Texas A&M University

Departmental Request for a New Course

Undergraduate • Graduate • Professional

• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Biology

2. Course prefix, number and complete title of course: BIOL 622 Microbial Physiology

3. Course description (not to exceed 50 words):
An area of microbial physiology will be explored at the molecular, cellular, and genetic levels through reading and discussion of classic and current research literature. The area of focus may change from semester to semester. May be repeated for credit with permission of instructor.

4. Prerequisite(s): Graduate classification

Cross-listed with: Cross-listed courses require the signature of both department heads.

5. Is this a variable credit course? Yes ☐ No ☐ If yes, from _______ to _______

6. Is this a repeatable course? Yes ☑ No ☐ If yes, this course may be taken ______ times.
Will this course be repeated within the same semester? Yes ☐ No ☑

7. Has this course been taught as a 489/689? Yes ☑ No ☐ If yes, how many times? 2
Indicate the number of students enrolled for each academic period it was taught: 7 (OSC), 6 (08C)

8. This course will be:

a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.S., Ph.D. in Biology, Microbiology, Cell & Molecular Biology, Biochemistry, Genetics, and other life science majors.

9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

10. Prefix Course # Title (excluding punctuation) Lect. Lab SCH CIP and Fund Code Admin. Unit Acad. Year FICE Code

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Novel recommend(s) 7/2/09

Head of Department Date

Head of Department (if cross-listed course) Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services Date Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201.
Curricular Services – 11/07
BIOL 622 Microbial Physiology SYLLABUS
(Syllabus used when course was taught as BIOL 689 in Fall 2008. The topics and papers used for each class may change from semester to semester, as appropriate.)

Instructor: Deborah Siegle, Ph.D.
Office: BSBW 233  Phone: 979-862-4022  E-mail: d-siegle@tamu.edu
Office hours: M 2:00-3:00 pm, T 2:00-3:30 pm, or by appointment

Course Description:
This semester the course will focus on the general stress response of E. coli and Salmonella. The goals of the course are to provide students with:
• an understanding of bacterial physiology during balanced exponential growth, during stationary phase, and during the transition between these two growth phases
• an appreciation for how the combination of genetic, molecular, and biochemical approaches can be used to understand how a microorganism adapts to a changing environment
• experience in critically evaluating scientific papers

Some advice on critical thinking
"One purpose of this course is to provide you with an opportunity to practice thinking critically about experimental science. Undergraduate science education is textbook-based, and often fosters uncritical acceptance of written material. As you begin your training to become professional scientists, you need to adopt the frame of mind where you accept nothing without evaluating the evidence presented to buttress the claim. Although we have to accept certain established scientific principles in order to even have a discussion, the normal interchange of scientific findings and ideas involves intense scrutiny and criticism. No claim should be treated as an accepted fact until it has been sustained and documented by other scientists. Thus you should react to a new result, no matter how glamorous and no matter how prestigious the journal, with skepticism as your default stance."

Copyright: Jim Hu and Ry Young, Dept of Biochemistry & Biophysics, TAMU

COURSE FORMAT
CLASS DISCUSSION: This is a discussion class based on papers from the literature. Each Thursday we will discuss two papers. There will be a student discussion leader for each paper. I want to emphasize that the discussion leaders will be leading a discussion, not presenting the paper. All students must come to class prepared to discuss each of the figures and tables in both papers. Discussion will begin with a randomly chosen student, then proceed around the room, so you will not know in advance which portions of the papers you will be asked about. You will find that annotating the figures in your papers as you read them will be very helpful during class.

STUDENT DISCUSSION LEADERS: Each discussion leader will give a short (approx.10 min) introduction to the paper, providing background information for understanding the paper to be discussed. Preparing the introduction will require the discussion leader to do additional reading. After giving his or her introduction, the student will lead the class in a critical examination of the experimental results in the paper and the conclusions that can made from the data.
The discussion leaders for each week will meet with the instructor on Monday at xx
(Alternate times on Monday can be arranged, if necessary). Before coming to the Monday session the discussion leaders should:
• carefully read the paper they are responsible for and make a list of the things that were unclear to ask me about.
• prepare an outline of their background presentation
• have a list of 5 to 10 questions that you plan to ask the class to facilitate discussion of the paper (this list can include questions from the homework)
• Discussion leaders are responsible for making overheads of each of the figures and tables in the paper for use during class discussion. The overheads of figures should be annotated.

**HOMEWORK:** There will be homework questions on each paper, which will be handed out one week before the paper will be discussed in class. When answering the homework questions, **USE YOUR OWN WORDS--DO NOT COPY OR PARAPHRASE THE PAPER.**

**Your answers are due by 5:00 pm on the Wednesday** before the discussion of the paper and will be graded and returned to you the next day in class. Put your homework in the letter tray located in the hallway outside BSBW233. Alternatively, answers can also be sent by e-mail or faxed to 845-2891. This is the Biology Dept fax machine, so faxes must have a cover page with my name on it. I'd prefer that your answers be typed and double-spaced. If you hand write your answers, please write as clearly as possible. If you write your answers by hand please leave 4 or 5 blank lines between your answers.

**GRADES:** Grades will be based on participation in class discussion (35%), discussion leading (35%), and written answers to homework questions (30%). The following letter grades and percentages will be applied:

- A 100-90.0%; B 89.9-80%; C 79.9-70.0%; D 69.9-60%; F 59.9-0%

There will be no final exam. **Instead of a final exam,** we will meet on Tue, Dec 2 at the regular class time (12:45 pm) to review and discuss the major points covered during the semester.

**THE AMERICANS WITH DISABILITIES ACT**
The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life for Students with Disabilities.

**ACADEMIC DISHONESTY**
The Aggie Honor Code: An Aggie does not lie, cheat, or steal, or tolerate those who do. Academic misconduct, a violation of the Texas A&M Honor System, involves any of the following: cheating, fabrication, falsification, multiple submission, plagiarism, and complicity. For explanations and examples of what constitutes academic dishonesty visit the Aggie Honor site: [http://www.tamu.edu/aggiehonor](http://www.tamu.edu/aggiehonor)

**COPYRIGHTS**
The handouts used in this course are copyrighted. By "handouts," is meant all materials generated for this class, which includes but is not limited to syllabi, lab problems, in-class materials, review sheets, and problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless the author expressly grants permission.
CLASS SCHEDULE & READINGS IN FALL 2008

Week 1, Thu, Aug 28
Topics: Course introduction; What is stress? What is the general stress response?; Introduction to microbial growth

Week 2, Thu, Sep 4:
2) Jenkins et al.

Week 3, Thu, Sep 11:
Topic: RpoS is a key regulator of the general stress response

Week 4, Thu, Sep 18
Topic: The intracellular level of RpoS is regulated at multiple levels.

Week 5, Thu, Sep 25:

Week 6, Thu, Oct 2:
Topic: Interactions between Hfq, DsrA, and rpoS mRNA

Week 7, Thu, Oct 9:
Topic: Interactions between Hfq, DsrA, and rpoS mRNA, cont.

Week 8, Thu, Oct 16:
Topic: RpoS is degraded by the ClpPX proteosome


Week 9, Thu, Oct 23: No class

Week 10, Thu, Oct 30:
Topic: RssB delivers RpoS to the ClpPX proteosome.


Week 11, Thu, Nov 6:
Topic: Regulating RpoS half-life by modulating RssB activity


Week 12, Nov 13:
Topic: ppGpp, the stringent response, and growth-rate control


Week 13, Nov 20:
Topic: Slow growth and RpoS


Week 14: Thanksgiving Day (no class)

Week 15: Tue, Dec 2, (REDEFINED DAY)
Topic: Summary session.