

**General Genetics**  
**MBIOS301/BIOL301**  
**Fall 2008**



<b>Clinical Assistant Professor</b>	<b>Dr. Julie Stanton</b>
E-mail Address	juliestanton@wsu.edu
Telephone	335-7719
Office	Eastlick 379
Office Hours	Tuesdays and Thursdays from 3-4 pm*
Teaching Assistants	Brian Baier, Sze-Ming Law and Amanda Wiren

\*I am also happy to meet at a time that is convenient for you.  
Please feel free to contact me for an appointment.

### General Information

#### Course Information

- Credit Hours: 4.0
- Lecture: Tuesday and Thursday, 10:35-11:50 a.m., Heald G3
- Recitation: Thursday or Friday, time listed on your schedule, see lecture handout for locations
- Pre-requisites: BIOL106, BIOL107, and two semesters of chemistry

#### Required Course Materials

- Genetics: Analysis and Principles by Robert J. Brooker, 3<sup>rd</sup> edition
- MBIOS301/BIOL301 website on eLearning (<https://elearning.wsu.edu>)

#### Course Description

- This course covers principles of modern and classical genetics, and is organized into four sections:
  - ① *Genes as units of information.* Including: DNA and RNA structure, DNA replication, transcription, translation, and control of gene expression in prokaryotes.
  - ② *Genes as carriers of inheritance.* Including: Mendelian genetics, chromosome inheritance, linkage, and non-Mendelian inheritance.
  - ③ *Gene alterations and the genetics of populations.* Including chromosomal variation, mutation, DNA repair, recombination, population genetics, and quantitative genetics.
  - ④ *Current genetic discoveries and technologies.* Including: control of gene expression in eukaryotes, RNAi, epigenetics, recombinant DNA technology, and genomics.

#### Course Goals

- To learn key genetic processes and mechanisms and to obtain the background knowledge necessary to understand current research in genetics.
- To appreciate that genetics is a dynamic discipline in which knowledge is based on experimental findings and concepts can change in light of new information.
- To understand how new information is obtained in genetics and to survey methods for answering new questions in this area.

#### Lecture

- **I expect you to attend class and be on time.** I expect you to be courteous while in class.
- I look forward to your active, thoughtful, and consistent participation in lecture activities.
- PowerPoint presentations will serve as an outline for lecture and discussion. It will be necessary to take notes in addition to what is presented on each slide.

## Recitation

• Recitation is an opportunity for you to enhance your understanding of material covered in lecture. During recitation you will review difficult concepts, practice problem solving, and engage in other learning activities.

• **Recitation attendance is required. You may miss two recitations, but if you miss three recitations you will automatically earn an F in General Genetics.**

## Assessment

### Summary of Point Distribution

10 recitation quizzes x 10 points	= 100 points
3 lecture exams x 100 points	= 300 points
1 comprehensive final exam	= 125 points
<b>Total Points</b>	<b>= 525 points</b>

### Grading Scale

100-93.0%	A	77.5-72.6%	C
92.9-90.0%	A-	72.5-70.0%	C-
89.9-87.6%	B+	69.9-67.6%	D+
87.5-82.6%	B	67.5-60.0%	D
82.5-80.0%	B-	<60.0%	F
79.9-77.6%	C+		

### Recitation Quizzes (10 points each)

- On Tuesday afternoons by 4:00 pm, a study guide will be posted on the MBIOS301/BIOL301 eLearning website (<https://elearning.wsu.edu>) containing information about the upcoming quiz.
- Quizzes will be given during the first ten minutes of recitation. There will be twelve recitation quizzes, and your top ten scores will count toward your final grade.

### General Genetics Recitation Quiz Schedule

Quiz	Date of Recitation	Lectures Covered on Quiz
1	8/28 or 8/29	8/26
2	9/4 or 9/5	8/28 and 9/2
3	9/11 or 9/12	9/4 and 9/9
4	9/18 or 9/19	9/11 and 9/16
	9/25 or 9/26	<i>No Recitation - Exam One on Tuesday</i>
5	10/2 or 10/3	9/18, 9/25 and 9/30
6	10/9 or 10/10	10/2 and 10/7
7	10/16 or 10/17	10/9 and 10/14
	10/23 or 10/24	<i>No Recitation - Exam Two on Tuesday</i>
8	10/30 or 10/31	10/16, 10/23 and 10/28
9	11/6 or 11/7	10/30 and 11/4
10	11/13 or 11/14	11/6
	11/20 or 11/21	<i>No Recitation - Exam Three on Tuesday</i>
	11/27 or 11/28	<i>No Recitation - Thanksgiving Holiday</i>
11	12/4 or 12/5	11/20, 12/2
12	12/11 or 12/12	12/4 and 12/9

### Exams (100 points each)

- **General information:** Exams will focus on concepts and mechanisms highlighted in lecture and covered in the accompanying textbook readings for that section. I expect you not only to recall what you've studied, but to also be able to synthesize, apply and evaluate the information.
- **Format:** Exams will consist of multiple-choice questions and short answer/short essay questions.

- **Dates:** Note that the dates of the exams are set, and prepare your semester schedule accordingly.

### **Comprehensive Final Exam** (125 points)

- The final exam will be on Monday, December 15 from 10:10 a.m.-12:10 p.m. in Heald G3.
- As stated in university policy: "A student will not be granted special final examinations for the purpose of leaving the institution before the close of the semester." The fall semester closes on Friday, December 19.
- The first part of the final exam will cover material from lectures 22-26 and the second part will cover material from the entire semester.

## **Policies**

### **Make-up Exams**

- Exams can only be made up in the event of a university-approved absence or a physician-verified illness. If you qualify for a make-up exam, please contact me before the exam or no later than 72 hours after the exam. Written documentation is required and must be submitted to me before a make-up exam can be administered.
- If exam 1, 2 or 3 is missed for any other reason or proper documentation is not provided, one **comprehensive essay** make-up exam will be offered on Wednesday, December 10 at 2:00 pm. This exam will cover the first three sections of the course and you will be responsible for all the material.

### **Students with Disabilities**

- Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Disability Resource Center (DRC). All accommodations **MUST** be approved through the DRC (Administration Annex Building, Room 205). Please stop by or call 509-335-3417 to make an appointment with a disability specialist.

### **Academic Integrity Statement**

Academic integrity will be strongly enforced in this course. Any student caught cheating on a quiz or an exam will earn an F in the course without the option to withdraw. Formal documentation will be filed with the WSU Office of Student Conduct. Academic dishonesty includes but is not limited to: cheating (copying answers from other students, offering answers to other students, using unauthorized materials during quizzes or exams), falsification, fabrication, plagiarism, abuse of academic materials, complicity or misconduct in research (for details see WAC 504-25-310). If this is not clear please read the Standards of Conduct for Students at [www.conduct.wsu.edu](http://www.conduct.wsu.edu). Academic integrity is the cornerstone of the university. Any student who attempts to gain an unfair advantage over other students by cheating will fail the course and will not be allowed to withdraw. You must do your own work in this course.

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## **Additional Notes**

I am excited to be your professor for General Genetics. For my Ph.D. study, I used the protozoan parasite *Leishmania tropica* as a model system to address a fundamental question in genetics: How does an organism control the expression of its genes? This project allowed me to explore the primary literature in this area, master molecular biology laboratory techniques, and learn methods for genomic analysis. I am looking forward to sharing my enthusiasm for this subject with you.

I love teaching and I am interested in finding new ways to better facilitate your understanding of the material. I will seek your feedback on occasion to see how you are responding to what we are doing in lecture. Please let me know how I can assist you and feel free to come to me with concerns you are having about the course. I hope that through our collective efforts we will become a community of learners who will succeed in General Genetics.

**General Genetics Tentative Lecture Schedule  
Fall 2008**

NOTE: Except for the exam dates, which will not be changed, this schedule is subject to change. All changes will be announced in class. You are responsible for all class announcements.

Week	Lecture	Day and Date	Topic	Reading
One	1	Tuesday 8/26	Introduction/Nature of genetic material	Ch (1), 9
	2	Thursday 8/28	DNA & RNA structure/Chromosome structure	Ch 9, 10
Two	3	Tuesday 9/2	Chromosome structure/DNA replication	Ch 10, 11
	4	Thursday 9/4	DNA replication	Ch 11
Three	5	Tuesday 9/9	Transcription/RNA processing	Ch 12
	6	Thursday 9/11	Translation	Ch 13
Four	7	Tuesday 9/16	Gene regulation in prokaryotes	Ch 14
	8	Thursday 9/18	Mendelian inheritance	Ch 2
Five		Tuesday 9/23	<b>Exam One (Lectures 1-7)</b>	
	9	Thursday 9/25	Mendelian inheritance/Extensions of Mendel	Ch 2, 4
Six	10	Tuesday 9/30	Extensions of Mendelian inheritance	Ch 4
	11	Thursday 10/2	Chromosome inheritance	Ch 3
Seven	12	Tuesday 10/7	Linkage & mapping	Ch 5
	13	Thursday 10/9	Linkage & mapping	Ch 5
Eight	14	Tuesday 10/14	Non-Mendelian inheritance	Ch 7
	15	Thursday 10/16	Genetic transfer in bacteria	Ch 6
Nine		Tuesday 10/21	<b>Exam Two (Lectures 8-14)</b>	
	16	Thursday 10/23	Variation in chromosome structure & number	Ch 8
Ten	17	Tuesday 10/28	Gene mutation & DNA repair	Ch 16
	18	Thursday 10/30	DNA repair/Recombination	Ch 16, 17
Eleven	19	Tuesday 11/4	Recombination/Transposition	Ch 17
	20	Thursday 11/6	Population genetics	Ch 24
Twelve		Tuesday 11/11	<i>No Class: Veteran's Day Holiday</i>	
	21	Thursday 11/13	Quantitative genetics	Ch 25
Thirteen		Tuesday 11/18	<b>Exam Three (Lectures 15-21)</b>	
	22	Thursday 11/20	Gene regulation in eukaryotes	Ch 15
Fourteen		11/25 & 11/27	<i>No Class: Thanksgiving Holiday</i>	
Fifteen	23	Tuesday 12/2	Epigenetics	Ch 7
	24	Thursday 12/4	RNAi/Recombinant DNA technology	Ch 15, 20
Sixteen	25	Tuesday 12/9	Recombinant DNA technology/Genomics	Ch 20, 21
	26	Thursday 12/11	Genomics	Ch 21
Seventeen		Monday 12/15	<b>Final Exam: 10:10 am - 12:10 pm (Lectures 22-26 &amp; comprehensive material)</b>	