

## **General Microbiology (50:120:330)**

3 credits

Mondays, Wednesdays, and Fridays 9:05 – 10:00 at BSB-132

Instructor: Kwangwon Lee

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Office hours: Monday 1:30 – 3:30 pm

### Expected learning outcomes

1. Students will be able to explain core principles of Microbiology.
2. Students will be able to read and analyze peer-reviewed articles on current social/medical/biological issues related to Microbiology.
3. Students will be able to identify one important/interesting topic of microbiological studies, perform literature search, summarize and present the topic to the general audience.

### How we will achieve the expected learning outcomes.

**1. Reading** textbook and primary research articles. Students are expected to read assigned reading materials before each class.

**2. Quiz** on the reading material. The quiz test will be available at the course website SAKAI, <https://sakai.rutgers.edu/portal>

### **3. Lecture/Class discussion.**

One of the objectives for this course is for students to develop critical thinking skills on microbiology-related subjects. For this goal, discussion during class is an important component for the course.

### **4. Take-home assignments**

There are several take-home assignments. This class activity is for students to learn a skill to perform independent literature search on any topic of interest, and to develop an attitude for a fact-based reasoning.

### **5. Microbiology Day.**

Students will present their term-paper projects to the public in a creative way, e.g. a poster, slide show, food, pictures, music, performance, etc. This activity is to develop a professional communication/presentation skill.

### **Extra Help**

John Maxymuk will answer your question on finding research articles and using RefWork. His phone number is 856-225-2842 and e-mail [maxymuk@camden.rutgers.edu](mailto:maxymuk@camden.rutgers.edu). He is working at Paul Robeson Library. You may visit him anytime; you may go to the library and ask Librarian John.

## **Grading**

### **15% Quiz**

Students are expected to read the assigned chapter of the textbook. The quiz will be available at least two days before the due date. Students can take the quiz on SAKAI. There are 10 multiple-choice or true/false quiz questions per chapter (two attempts allowed, best score will be used for grade); 10 points maximum per Quiz. Any technical problem related to a student's computer or on-line connection could not be an excuse for not taking the quiz on time; for example, 'my computer crashed', 'on-line connection was bad', and so on.

### **15% Take-home assignments**

Study the rubric and follow the direction.

### **40% Test**

Three tests with equal weight.  
There is no accumulative final.

### **30% Class Participation**

Class Participation has three different categories:

- Class attendance
- Microbiology Day
- Class discussion (extra-credit)

These three categories contribute equally to the Class Participation grade.

#### *Class attendance*

Class attendance will be evaluated by subtracting the penalty points (10 points);

No class missed 100 points

Missed one class 90 points

Missed two classes 80

Missed three classes 70 and so on.

When a student has a legitimate reason for missing a class, the student should contact the instructor beforehand or the same day and arrange a make-up assignment. For the lecture classes on a chapter of the textbook, student should submit a make-up project (maximum one-page summary of the chapter and maximum one-page response to the critical thinking question in the textbook) before the following class; the student can bring it to the class. No e-mail attachments will be accepted. The instructor may not check the attendance in the event of bad weather or a serious traffic problem due to the road accidents.

#### *Microbiology Day*

<https://sites.google.com/site/rucmicro/>

There are four categories for the evaluation.

1. Title/abstract (10)  
Two students will prepare one project. Post your title and short description of your project on the SAKAI ->Wiki by 9 am on March 21. More instruction will be given during class.
2. Presentation plan (10)  
Bring one page rough plan for your booth to the class on April 11
3. Self/peer evaluation (40)
4. Outside reviewers (two professors) (40)

There will be volunteer opportunities to help out the event for extra-credits; web-master, decoration/advertisement.

Sometimes, several groups have a similar idea; great minds think alike. Only one group will work on one topic. First group claims the idea on SAKAI will work on it. For this reason, each project should deal with a narrow topic; for example, one can work on a specific viral disease not all diseases caused by virus. You may check out the evaluation rubric before you start working on the project. The rubric will be used for both self/peer evaluation and outside reviewers. Find a topic that is interesting, important, and current.

The project topic should be directly related to "microbiology". However, one may choose to address the topic focusing on one of different aspects; e.g. basic research, applied science, history, and government policy.

#### *Class discussion*

Extra-credit (up to 10% of the class participation grade).

Students are expected to make positive contributions to the class discussion by answering to the instructor's questions, sharing opinions, and making comments during class. The number of contribution of each student will be recorded after each class; percentile ranking in the number of participations in class.

#### **Take-Home Assignment Instruction**

1. Download the Assignment template (Microsoft Word file) from the SAKAI->Resources->Lecture note->Date.
2. Answer your opinion in a simple statement; yes or no, agree or disagree.
3. Explain your answer based on data in peer-reviewed journal articles (see 5).
4. The assignment should be a maximum one page, single space, Cambria (or Arial) font, and font size 12 document.
5. The following resources are **NOT** acceptable to support your opinion; Wikipedia, blog, YouTube, any Internet resources that are not peer-reviewed by experts in the field, secondary news reports (CNN, MSNBC, Times and so on). Use only the references that you actually read.
6. Direct quotation from the reference papers is **NOT** allowed.

7. Upload your assignment to SAKAI (->Assignment) before due date. The file should have an extension, .doc or .docx.

Rubrics (10 points):

1. Answer YES or NO (1 points).
2. Logical and convincing arguments for your answer (6 points)
  - 1 point for one reference (up to 3 points)
  - 3 points for cohesive and convincing arguments (3 points)
3. Format (3 points)
  - Used the MS Word format (1 point)
  - Proper citation format (1 point)  
(Author Year);
  - Proper reference format (1 point)  
(All authors, Year. Title. Journal. Issue number: Page number)
4. Late submission (3 point deduction)
5. Not acceptable references (3 point deduction)
6. Direct quotation from the references (3 point deduction)

Citation and Reference Example;

Underlying the WC-1 NpolyQ is a simple sequence repeat (SSR), which is a site of natural variation within populations due to slippage of DNA polymerase (Borstnik 2002; Levinson 1987). For example, the circadian clock protein PERIOD in both *Drosophila melanogaster* and *Homo sapiens* harbors SSRs that are associated with known clock phenotypes across natural populations (Nadkarni 2005; Sawyer 1997).

Borstnik, B., Pumpernik, D., 2002. Tandem Repeats in Protein Coding Regions of Primate Genes. *Genome Res.* 12, 909-915.

Levinson, G., Gutman, G., 1987. Slipped-strand mispairing: a major mechanism for DNA sequence evolution. *Mol Biol Evol.* 4, 203-221.

Nadkarni, N.A., Weale, M.E., von Schantz, M., Thomas, M.G., 2005. Evolution of a Length Polymorphism in the Human PER3 Gene, a Component of the Circadian System. *J Biol Rhythms.* 20, 490-9.

Sawyer, L.A., Hennessy, J.M., Peixoto, A.A., Rosato, E., Parkinson, H., Costa, R., Kyriacou, C.P., 1997. Natural Variation in a *Drosophila* Clock Gene and Temperature Compensation. *Science.* 278, 2117-2120.

**SAKAI**

Course material including lecture note will be available through the SAKAI web site, <https://sakai.rutgers.edu/portal>

**Code of academic integrity**

Each student in this course is expected to abide by the University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work.

Quiz exam and take-home assignments are open-book tests. Students should take the quiz test by herself/himself. Students should not share the quiz questions with other students. If you know someone violated this, you should report to the instructor. All writing assignments have to be an original work by a student. Any violation of the code of honor will be reported to the Dean's office.

**Plagiarism is a serious academic offense**

All writing assignment should be an original work by a student. Students are highly recommended to educate themselves on the subject;

<http://library.camden.rutgers.edu/EducationalModule/Plagiarism/whatisplagiarism.html>

<http://sociology.camden.rutgers.edu/curriculum/plagiarism.htm>

**Religious Holidays**

I support my students who wish to practice their religious beliefs. Students are being advised to discuss religious absences with me well in advance of the religious holiday so that arrangements for making up work can be assigned before the holidays.

**Tentative Syllabus (Lecture/Discussion)****Textbook**

Prescott's Principles of Microbiology, 1st Edition  
by Willey, Joanne; Woolverton, Chris; Sherwood, Linda  
Publisher: McGraw-Hill Higher Education

**Class dates**

Date	Class activity	Quiz Deadline
18-Jan	Organization (mandatory class)	Syllabus
20-Jan	1. Vaccine and autism Chapter 33	
23-Jan	2. Papillomavirus vaccine Chapter 24 and 33	Ch.3
25-Jan	3. Infectious disease (Influenza) Chapter 24	
27-Jan	4. Antimicrobial Chemotherapy (Methicillin-Resistant <i>S. aureus</i> , MRSA) Chapter 31	Ch.4
30-Jan	5. Food	

	Chapter 34	
1-Feb	6. Applied Microbiology Chapter 35	
3-Feb	7. Chapter 3	Ch.5
6-Feb	8. Chapter 4	
8-Feb	9. Chapter 5	Research article
10-Feb	Discussion	
13-Feb	Test 1	
15-Feb	10. Disease by Microorganism Chapter 30	
17-Feb	11. Chapter 6-1	Ch.6
20-Feb	12. Chapter 6-2	
22-Feb	13. Chapter 7-1	Ch.7
24-Feb	14. Chapter 7-2	
27-Feb	15. Chapter 8-1	Ch.8
29-Feb	16. Chapter 8-2	
2-Mar	17. Chapter 9-1	Ch.9
5-Mar	18. Chapter 9-2	
7-Mar	Discussion	Research Article
9-Mar	Test 2	
19-Mar	19. Chapter 12-1	Ch.12
21-Mar	20. Chapter 12-2	
23-Mar	21. Chapter 13-1	Ch.13
26-Mar	22. Chapter 13-2	
28-Mar	23. Chapter 14-1	Ch.14
30-Mar	24. Chapter 14-2	
2-Apr	25. Chapter 15-1	Ch.15
4-Apr	26. Chapter 15-2	
6-Apr	Discussion	Research article
9-Apr	27. Chapter 25	Ch.25
11-Apr	28. Chapter 26	Ch.26
13-Apr	29. Chapter 27	Ch.27
16-Apr	Discussion	
18-Apr	Discussion	Research article
20-Apr	Test 3	
23-Apr	Microbiology Day preparation	
25-Apr	Microbiology Day	
26-Apr	Microbiology Day (no class on 27 <sup>th</sup> )	
30-Apr	Best Group Project presentation	

Microbiology Day Presentation Self/Peer evaluation

Evaluator:

Strongly agree:10

Strongly disagree:1

<b>Term paper project number</b>	1	2	3	4	5	6	7
1. Focused on a well-defined problem?							
2. Problem and approach be grasped quickly and easily?							
3. Are the visuals attractive, creative, informative and of high quality?							
4. Sufficient content to understand the importance of the problem?							

	8	9	10	11	12	13	14
1. Focused on a well-defined problem?							
2. Problem and approach be grasped quickly and easily?							
3. Are the visuals attractive, creative, informative and of high quality?							
4. Sufficient content to understand the importance of the problem?							

	15	16	17	18	19	20	21
1. Focused on a well-defined problem?							
2. Problem and approach be grasped quickly and easily?							
3. Are the visuals attractive, creative, informative and of high quality?							
4. Sufficient content to understand the importance of the problem?							