

# BIOL 238 Microbiology

Dr. Joan Slonczewski

Spring Semester 2016  
MWF 11:10, Hig Aud

Microbiology is the study of organisms too small for our eyes to see. BIOL 238 explores the cell biology, ecology, and medical applications of microbes. We get to know the vast realm of microbes that inhabit our planet and make the atmospheric gases we breathe. The human body contains ten times as many microbial cells as those of *Homo sapiens*. Microbes evolve as essential parts of human bodies; in fact, microbes may have originated multicellular life to give themselves a home. Still other microbes inhabit environments too “extreme” for us, such as deep-sea superheated thermal vents, or Antarctic deserts that resemble Mars.

Date	Topic	Reading BEFORE Date <b>Tests on Moodle</b>
Jan 18 20 22	10:40am Discover unseen life. 3:00 MLK DAY Microbes in history. <b>AIDS quilt</b> . Light and Electron Microscopy. <b>Ani: Microscopy.</b>	“Looking Glass” Ch. 1 Ch. 2
Jan 25 27 28 29	Bacterial cell structure. Cell Envelope and Growth. <b>Gasland</b> . 11:10 Dr. Paula Mouser: <b>Fracking Microbes</b> Cell Division and Growth. <b>Growth Calculation</b> .	Ch. 3 <b>Ani: Replisome; Motility</b> Ch. 4
Feb 01 03 05	Environment. <b>Ani: Endospore</b> Stress response. <b>Research: New Antibiotic from Soil Bacteria</b>	<b>TEST 1</b> Ch. 5 <b>Lewis 2015</b>
Feb 08 10 11 12	Bacterial genomes. DNA replication. <b>Illumina sequencing</b> . 4:15 Dr. Brian Becknell: <b>Antimicrobials</b> Gene transfer.	Ch. 7 <b>Ani: DNA replication</b>  Sec 9.1-5
Feb 15 17 19	Gene expression. <b>Ani: Protein</b> Gene Regulation. <b>TEST 2</b>	Sec 8.1-7 Sec 10.1-2, <b>Liao 2015</b>
Feb 22 24 26	Origins of life. Evolution. <b>Research: Gut Bacteria Eat Sushi</b>	Ch. 17  <b>Hehemann 2010</b>
Feb 29 Mar 02 04	Bacterial diversity. Archaea. <b>George Washington</b> . Eukaryotic microbes.	Ch. 18 Bring to class. Ch. 19 Bring to class. Ch. 20 Bring to class.
<b>SPRING BREAK</b>		
Mar 21 23 25	<b>Research: Jet-lagged Human Bacteria</b> <b>No class.</b> <b>No class.</b>	<b>Thaiss 2014</b> -- <b>TEST 3: 5:00 pm</b>

<b>Mar 28</b>	Energy and catabolism.	<b>Ch. 13; Sec 14.1, 2.</b>
<b>29</b>	<b>11:10 Dr. Laura Johnson: Lake Erie Algae</b>	
<b>30</b>	Catabolism and Electron Transport.	---
<b>Apr 01</b>	Electron transport. <b>Research: Ahmer</b>	<b>Ahmer 2014</b>
<b>Apr 04</b>	Electron transport & Lithotrophy. <i>Salmonella</i> .	<b>Ch. 14; Ani:ETS</b>
<b>06</b>	Photosynthesis and Carbon Fixation.	<b>Sec 15.1-5</b>
<b>08</b>	Nitrogen Fixation & Biosynthesis.	
<b>Apr 11</b>	Microbial ecology and Symbiosis.	<b>Ch. 21; Wiki Topic</b>
<b>13</b>	Global Cycles.	<b>Sec 23.1-2; Sec 22.1-4</b>
<b>15</b>	<b>TEST 4</b>	
<b>Apr 18</b>	Viruses. <b>"Good viruses"</b>	<b>Ch. 6; "Good viruses"</b>
<b>20</b>	A DNA virus: Herpes.	<b>pp 443-450</b>
<b>22</b>	An RNA retrovirus: HIV. <b>Ani: HIV Ani: Lentivectors.</b>	<b>Sec 11.2-6 Wiki title plus 1 Figure; 1 Citation</b>
<b>Apr 25</b>	Microbial diseases. <i>Listeria</i> .	<b>Wiki Text; Post all Figs</b>
<b>27</b>	Innate immunity.	<b>Sec 23.3-9. Post text.</b>
<b>29</b>	Innate immunity. <b>Ani: Inflammation.</b>	
<b>May 02</b>	Immune response.	<b>Sec 24.1-6</b>
<b>04</b>	Active immunity. Ani: Activation.	<b>TEST 5: 11:59pm</b>
<b>06</b>	Active immunity.	<b>Wiki comments</b>
<b>May 13</b>	<b>Wiki Last Edits 4:30pm</b>	<b>Wiki last edits</b>

**Text: Slonczewski & Foster (2014) *Microbiology: An Evolving Science* (Norton, 3E only).**

**Three-hole punch with free eBook** is assigned, so you can bring a chapter to class.

Alternatively, the eBook alone: <http://books.wwnorton.com/books/webad.aspx?id=4294990210>

\*\*Always check on-line syllabus for changes.

**Attendance.** 100% attendance **ON TIME** is required, including the seminars on syllabus. After two absences, each absence subtracts a full letter grade.

**Computer policy.** Bring your PC, and use appropriate internet materials during class, while paying attention. Email, texting or phone calls during class are cause for expulsion.

**Class Response.** Includes: Online surveys; class discussion; email within 1 day after class.

**Tests.** There are two tests by Moodle, and three in class.

**MicrobeWiki Project.** A term project will be authored on any approved topic of microbiology.

**April 22, 11:59pm:** Start new page with your title, and copy class template into it.

**April 25, 11:59pm:** Submit a minimum of 3000 words (main text) plus citations, via Moodle.

Load all figures (3 or more) onto MicrobeWiki.

**April 27, 11:59pm:** Complete page on MicrobeWiki. Provide comments on 2 pages by May 6.

**May 13, 4:30pm:** Final edits on your page.

**No assignments accepted late.** Start work early in case of illness or emergency.

**Grades are based on:**

- Tests -- 50%
- Class Response and Attendance -- 20%
- Wiki page -- 30%

## **Syllabus Statements of Kenyon College Policy**

Students in classes of Professor Joan Slonczewski must read and understand these policies.

### **Statement of Academic Integrity**

At Kenyon we expect all students, at all times, to submit work that represents the highest standards of academic integrity. It is the responsibility of each student to learn and practice the proper ways of documenting and acknowledging those whose ideas and words they have drawn upon (see Academic Honesty and Questions of Plagiarism in the Course Catalog). Ignorance and carelessness are not excuses for academic dishonesty. If you are uncertain about the expectations for this class, please ask for clarification.

### **Statement on Student Accessibility Accommodations**

Students who anticipate they may need accommodations in this course because of the impact of a learning, physical, or psychological disability are encouraged to meet with me privately early in the semester to discuss their concerns. In addition, students must contact Erin Salva, Director of Student Accessibility and Support Services ([740-427-5453](tel:740-427-5453) or [salvae@kenyon.edu](mailto:salvae@kenyon.edu)), as soon as possible, to verify their eligibility for reasonable academic accommodations.

### **Statement on Title IX**

As a faculty member, I am deeply invested in the well-being of each student I teach. I am here to assist you with your work in this course. If you come to me with other non-course-related concerns, I will do my best to help. It is important for you to know that all faculty members are mandated reporters of any incidents of sexual misconduct. That means that I cannot keep information about sexual misconduct confidential if you share that information with me. Confidential resources include the Health and Counseling Center, Sexual Misconduct Advisors (SMAs) and the College chaplain.