
BIOLOGY 210 - PRINCIPLES OF GENETICS

Section 02, Fall 2018 Course Syllabus

Instructor:

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Course Information:

Lecture – Room 170, Trainer Natural Resources Building (TNR)
Monday, Wednesday, Friday; 1:00pm – 1:50pm

Course website – see D2L

Office hours: Monday, Friday 12-1:00pm; Wednesday 2-3:00pm; and by appointment

Required Text:

Textbook - Brooker, R.J. 2015. *Genetics: Analysis & Principles*, 6th ed. Can be rented in the university bookstore.
Calculator – Simple calculator for exams (programmable/text-display calculators and phones not acceptable)

Course Objective:

The objective of this course is to understand the general principles of genetics that contribute to heredity and variation among organisms. Particular focus will be placed on the molecular basis of transmission, cytological, molecular and population genetics.

Learning Outcomes:

University Level: Investigation / Understanding the Physical World:

- 1) Infer relationships, make predictions and solving problems based on an analysis of evidence or scientific information.
- 2) Apply scientific concepts, quantitative techniques and methods to solving problems and making decisions.
- 3) Describe the relevance of some aspect of the natural science to their lives and society.

Biochemistry/Biology Program Level:

- 1) Apply the scientific method, using appropriate theoretical and practical skills to design research studies, answer biological questions and/or solve problems.
- 2) Describe the flow of genetic information, the chromosome theory of heredity, and the relationship between genetics and evolutionary theory.
- 3) Evaluate and discuss contemporary social and ethical issues related to biology.

Genetics Course Level:

- 1) Compare the basic principles of inheritance at the molecular, cellular and organismal levels, beyond the scope of an introductory course.
 - 2) Compare relationships between molecule/cell level phenomena (modern/molecular genetics) and organism-level patterns of heredity (classical/transmission genetics).
 - 3) Apply this knowledge in a variety of problem-solving situations.
 - 4) Integrate knowledge of DNA with the concepts of cellular function, evolution and biotechnology.
 - 5) Appraise ethical issues involved with the study of genetics, biotechnology and medicine.
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Grading:

Grade Items	% of Course Grade
Exam I	15 %
Exam II	15 %
Exam III	15 %
Exam IV	15 %
Comprehensive Final	25 %
Take-home Assignments	15 %
Total	100 %

Grade Scale:

A ≥ 93%	B+ ≥ 87%	C+ ≥ 77%	D+ ≥ 67%	F ≤ 59%
	B ≥ 83%	C ≥ 73%	D ≥ 60%	
A- ≥ 90%	B- ≥ 80%	C- ≥ 70%		

Grades will be posted on D2L

Exams and Assignments:

There will be 4 Exams given during class lecture time, and 1 comprehensive Final. All exams must be taken for a grade. Each exam is worth 15% of the course grade. The final is worth 25% of the course grade.

There will be three take-home assignments throughout the semester. These assignments will be posted on D2L and will be due on an exam day, indicated in the schedule on the last page of this syllabus. Each assignment should be completed individually.

Exams Study Guides:

Study guides including practice problems and suggested problems from your textbook will be posted on D2L before each exam. Although these problems will not be graded, **some may be used as questions on the exams.** In addition, you have the option to discuss the genetics problems during lecture, with the instructor during office hours or by appointment, and/or attend weekly tutoring sessions. Tutoring sessions are a great way to review as well as get help!

Attendance Policy:

- Attendance at all lectures is required. Any missed assignments cannot be made up without approved documentation for an excusable of absence.
- Excusable absences include illness, accident, family emergency, professional development activity, religious activity (see UWSP University Handbook Chapter 22), or university sanctioned event. Acceptable documentation is the instructor's discretion, but may be written or electronic documentation for the reason of absence. In the case you have an expected or unexpected absence, please contact the instructor **AS SOON AS POSSIBLE** to notify about the nature of the absence and determine if it can be excused.
- Late arrival to class will not be excused and any assignment, quiz, or exam due during that class will not be granted a time extension.

Academic Conduct:

Do not copy the work of other students; Do not represent the work of other students as your own; Do not share your work with other students

You are responsible for the honest completion and representation of your work and for the respect of others' academic endeavors. Any action of cheating, plagiarism, or academic misconduct is subject to the penalties outlined in UWS University Community Rights and Responsibilities, Chapter 14. Please refer to the University Community Rights and Responsibilities rules and regulations for more information: <https://www.uwsp.edu/dos/Documents/CommunityRights.pdf#page=11>

Student assignments determined to be in violation of these policies will result in a grade of zero (0). Depending on the circumstance, students may receive further penalty in accordance with these policies.

Course Communication:

Information about this course will be communicated through D2L and/or sent to University email accounts. Students are responsible for/expected to check their University email regularly. If you use an email account other than your University account to contact the instructor, be sure your full name is included in the message!

Electronic Devices:

Cell phones should be turned **OFF** and **NOT BE USED** during class time unless otherwise indicated. No other communication or musical devices are allowed. Students needing an electronic language dictionary during exams may use one with permission from the instructor (see below). No video or audio recording of lectures is permitted without the prior permission from the instructor (see below).

Students Seeking Assistance & Students Disabilities:

As the instructor, it is **my goal to meet the educational needs of ALL STUDENTS and to provide the best learning environment possible.**

Any students seeking/considering use of assistive technology, materials, or accommodations are encouraged to talk with the instructor at the beginning of the course. It is my goal to find the most effective way to teach all students. Students with a disability seeking accommodations should also register with the Disability and Assistive Technology Center (<https://www.uwsp.edu/disability/Pages/default.aspx>) in the Learning Resource Center (the Library).

Suggested study habits:

It is often observed that people learn more when they encounter and interact with subject material in different ways. The following scale presents representative measures of how we might learn through different forms of interaction.

You learn:

- 10% of what we **read**
- 20% of what we **hear**
- 30% of what we **see**
- 40% of what we **see & hear**
- 50% of what we **write**
- 60% of what is **discussed**
- 70% of what we **experience**, and
- 95% of what we **teach**

Before each class:

- a) Read the textbook chapters and summary sections that pertain to the info in the lecture slides (Powerpoint). While reading, take notes on the side of each slide to help clarify the information discussed in class. These notes can be used as lecture slide guide sheets.

Before the exam:

- a) **Rewrite your notes!** For each lecture, continue developing your lecture slide guide sheets and write out the information that was covered for each slide. Try to describe any images/figures on the slide in your own words. Try to do this for each lecture BEFORE the next lecture. Then read it over once to see the whole picture or overall theme of that lecture. When appropriate, make a table of info to help compare concepts.
- b) **Anticipate exam questions.** Come up with 1-2 questions of your own from each slide to quiz yourself later. Definitions, short answers, problems, and comparisons are all good types of questions.
- c) **Study your notes.** At the end of each week you will have made lecture slide guide sheets that include your notes for that material. Before the week's lectures, read over your lecture slide guide sheets and highlight only the information you could not remember.
- d) **Focus your studies.** Before the exam you will have made a set of lecture slide guide sheets with the information you need to reinforce already highlighted. Focus on this highlighted material one or two days before the exam. Reread, highlight info that you are having trouble learning or remembering and say it out loud, to yourself, with another person from class, a friend or study group.
- e) **Practice questions.** At the end of each chapter, try the practice questions (suggested on D2L) before looking at the answers in the back of the book. Write down the ones you do not understand and ask the instructor for guidance with those problems.
- f) **Revisit your study questions.** Try to answer the questions that you generated for each slide. Study with someone in class and try to answer each other's questions.
- g) **Teach your peers.** If you can teach it to another person, then you know it!

The night before the exam:

- a) **Value your sleep.** Being wakeful and well rested can help your performance on the exam. Be sure to get a good night's sleep before the exam. Cramming at the expense of sleep is not the best method.
- b) **Try to relax.** Study hard, but also seek ways to reduce your stress. Take breaks to help refocus your mind.

After the exam:

- a) A good grade can result from **reading** the text and your notes, **listening** to lectures, **seeing** the words and figures, **writing** and **rewriting** notes from class, the **experience** of answering questions from the chapters or provided, and **discussing** topics with another person (saying it out loud).
- b) Your grade should reflect the amount of cumulative effort you put into your studying. Remember, for every hour of lecture, you should have a lot two hours of designated studying time. In other words, for each exam you should be spending about 10-15 hrs studying! It isn't possible to effectively achieve that right before an exam.

BIOL 210 COURSE SCHEDULE – Principles of Genetics, Fall 2018

Week	Date	Topic	Chapter (Slides)
1	5	Syllabus / Overview of Genetics	1
	7	DNA as Genetic Material	9
2	10	Molecular Structure of DNA and RNA	9
	12	Chromosome Organization and Structure	10
	14	DNA Replication	11
3	17	DNA Replication	11
	19	Gene Transcription in Prokaryotes	12
	21	Gene Transcription in Eukaryotes & RNA Modification	12
4	24	EXAM I	(Chapters 1, 9, 10, 11, 12)
	26	Genetic Code	13
	28	Translation	13
5	1	Translation	13
	3	Gene Regulation in Prokaryotes	14
	5	Gene Regulation in Eukaryotes at DNA Level	15/16
6	8	Gene Regulation in Eukaryotes at RNA Level	15/16
	10	Gene Mutation	19
	12	DNA Repair	19
7	15	Transposable Elements & Viruses	18/20
	17	EXAM II (Take-Home Assignment #1 Due)	(Chapters 13-16, 18-20)
	19	Mendelian Inheritance	2
8	22	Mendelian Inheritance	2
	24	Cell Division: Mitosis	3
	26	Cell Division: Meiosis	3
9	29	Inheritance Patterns: Forms of Allele Expression	4
	31	Inheritance Patterns: Factors Affecting Inheritance	4
	2	Variation in Chromosome Structure and Number	8
10	5	Non-Mendelian Inheritance	5
	7	EXAM III (Take-Home Assignment #2 Due)	(Chapters 2, 3, 4, 5, 8)
	9	Genetic Linkage and Mapping	6
11	12	Population Genetics	27
	14	Population Genetics	27
	16	Research Applications in Population Genetics	Guest Speaker
12	19	Genetic Transfer in Bacteria	7
	21	Molecular Technologies	21
	23	Thanksgiving Break!!!	
13	26	Molecular Technologies	21
	28	Molecular Technologies/Metagenomics	21/23
	30	EXAM IV (Take-Home Assignment #3 Due)	(Chapters 6, 7, 21, 23, 27)
14	3	Biotechnology	22
	5	Biotechnology	22
	7	Biotechnology/Functional Genomics	22/24
15	10	Medical Genetics & Cancer	25
	12	Medical Genetics & Cancer	25
	14	Extra-Lecture Day (Exam Review Day)	
COMPREHENSIVE FINAL: Thursday, December 20 (12/20) 8:00am-10:00am			



Care Team

The University of Wisconsin-Stevens Point is committed to the safety and success of all students. The Office of the Dean of Students supports the campus community by reaching out and providing resources in areas where a student may be struggling or experiencing barriers to their success. Faculty and staff are asked to be proactive, supportive, and involved in facilitating the success of our students through early detection, reporting, and intervention. As your instructor, I may contact the Office of the Dean of Students if I sense you are in need of additional support which individually I may not be able to provide. You may also share a concern if you or another member of our campus community needs support, is distressed, or exhibits concerning behavior that is interfering with the academic or personal success or the safety of others, by reporting here:

<https://www.uwsp.edu/dos/Pages/Anonymous-Report.aspx>.

Title IX

UW-Stevens Point is committed to fostering a safe, productive learning environment. Title IX and institutional policy prohibit discrimination on the basis of sex, which includes harassment, domestic and dating violence, sexual assault, and stalking. In the event that you choose to disclose information about having survived sexual violence, including harassment, rape, sexual assault, dating violence, domestic violence, or stalking, and specify that this violence occurred while a student at UWSP, federal and state laws mandate that I, as your instructor, notify the Title IX Coordinator/Office of the Dean of Students.

Please see the information on the Dean of Students webpage for information on making confidential reports of misconduct or interpersonal violence, as well as campus and community resources available to students. Dean of Students: <https://www.uwsp.edu/DOS/sexualassault> Title IX page:

<https://www.uwsp.edu/hr/Pages/Affirmative%20Action/Title-IX.aspx>

Disability and Accommodations

In accordance with [federal law and UW System policies](#), UWSP strives to make all learning experiences as accessible as possible. If you need accommodations for a disability (including mental health, chronic or temporary medical conditions), please visit with the [Disability and Assistive Technology Center](#) to determine reasonable accommodations and notify faculty. After notification, please discuss your accommodations with me so that they may be implemented in a timely fashion. **DATC contact info:** datctr@uwsp.edu; 715/346-3365; 609 Albertson Hall, 900 Reserve Street

FERPA

The [Family Educational Rights and Privacy Act](#) (FERPA) provides students with a right to protect, review, and correct their student records. Staff of the university with a clear *educational need to know* may also have to access to certain student records. Exceptions to the law include parental notification in cases of alcohol or drug use, and in case of a health or safety concern. FERPA also permits a school to disclose personally identifiable information from a student's education records, without consent, to another school in which the student seeks or intends to enroll.

Academic Integrity

Academic Integrity is an expectation of each UW-Stevens Point student. Campus community members are responsible for fostering and upholding an environment in which student learning is fair, just, and honest. Through your studies as a student, it is essential to exhibit the highest level of personal honesty and respect for the intellectual property of others. Academic misconduct is unacceptable. It compromises and disrespects the

integrity of our university and those who study here. To maintain academic integrity, a student must only claim work which is the authentic work solely of their own, providing correct citations and credit to others as needed. Cheating, fabrication, plagiarism, unauthorized collaboration, and/or helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. Failure to understand what constitutes academic misconduct does not exempt responsibility from engaging in it. For more information on UWS chapter 14 visit: <https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx>

Reporting Incidents of Bias/Hate

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it: <https://www.uwsp.edu/dos/Pages/Anonymous-Report.aspx>.

You may also contact the Office of the Dean of Students directly at dos@uwsp.edu. Diversity and College Access is available for resources and support of all students: <https://www.uwsp.edu/dca/Pages/default.aspx>.

Clery Act

The US Department of Education requires universities to disclose and publish campus crime statistics, security information, and fire safety information annually. Statistics for the three previous calendar years and policy statements are released on or before October 1st in our [Annual Security Report](#). Another requirement of the Clery Act is that the campus community must be given timely warnings of ongoing safety threats and immediate/emergency notifications. For more information about when and how these notices will be sent out, please see our [Jeanne Clery Act](#) page.

The **Drug Free Schools and Communities Act** (DFSCA) requires institutions of higher education to establish policies that address unlawful possession, use, or distribution of alcohol and illicit drugs. The DFSCA also requires the establishment of a drug and alcohol prevention program. The Center for Prevention lists information about alcohol and drugs, their effects, and the legal consequences if found in possession of these substances. [Center for Prevention – DFSCA](#)

Copyright infringement is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under section 106 of the Copyright Act. Each year students violate these laws and campus policies, putting themselves at risk of federal prosecution. For more information about what to expect if you are caught, or to take preventive measures to keep your computing device clean, visit our [copyright page](#).