 3 = 15% each (45%)
- Final Exam = 15%
- Research paper & oral presentation = 20%
- Homework assignments = 15%
- Participation in classroom discussions = 5%

Midterm grades will be posted in myUK by the deadline established in the Academic calendar (http://www.uky.edu/Registrar/AcademicCelndar.htm).

Exams. Three exams and a cumulative final exam will be given during this course. Make-up exams will be given at the discretion of the instructor only for students who have an excused absence (see attendance policy above). *It is the student's responsibility to contact Dr. D'Orazio to request excused absences, preferably in advance, and no later than 5 days following an absence.*

Research paper. Each student will be required to write a short paper describing the "story" of a particular bacterial pathogen. Each student will be assigned a bacterial pathogen at the beginning of the semester; the paper will be due at the end of the semester. The pathogen will be an organism that is not discussed extensively during class, and thus, will require outside research and reading. Each student will be required to collect at least 4-6 articles from scientific journals to use as reference materials. Students should use the PubMed database to find these scientific manuscripts; literature references to web sites are not acceptable unless they have a terminal domain name of .gov or .edu. Papers that plagiarize information or text from published articles without proper citation will be a given a failing grade. The paper should be no more than 3000 words and should include the following information about the assigned pathogen:

1) microbiological description (gram stain, morphology, nutritional requirements, etc.)
2) the environmental reservoir and the route of transmission
3) type of human infection/disease it causes (symptoms, incidence, morbidity/mortality)
4) type of animal or cell culture models used to study the infection
5) the major virulence factors encoded by the pathogen
6) the major unanswered questions/future research directions for this pathogen.

Graduate students enrolled in MI 495-G will be expected to give a short (10-15 min.) oral presentation during the last day of class using audiovisual materials (e.g., Powerpoint) to summarize the research paper.

Homework assignments. Graduate students enrolled in MI 495-G will also be expected to answer certain open-ended questions taken from the end of chapters in the assigned textbook. Undergraduate students are encouraged to read and think about these questions, but will not be required to submit answers as part of a graded assignment. A list of the assigned questions, along with the due dates for each of the eight assignments, will be provided at the beginning of the semester. The homework assignments should be emailed directly to Dr. D'Orazio at sarah.dorazio@uky.edu, and will be graded as follows:

10 = The question is answered completely, supported by facts, with appropriate references cited. An excellent understanding of the material is demonstrated.

8 = An incomplete answer or lack of appropriate citations to support the answer. The student demonstrates an incomplete understanding of the material.

0 = No assignment turned in; question not answered; no references given.

Late assignments will be accepted, however, the highest score for a late assignment will be an 8. The average score for the 8 assignments will be converted to a percentage and will count as 20% of the final grade, for graduate students only.

Academic integrity. Plagarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with all forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. *A plea of ignorance is not acceptable as a defense against a charge of academic dishonesty.* It is important that you review this information as all ideas borrowed from others need to be properly credited.

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The

minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Part II of *Student Rights and Responsibilities* (http://www.uky.edu/StudentAffairs/Code/part2.html) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Tentative Lecture Topics:

		Instructor
1	Course objectives & policies; Overview of human pathogens (Chp. 1)	D'Orazio
2	Barrier Defense: Skin & Mucosa/Innate Immune mechanisms (Chp. 2,3)	Kaplan
3	Adaptive Immune Mechanisms (Chp. 4)	Kaplan
4	Human Microbiota/ Defining virulence: what is a pathogen? (Chp. 5,6)	D'Orazio
5	Acquisition of virulence traits: mechanisms of genetic exchange (Chp. 7)	Wolf
6	Measuring Infectivity and Virulence (Chp. 8)	D'Orazio
7	Molecular approaches to identify bacterial virulence factors (Chp. 9)	D'Orazio
8	Exam 1	N/A
9	Mechanisms for extracellular survival in the host (Chp. 11, pg. 200, 210-213) IgA proteases, antibacterial peptide resistance, capsule	Kaplan?
10	Adherence, Motility and Biofilms– (Chp. 11, pg. 196-199, 203-210)	Wolf
11	Bacterial growth: defense against "nutritional immunity" Iron and other metal acquisition systems – (Chp. 11, pg. 201-203)	Wolf
12	Bacterial toxins (Chp. 12)	Pickett
13	Delivery of virulence factors: bacterial secretion systems (Chp. 13)	Pickett
14	T3SS Effector Proteins: Role in virulence (Chp. 13)	Pickett
15	Invasion of host cells (Chp. 11, p.213)	D'Orazio
16	Exam 2	N/A
17	Intracellular Pathogens: life in the cytosol (Chp. 11, pg. 217-221)	D'Orazio
18	Intracellular Pathogens: modifying the vacuole (Chp. 11, p. 213)	D'Orazio
19	Regulation of gene expression in bacteria (Chp. 14)	Wolf
20	Antimicrobial compounds (Chp. 15)	Pickett?
21	How bacteria become resistant to antibiotics (Chp. 16)	Pickett?
22	Opportunistic pathogens – Gram positives (Chp. 18)	D'Orazio
23	Gram-negative opportunistic pathogens (Chp. 19)	D'Orazio
24	Exam 3	N/A
25	Host factors that define susceptibility or resistance to infection (Chp. 10)	D'Orazio
26	Unique mucosal environments: the GI tract & the lung acid & bile resistance, "colonization" resistance	D'Orazio
27	Infections of the CNS/crossing the BBB and the genitourinary tract	D'Orazio
28	Research Paper Due/Oral Presentations	D'Orazio
29	Bacteria as Bioweapons - Chp. 20	Pickett
30	Emerging Pathogens	D'Orazio
31	Review session	D'Orazio/Pickett/Wolf

Finals week: Cumulative final exam — N/A