

BIO 343 INTRODUCTION TO GENETICS
LECTURER: Dr. Lisa Dorn

OFFICE: HS 45; LAB: HS 47/50 PHONE: 424-3064; E-MAIL: dorn@uwosh.edu

OFFICE HRS: Posted to D2L

LECTURE HOURS: 11:30 – 12:30 pm in Halsey Science Building; Rm.268

TEXT: **Brooker, Genetics: Analysis & Principles (4th edition or Custom Book)**
McGraw Hill.

OBJECTIVES: Genetics and its experimental methods is one of the broadest and most rapidly evolving fields of science. I cannot possibly cover it all, so my goal is to teach you how to think like a geneticist, while learning genetics concepts so that you can judge for yourself the value of emerging genetic technologies and discoveries. This course covers Mendelian genetics and its complications, the molecular basis of genes and their affect on phenotypes, the methods of identifying and characterizing the genetic basis of diseases and other phenotypes as well as population and evolutionary genetics.

The prerequisites for this course are Bio105 and 323, which by extension means you have taken Chem 105 and 106. The laboratory part of this course will expand on what you have learned in Molecular and Cell Biology (Bio 323). I will assume you have mastered the Bio323 material and will not waste much time reviewing this material but there will be some review of 323 materials in lab.

ASSESSMENT: How are you going to earn your grade?

EXAMS: 4 exams each worth 100 points. They will be mostly problems similar to those in your D2L quizzes. (400 total points).

Note: For exams you will need a calculator. **YOU CANNOT USE YOUR PHONE AS A CALCULATOR ON EXAMS.**

PROBLEM SOLVING: There will be **8 D2L** problem-solving sessions where you will be required to solve problems that will be available on D2L. They are **worth 10 points each (total = 80 points)**. These problems are presented as quizzes that will be available ~1 week before the due date for that quiz. During that week you may open it, print it and discuss potential solutions with your peers and me. On the day that the quiz is due you have until 10:30pm to submit your quiz. After that 10:30 pm time you have a 6 hr grace period to submit late (i.e. until 5:30 am the following morning). After that, you lose 1 pt for every hour the quiz is late. **THE QUIZ CLOSSES AT 10:30PM THE DAY AFTER IT IS DUE AT WHICH POINT THE GRACE PERIOD IS OVER!** You can make up some or all of those lost points at the end of the semester with the extra credit quiz depending on how many quizzes you miss.

You should *save* the answers as you enter them. You can still change answers even after saving but once you submit the quiz you cannot. You can see the answers 1 day after the late submission deadline.

*****IMPORTANT***:** D2L can be temperamental. **Do not wait for the last hour to submit your answers.** D2L tells me when you are logged on, if you tried to submit a quiz and even if you have opened the quiz.

Excuses for waiving late submission penalties that **will NOT be accepted** include:

- D2L problems in the last hour before the deadline.
- I forgot to save my answers
- I forgot after I went to work
- My internet service at home failed.

BUT if you have submitted by the deadline and D2L fails to recognize your submitted quiz send me an e-mail. In most cases, I have your quiz and can force D2L to accept it.

EXTRA CREDIT QUIZZES: There will be **one** extra credit quiz at the end of the semester worth **5** points. Besides the extra credit, it will be very similar to questions you will find on the last exam so I highly recommend that you do this. ***NOTE:** Extra credit points from this quiz can be used to pass the course but, you may have other opportunities for extra credit points that may change your letter grade but these EC points cannot be used to **pass** the course.

LABORATORY: Is worth **105 points**. The lab syllabus is appended to the end of this document.

LABORATORY ATTENDANCE: Lose 5 pts on a report for every unexcused absence during the weeks of that reports exercises.

Total Possible points = 400 + 80 + 105 = 585.

GRADING SCALE:

A = 93 - 100%,

A- = 90 - 92.9%

B+ = 88 - 89.9%

B = 83 - 87.9%

B- = 80 - 82.9%

C+ = 78 - 79.9%

C = 73 - 77.9%

C- = 70 - 72.9%

D+ = 68 - 69.9%

D = 63 - 67.9%

D- = 60 - 62.9%

F (Failure) < 60%

Grades may be “curved” at the end, if necessary.

Disputing a grade: if you feel your exam has been misgraded, you must submit to me a request for re-grade within a week of the day I have passed exams back (not the day you picked it up). That request must be in writing accompanied by a copy of the exam in question that I will keep.

Students With Disabilities are welcome in this class! If you need special accommodations please contact me during office hours in the first week of class. This includes students with diagnosed learning disabilities. If you feel you should be evaluated for a learning disability, please contact the **Project Success** office at 920 424-1033 or go to their website at <http://www.uwosh.edu/organizations/success>.

Classroom Etiquette: please silence all pagers, cell phones; or iPods etc. and do not talk or whisper unless called upon in turn (but feel free to raise your hand for a question or comment at ANY time!). Please do not text during my lectures. If you find me that boring just don't bother to come. Texting is more disruptive than you suspect and wastes both my time and your money.

Incomplete Grades may be given in extreme circumstances, such as when a student becomes too ill to complete the semester's work. Please talk to me if you think your situation warrants an "I" grade and be prepared to provide documentation.

Make up exams. If you cannot make one exam several alternatives may be available to you depending on the rest of my teaching obligations at that time. I will do what I can, given your circumstance. If you know ahead of time that you must miss an exam (for instance if your job requires that you work that day) please let me know ahead of time.

The schedule of lectures, exams and due dates for problems. There may be minor changes to this schedule of lectures without notice. I will announce such changes in class. Exams and quizzes will stay on schedule unless (for quizzes) there are problems with D2L.

Lec #	Day	Date	Topics	Book
1	Wed	5-Sep	Mendels Laws; Monohybrids & Dihybrids	Ch2
2	Fri	7-Sep	Dihybrids & Pedigrees	Ch2
3	Mon	10-Sep	Pedigrees; Probability	Ch2
4	Wed	12-Sep	Chi-Square Chromosomes Sex-Linkage	Ch 3
5	Fri	14-Sep	Sex Determination; Meiosis Quiz 1 Due	Ch 3
6	Mon	17-Sep	Recessive Lethals	Ch 4

7	Wed	19-Sep	Pleiotropy; Incomplete Dominance	Ch 4
8	Fri	21-Sep	Co-Dominance, Overdominance,	Ch 4
9	Mon	24-Sep	Penetrance, Complementation	Ch 4
10	Wed	26-Sep	Epistasis, Linkage and Recombination Quiz 2 Due	Ch 4/6
	Fri	28-Sep	EXAM 1 (covers up to lecture 9)	
11	Mon	1-Oct	Linkage and Recombination	Ch 6
12	Wed	3-Oct	Mapping genes: dihybrid crosses	Ch 6
13	Fri	5-Oct	Mapping genes: Trihybrid crosses Quiz 3 Due	Ch 6
14	Mon	8-Oct	Mapping genes: Trihybrid crosses	Ch 6
15	Wed	10-Oct	Genomics	Ch 20
16	Fri	12-Oct	Genomics	Ch 20
17	Mon	15-Oct	Genomics Quiz 4 Due	Ch 20
	Wed	17-Oct	EXAM 2 (covering lectures 10 to 18)	
18	Fri	19-Oct	Gene Mutation	Ch 16
19	Mon	22-Oct	Gene Mutation	Ch 16
20	Wed	24-Oct	Chromosomes: Change in Number	Ch 08
21	Fri	26-Oct	Chromosomes: Structure; Variation & Mutations	Ch 08
22	Mon	29-Oct	Chromosomes: Polyploidy	Ch 08
23	Wed	31-Oct	Transcription & Post-Transcriptional Processing Quiz 5 Due	Ch 12
24	Fri	2-Nov	Transcription & Post-Transcriptional Processing	Ch 12
25	Mon	5-Nov	Post-Transcriptional Processing	Ch 12
26	Wed	7-Nov	Post-Transcriptional Processing	Ch 12
27	Fri	9-Nov	Transcriptional Regulation in Eukaryotes	Ch 15

28	Mon	12-Nov	Transcriptional Regulation Chromatin & RNAi	Ch 15
29	Wed	14-Nov	Transcriptional Regulation Chromatin & RNAi Quiz 6 Due	Ch5
30	Fri	16-Nov	Non-Mendelian Inheritance: X-inactivation	Ch5
	Mon	19-Nov	'EXAM 3 (Lectures 19 to 29)	
	Wed	21-Nov	Thanksgiving Break (NO LABS THIS WEEK)	
	Fri	23-Nov	Thanksgiving Break(NO LABS THIS WEEK)	
31	Mon	26-Nov	Non-Mendelian Inheritance: Imprinting	Ch5
32	Wed	28-Nov	Non-Mendelian Inheritance: X-inactivation & Imprinting	Ch5
33	Fri	30-Nov	Population Genetics: HW	Ch 24
34	Mon	3-Dec	Population Genetics:Drift Quiz 7 due	Ch 24
35	Wed	5-Dec	Population Genetics Variation	Ch 24
36	Fri	7-Dec	Population Genetics Inbreeding	Ch 24
37	Mon	10-Dec	Population Genetics/ Review Quiz 8 Due; EC Quiz Due	Ch 24
	Wed	12-Dec	EXAM 4 (Lectures 30-37)	Ch 24
	Fri	14-Dec	Alternate Exam day	

Genetics Lab Syllabus

Instructors: Lisa Dorn HS 45/47/50; dorn@uwosh.edu

Section A01L: Tues 9:40am – 11:40 am in HS 50,

Section A02L: Tues 1:20 pm – 3:20 pm in HS 50,

Instructor: Rosemary Shade HS 142; shade@uwosh.edu

Section A03L: Thurs 9:40 – 11:40 am in HS 50

OBJECTIVES: Welcome to the laboratory portion of Biology 343. This course is designed to give you hands-on experience with modern genetics techniques. It is not designed to coincide very much with your lecture material but it will on occasion. You will learn molecular lab techniques that are useful for genetics, learn to debug those

techniques, as well as how to interpret your results and what that means for understanding genes and their function. These exercises are based on molecular biology concepts you should have learned in 105 and 323. Therefore, we will use some lab time to review those molecular biology concepts. Despite this course's position as a core course there are only two hours a week devoted to laboratory. That means that your exercises will stretch out over a period of weeks. We will help you keep track. It may help if you use the schedule presented below as a checklist.

ORGANIZATION: The course consists of three basic sections or “modules”. Within each module are a series of exercises designed to teach the topics covered by that module. The first module *Basic Lab Techniques* teaches the basic techniques you will need for the rest of the semester. For some of you with experience in professors’ labs this module will be *very basic* at times. Please be patient. Remember this course is a required course for all biology majors even those who are not pursuing research that requires these techniques. Those of you with research experience may find that using your expertise to help less-experienced students a useful exercise. Last, some of these exercises are designed to at least partially fail so do not get discouraged.

GRADING: The lab part of the course is worth **105** points toward your total grade. There are four quizzes and five reports as shown in the table below.

Quiz/ Report		Points
Quiz 1: Nucleic Acids Review		10
Quiz 2: Replication		10
Report 1: Electronic PCR		10
Quiz 3: Optimization/ Polymorphisms		20
Report 2: Polymorphisms		15
Report 3: Marker Map		10
Quiz 4: Gene Expression		10
Report 4: RT-PCR		10
Report 5: Gene Families		10
	Total points	105

