

BIOL 6611: ADVANCED MICROBIAL PHYSIOLOGY

COURSE SYLLABUS – FALL 2012

I. Course Instructor

Dr. Thomas DiChristina: office: ES&T 1240; phone: 4-8419

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Office hours by appointment

Class schedule: ES&T L1118: TTh 12:05-1:25 pm

II. Objectives

The objective of this course is to examine the latest findings on the molecular physiology of microbial systems. Examples of such systems include: Bacterial motility and chemotaxis, ATPase structure and function, Anaerobic respiration, Bioluminescence, Protein secretion, Environmental sensing (Two-component signal transduction), Magnetotaxis, Prokaryotic-eukaryotic symbioses, Bioremediation, Genomic sciences (Microbiome, metagenomics).

III. Course Material

Course material is based on class notes, handouts, and assigned readings. A specific textbook is not required for the course, but the following may be useful as references:

- M.T. Madigan, J.M. Martinko, and J. Parker. 2011. *Brock Biology of Microorganisms*. 13th edition, Prentice Hall (on reserve in library).
- D. White, J. Drummond, and C. Fuqua. 2012. *The Physiology and Biochemistry of Prokaryotes*. 4th edition, Oxford University Press (on reserve in library).

IV. Course Organization

1. The course will consist of student presentations of recent *Science* and *Nature* articles. The course is designed in a discussion format. Each student is expected to read each paper carefully and have questions to be asked in class. Papers presentations should last 60 minutes and will be followed by a 20-minute discussion. All papers must be approved by Dr. DiChristina prior to presentation. Only *Science* and *Nature* articles from 2011 or 2012 are permitted.

2. A term paper is required from each student in the class. This paper should be a critical review of a subdiscipline of microbial physiology. The term paper should be 10 pages in length (Font: Times 12; Lines: double-spaced) not including figures and references. Topics for the term papers should be approved by Dr. DiChristina by Friday, November 16th. Term papers are due via e-mail by 5:00 pm on Thursday, December 13th.

V. Grading

Oral presentations: 2 X 20% each = 40%

Term paper: 50%

Participation: 10%

TOTAL: 100%