

# PRINCIPLES OF GENETICS

## BIOL 210, Fall 2012

**INSTRUCTOR:** Dr. Karin Bodensteiner

**Office:** 463 TNR Building

**Phone:** (715) 346-3994

**E-mail:** [kbodenst@uwsp.edu](mailto:kbodenst@uwsp.edu)

**Office Hours:** Tuesdays/Thursdays 9:00 - 10:30 a.m., or by appointment

**Additional Course Information:** Available off of Desire to Learn (D2L)

**CLASS MEETINGS:** TNR 120. Tuesday/Thursday/Friday 11:00-11:50 a.m.

**Prerequisites:** Biol 101, 130, or 160.

**REQUIRED TEXT:** Brooker, R. J. (2012) Genetics: Analysis & Principles, 4th Edition. McGraw-Hill, New York.  
Available for rent in bookstore.

### COURSE DESCRIPTION:

This course is intended to serve as an introduction to the basic principles of genetics. Fundamental aspects of genetics at the molecular, cellular, organismal, and evolutionary levels will be covered. Discussion of current events will also be used to emphasize the importance of genetics to biology, ethics, and society.

**COURSE LEARNING GOALS:** By the end of the semester, students will be able—

- 1) To explain how genetic material is arranged and transmitted.
- 2) To illustrate how changes in the structure of genetic material can impact function.
- 3) To describe different modes of reproduction and inheritance.
- 4) To articulate the importance of genetics to societal, medical, and personal issues.
- 5) To integrate information from a variety of disciplines, including biology, chemistry, and physics, and apply that knowledge to the study of genetics.
- 6) To think critically about issues in the field of genetics.

### EXAMS, QUIZZES, AND GRADING:

There will be four exams: three during the course of the semester and one during finals week. There will also be four quizzes given throughout the semester. All exams, quizzes, and assignments will count towards the final grade (i.e. no grades will be dropped).

### POINT BREAKDOWN:

Lecture Exams	4 @ 100 pts each
Quizzes	4 @ 20 pts each
<u>Other Assignments</u>	<u>TBA, 20 pts total</u>
<b>TOTAL</b>	<b>500 pts</b>

### GRADE SCALE (out of 100% of Total):

A $\geq$ 93-100	C = 73-76
A- = 90-92	C- = 70-72
B+ = 87-89	D+ = 67-69
B = 83-86	D = 60-66
B- = 80-82	F < 60.0
C+ = 77-79	

### DATES TO REMEMBER:

QUIZ 1	Sept. 14
EXAM 1	Sept. 28
QUIZ 2	Oct. 12
EXAM 2	Oct. 26
QUIZ 3	Nov. 9
EXAM 3	Nov. 20
QUIZ 4	Dec. 7
EXAM 4	Dec. 18 (2:45-4:45 a.m., 120 TNR)

## EXAMS, QUIZES, AND ASSIGNMENTS:

There will be four exams: three during the course of the semester and one during finals week. Exams will primarily consist of multiple choice, problem sets, and/or short answer questions. Fill-ins, matching, and definitions may also be used. Application of information provided in lecture to an unknown problem may be required. There will also be four quizzes given throughout the semester. The quizzes are meant to help you stay on top of the information covered in class and, thus, quizzes will emphasize material studied during the interval between quizzes or quizzes and exams. Format of quizzes will be similar to the exams. There will also be a number of assignments (to be announced; worth 20 points total) for you to complete during the semester. Exams and quizzes are not comprehensive. That said, course material will build over the semester and it will be important for you to remember and apply basic information learned early on to material covered later in the course. If there are students in the class who have a disability and need accommodation, please see me.

## ATTENDANCE:

Class attendance is a given and you are expected to arrive on time and ready to learn. I do not have a formal attendance policy per se, but missing class will put you at a distinct disadvantage and absences and/or chronic tardiness WILL reveal themselves in your grade. Assignments are due when they are due. Exceptions to this rule will only be granted if arrangements are made with the instructor WELL IN ADVANCE. Exams and quizzes must be taken at the assigned time and alterations to this schedule will only be made for personal injury or emergencies (e.g. death in the family, serious accident, or hospitalization). In such cases, evidence of some kind must be provided and you are expected to reschedule the exam/quiz and/or complete the assignment as soon as possible. If you have an unexcused absence, you will NOT be allowed to make up missed work. If you have an excused absence AND are allowed to make up work, format will be at the discretion of the instructor. It is your responsibility to get the notes for any missed classes. I expect nothing short of complete mutual respect and courtesy. Cell phones and other personal electronic devices must be turned off while class is in session.

## ACADEMIC INTEGRITY:

Academic dishonesty in any form will result in disciplinary action in accordance with UW System Administrative Code.

See <http://www.uwsp.edu/centers/rights/RRBOOKLET8-2005-06.pdf> (pages 4-9) for more information.

## GENERAL COURSE OUTLINE\*:

## CHAPTER(S)

Introduction/Overview	1
Mitosis and Meiosis	3
Mendelian Inheritance	2
Extensions of Mendelian Inheritance	4
Non-Mendelian Inheritance	5
Molecular Structure of DNA and RNA	9
Chromosome Organization	10
DNA Replication	11
Gene Transcription and RNA Modification	12
Translation of mRNA	13
Gene Regulation in Bacteria and Bacteriophages	14
Gene Regulation in Eukaryotes	15
Gene Mutation and DNA Repair	16
Genetic Technologies	18, 19
Population Genetics	24

\*Please note: Course schedule and topics covered are subject to change.