

**MICROBIOLOGY 470 MICROBIAL GENETICS AND MOLECULAR MACHINES  
SPRING 2015**

**Instructors:**

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**Time and Location:**

TTh 11-12:15  
Rm. 1420 Microbial Sciences Building

**Office hours**

**(Rm. 4415 HGB or 5415 KMW):**

*Starting week of January 26*

Monday 4-5 pm (KMW)

Wednesday 4-5 pm (HGB)

By appointment (email)

**Review sessions:**

Friday February 20, 2015 5pm

Tuesday March 24, 2015 5pm

Friday May 8, 2015 5pm

**Course content:** Microorganisms occupy and thrive in almost every environmental niche on Earth, including within humans. Why are they so successful? One reason is their ability to sense numerous parameters within their environment and adapt to optimize growth or survival under those conditions. Building on the knowledge you gained in Microbiology 303, the goal of this course is to examine the intricate molecular pathways that connect the environment to microbial physiology, and the role that mutation plays in the evolution and adaptation of these pathways. We will use well-understood paradigms to highlight recurring themes that underlie microbial processes, with an emphasis on genetics, molecular biology, and the scientific method for discovery. Topics will include molecular and genetic aspects of microbial reproduction, development, behaviors, signal sensing and transduction, nutrient acquisition, stress responses, communication, communities, and interactions. Furthermore, we will concentrate on how we as scientists investigate microbial processes and use this knowledge to benefit society and the environment. Classes and exams will emphasize problem solving, data interpretation, and research.

**Course and reading materials:**

All course materials (lectures, powerpoints, tests, assignments, study guides, outlines, etc.) are protected by copyright and may not be re-posted or re-distributed. Recording of lectures is not allowed without signed permission of instructors. The recommended textbook for supplemental reading is Snyder and Champness; Molecular Genetics of Bacteria; 3<sup>rd</sup> edition, which can be purchased relatively inexpensively. A new (4th), more expensive version of this textbook has been published (Snyder et al.). This version is also acceptable for supplemental reading. Recommended reading will be announced in class and on Learn@UW. Three textbooks: Snyder and Champness, Snyder et al., and Lewin (Genes VII) are on reserve at Steenbock Library.

**Homework and Class Activities:**

Assignments will be handed out and introduced in class, along with any necessary introductory reading or explanation. Typically, class time will be available to work on the exercise either in groups or individually. Several types of exercises will be used during the semester: problem sets, discussions, worksheets, and experimental data interpretation. These exercises are meant to help you better understand the material, and give you practice in applying the concepts covered in class.

**Exams:**

Three exams will be given: two during the semester and one cumulative final with an emphasis on section 3. These exams will cover lecture material and content of exercises. Preparation should include reviewing your notes and assignments. In class exams will be on **Feb. 24** and **Mar. 26**. The final exam will be on **May 11** 2:45-4:45pm.

**Grading:**

Assignments - number varies by semester - lowest grade dropped – 25%

Exams – three, 25% each

Grading: >92% is A, >82% is B, >72% is C, >62% is D, the average score will earn at least a B/C.