



BIOL137-01

Human Genetics Laboratory

Lab meetings Tues. 2:00-3:50 p.m. Room S-219 (Brockton)

Instructor William Hanna, Ph.D.

Office hours Mon., Wed., and Fri. 9:00-10:00 a.m.
Tues. 2:00-3:00 p.m., or by appointment

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office: S-220 (in the Science building; Brockton campus)

Course website <http://www.massasoit-bio.net/courses/>

Course description

This course will include activities related to human reproductive anatomy, transmission genetics, and molecular genetics. An emphasis will be placed on understanding the scientific process. Laboratory: two hours.

Pre/corequisite: Human Genetics Lecture (BIOL136)

Who should be taking this course?

- Students interested in a better understanding of the principles behind reproduction, genes, and inheritance;
- Students who wish to apply the concepts of genetics and molecular biology in a practical arena;
- Students in Transfer Programs, such as:
 - Liberal Arts Transfer (LAT)
 - Liberal Arts Transfer – Science option (LATS)

- Business Administration Transfer (BAT)
- Criminal Justice Transfer (CJTR)
- Child Care Transfer
- Human Services Transfer; and
- Students in, or interested in, careers in human health and/or counseling, such as:
 - Nursing Education
 - Radiologic Technology
 - Respiratory Care
 - Certificate programs in Phlebotomy, Medical Assisting, Dental Assisting, among others.

Required course materials

None; all handouts will be provided by the instructor and will be made available online at the course website. It is strongly recommended that you have your textbook or other materials from the lecture portion of the course. Any current non-major's genetics textbook should be sufficient.

Prelab and lab activities

Prelabs. Before coming to each lab, you are expected to have read the prelab reading and to have completed a prelab activity online in MyMassasoit, the College's course management system (a.k.a. WebCT or CE8). Directions for accessing MyMassasoit can be found on the inside cover of this lab manual.

The purpose of this prelab activity is to introduce you to the material we will be covering in the lab, thereby minimizing the time for the instructor to "teach" you prior to the lab itself. This online activity must be completed by the beginning of that week's lab.

You will be given two (2) attempts to take the prelab activity, and your higher score will count.

Lab activities and reports. During lab, you and your lab group will work on a lab activity. At the end of lab, you will submit a lab report based on your work. You must be present and participating in the lab to submit lab reports.

Your homework for the following lab is the prelab reading and online activity. All handouts you need are provided in the *Laboratory Manual*; electronic copies are available on the course website.

Attendance and late assignments

Your attendance is expected at all meetings. There are **no make-up labs**. Part of your grade in this lab is derived from participation in the lab activity.

If you miss no labs,	your lowest lab grade will be dropped.
If you miss one lab,	no penalty; you earn a zero for your lab, but it is dropped as your lowest grade and will not count against your final lab grade.
If you miss two or three labs,	you will receive zeroes on your labs that will count against your final lab grade.
If you miss four or more labs,	you automatically fail the lab portion of the course.

I must periodically provide the Registrar's Office with information on student attendance. Students who are not

participating may be withdrawn from the course. Please understand that non-participation in the course can result in you being required to pay back your financial aid.

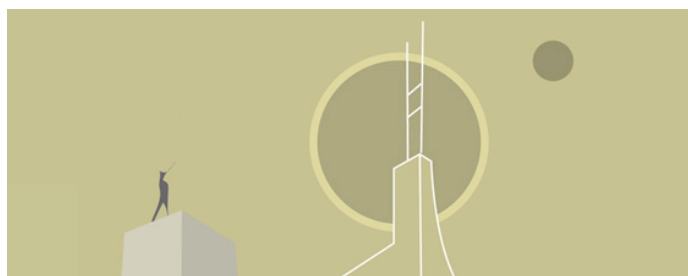
Academic integrity (from the College catalog)

Students are responsible for maintaining the highest standards of academic honesty and integrity in this course. Violations of academic honesty will usually fall in one of two categories: cheating or plagiarism. Cheating includes, for example, copying or buying the work of others; hiring or persuading others to do work under a false name; concealing notes or other helpful materials during an exam; communicating with your classmates during an exam. Plagiarism is the use of another person's work or ideas as one's own without giving appropriate credit. In short, plagiarism is intellectual theft and is, therefore, taken seriously; consequently, using the ideas or language of others in an oral, written, technical, or artistic work must be properly acknowledged and documented. Students are responsible for understanding what constitutes plagiarism in their classes and should note that these offenses are often very easy for the instructor to catch. In this class, the penalty for cheating or plagiarism will be a grade of zero (0) for the work in question and possibly a failing grade for the course.

Please note that copying either text or drawings out of textbooks, course materials and websites is also prohibited. All work conducted in this course is to be yours and yours only!

Students with disabilities

Students with disabilities who believe that they may need accommodations in the classroom are encouraged to contact a disability counselor as soon as possible. Students at the Brockton Campus with learning disabilities should contact Andrea Henry (ext. 1805). Students with physical disabilities at the Brockton Campus should contact Mary Berg (ext. 1425). All students at the Canton Campus should contact Mary Berg (ext. 2132).





Fall 2010 Schedule

Date	Lab Activity	Page
Sept 9.....	Windows to a Microscopic World	1
Sept 16.....	Mitosis	13
Sept 23.....	Meiosis and Introduction to Inheritance.....	31
Sept 30.....	Probability and the Idea of Chance	47
Oct 7	The Genetics of Codominance	59
Oct 14.....	Chromosomes and Karyotyping.....	71
Oct 21	Polygenic Inheritance.....	87
Oct 28.....	Reproductive Anatomy	103
Nov 4.....	Survey of Animal Development.....	119
Nov 11	Veterans' Day • No Lab	
Nov 18.....	Lab Test on Reproductive Anatomy	
Nov 25.....	Thanksgiving • No Lab	
Dec 2.....	Forensic DNA Fingerprinting (Week 1).....	133
Dec 9.....	Forensic DNA Fingerprinting (Week 2).....	147
Dec 16.....	Cancer Gene Detection	157

Grading

In calculating your final grade in this class, your assignments will be weighted as follows:

Prelab activities (online)	40%	(lowest grade dropped)
Lab reports	40%	(lowest grade dropped)
Lab test	20%	
	<hr/>	100%

Your final grade will be assigned using the scale below:

A	Above 92.4%	C	72.5-77.4%
A-	89.5-92.4%	C-	69.5-72.4%
B+	87.5-89.4%	D+	67.5-69.4%
B	82.5-87.4%	D	62.5-67.4%
B-	79.5-82.4%	D-	59.5-62.4%
C+	77.5-79.4%	F	Below 59.5%

Your final grade in this course is a culmination of the work you complete throughout the semester. Final grades are non-negotiable and no additional assignments are accepted at the end of the semester in the event you are not happy with your grade.

Extra credit

If you are in “good standing” in the course (*i.e.*, not failing), you have an opportunity to earn extra credit by designing a poster that advertises this class to other students. Posters will be displayed in the Science building during “registration season” for future Genetics Lab students to see.

Poster requirements:

- Must be at least 12” x 18” and be on poster board. (No taped-together notebook paper!)
- Must be in good taste.
- Must be neat, well-written, and all words must be spelled correctly. (I am happy to “proofread” for you, as long as you don’t wait until the last minute!)

- Must be submitted to me no later than Nov. 8. (I will put them up for you.)
- Your name does not have to be visible on the front of the poster.
- Each student can only submit one poster.

Submission of an acceptable poster will bump you up by one grade. For example, if your average is a C+, a successful poster will raise you to a B-. Let your creative juices flow!

You must earn a minimum of a D- on your lab assignments in order to qualify for this extra credit privilege. Submitting a poster will not move you from an F to a D-.

Course outcomes

By the end of this course, you should be able to:

- Describe the steps of the scientific method and apply in solving problems related to human genetics.
- Conduct laboratory experiments related to current topics in human genetics, using the scientific method in order to understand how scientists collect, analyze, and interpret data.
- Work safely in the laboratory and follow simple laboratory protocols in order to work cooperatively to complete laboratory exercises.
- Perform simple mathematical calculations, construct graphs and tables, and analyze data as appropriate to draw conclusions.
- Use the compound microscope as an observational tool.
- Develop basic lab skills, such as the use of pipettes and micropipettes, wet mount preparations, ELISA, and electrophoresis.
- Investigate selected topics in human genetics.
- Strengthen Core Competencies in order to increase success in this (and other) courses and in the workplace.