

General Microbiology Lab (50:120:331)

Thursdays 1:20 – 4:20 at Science Building Room 204 (lecture) or B12 (lab)

Instructor: Kwangwon Lee
202 Science Building, Phone: 225-6066
Email: kwang1@camden.rutgers.edu
Office hours: Monday 1:30 – 4:30 pm

Overview

This course will teach students how to ask questions in biology; formulating hypothesis, designing experiments to test hypothesis, performing simple statistical tests on experimental data using Matlab, creating graphs with error bars using Matlab, and presentation skills.

Expected learning outcomes

1. Students will become familiar with core concepts in microbiology studies.
2. Students will be able to evaluate experimental data presented in current research articles in the field of microbiology.
3. Students will formulate a working hypothesis, design experiments, perform experiments, and write a report.

Grading

50% Class Attendance

50% Assignments

Weekly reports
Progress reports
Final reports

SAKAI

All the 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.

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 resolved before the absence.

Students with Disabilities (all schools excluding law)

Associate Dean Thomas DiValerio
(856) 225-2663 tdivaler@camden.rutgers.edu

Campus Center, Room #326 (stairs by the third street entrance, elevator located behind the corner convenience store and down the hall from the main campus lounge and multipurpose room).

More information; <http://studentaffairs.camden.rutgers.edu/disabled.html>

Tentative Syllabus (Lab)

Testbook

Optional:

Asking questions in biology 3rd Edition. Bernard, Gilbert, McGregor.

The cartoon guide to statistics by Gonick and Smith.

Statistics for terrified biologists by Helmut van Emden

January 19, Course organization

- Understanding the goals and structures of the course
- What does it mean to have 'critical thinking' skills?
- What do biologists do everyday in the lab/office?

January 26, Basic data analysis skills

- Understanding basic statistical concepts
- How to sort and analyze data?
- Learn to use data analysis functions in Matlab
- Matlab tutorials; http://www.mathworks.com/academia/student_center/tutorials/

February 2, Working hypothesis / Experimental design / Examples of real experimental data

- How to ask (good) questions?
- How to form a hypothesis?
- How to design experiments to test the hypothesis?
- Real examples
- What is your working hypothesis?
 - What is known and what is not known?
- Evaluation of working hypotheses.
 - Is it important? Is it interesting?
 - Is it technically feasible to test?

February 9, Experimental system, *Neurospora crassa*

- Biology of *Neurospora crassa*
- Genetic/Genomic resources

February 16, Your own hypothesis

- What is your question?
- What is your hypothesis?
- What is your experimental approach?

February 23, Experiment 1

March 1, Experiment 2

March 8, Experiment 3

March 22, Progress report 1

March 29, Experiment 4

April 5, Progress report 2

April 12, Experiment 4

April 19, Experiment 5

April 26, **Final report and discussion 2**