

Genetics – BISC 336 Lab – Fall 2014– Shoemaker 527

Lab Coordinator: Mr. John Romanowski, 525 Shoemaker Hall, x2002, jromanow@olemiss.edu

Office Hours: THURSDAY 9:00-11am, 1pm-4pm

Graduate Teaching Assistants: Marcella, Stu, Mr. J, JP
Sections: Mr. J (1,3,4,10), JP (2,9), Stu (5,6,11), Marcella (7,8,12)

CONTACT INFO

JP: jlawrenc@go.olemiss.edu

Stu: svnielse@go.olemiss.edu

Marcella: mgsantos@go.olemiss.edu

Description:

The laboratory segment of BISC 336 is designed to illustrate the principles of genetics that you are learning in the lecture. The semester will begin by studying basic Mendelian Inheritance patterns and probability through both problem sets and actual genetic crosses of *Drosophila melanogaster*, the fruit fly. The second half of the semester will expose you to common molecular genetic techniques utilized in multiple areas of medicine and biological research.

The *Drosophila* crosses will take 5 weeks, from parents through the F₁ to the F₂. We will do four crosses. Concurrent with the crosses, you will be responsible for completing two problem sets focusing on probability, Punnett squares, pedigrees, gene linkage, and gene mapping.

The molecular genetics experiments will take 6 weeks. Procedures for all experiments will be provided one week prior to lab. Students are expected to have read the lab handouts and the procedure before lab. **All handouts and homeworks will be posted via Blackboard. YOU are responsible for printing handouts, homework, and other related material BEFORE LAB.**

Text:

Related readings from the lecture text (Essentials of Genetics 8th edition, Klug, *et. al*) are noted throughout the syllabus.

Students with Disabilities

It is University policy to provide, on a flexible and individual basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities, which have been verified through the [Office of Student Disability Services](#), need to contact John Romanowski at the beginning of the semester to discuss their individual needs for accommodations.

Grades:

The laboratory component of BISC 336 counts for 25% of the overall course grade. This will be broken down as follows:

- Problem Sets: Hand Written portion, Blackboard Portion = 2.5% (x4) = 10%
- Fly Lab Manual = 2% (x5) = 10%
- Fly Quiz = 15%
- PCR Crime Scene/Molecular Figure 1 = 5%
- Restriction Digest/Molecular Figure 2 = 5%
- Molecular Quiz = 15%
- Population Genetics blackboard problem set = 10%
- Comprehensive Final Exam = 25%
- Participation = 5%

Calculating your Grade:

To calculate your grade, you multiply your score for that assignment/quiz/exam with its weight and then sum all of the numbers. For example, if you scored an 83% on the Fly Quiz, you would calculate $(.83)(.15)$, which equals .1245 or 12.45.

ATTENDANCE IS REQUIRED

If you know you will be absent due to a court date, university approved function, etc., you are expected to contact your TA as soon as possible. If they absence is excused ahead of time, you will have the opportunity of attending another lab. Approval of excused absence is done per **John Romanowski**. If you arrive late to lab, after your group has begun the experiment, 2% will be deducted from your **final lab grade**. This penalty will occur with each late arrival. Each unexcused absence will result in 10% deducted from your **final lab grade**.

PARTICIPATION

At the end of the semester, an overall participation grade will be given based on criteria including but not limited to: interaction with laboratory team members, laboratory instructor, and active participation within the lab itself. This accounts for 5% of your final lab grade. Lastly, failure to come prepared to lab (e.g not printing problem sets) will account to a 2% deduction from the **final lab grade**. You will be expected to keep your cell phones put away during the duration of the lab period unless needed for emergency purposes. Texting will be construed as not participating in lab; each instance will incur a 2% deduction from the **final lab grade**. Lastly, coming prepared to lab with material printed ahead of the week's lab.

Assignments

*Assignments are due at the beginning of lab. **Late assignments will not be accepted without valid documentation.** Questions related to laboratory assignments will not be answered within 24 hours of being due.*

Make up quizzes/exams:

Students can make up the lab quizzes only if they have proper documentation regarding their absence (i.e. doctor's note, court date, death certificate). Unexcused absences will result in a score of 0 for that quiz. The lab final can be made up immediately after the lecture final **only** with documentation regarding the absence.

Materials:

You will need to purchase your own sharpies to use in the various labs of BISC 336.

Make up Labs:

Students **MAY** have the opportunity to make up a lab **if an absence is excused** by attending an earlier or later lab during the week. **STUDENTS WILL NOT BE ABLE TO MAKE UP MISSED LABS WITHOUT VALID DOCUMENTATION.**

Blackboard Policies

Blackboard will be utilized in administering several online problem sets throughout the semester. As a result, you **MUST** be able to connect to Blackboard via a **secure and dependable** network. You will NOT be exempted from a problem set if you connect through a wireless network or connection that drops out sporadically (Internet connection dropout will cause Blackboard to automatically submit your answers). It is strongly recommended to start Blackboard problem sets well in advance of the due date to avoid technical problems costing points.

Online Assignments:

A. You are responsible for the following:

1. **Contact Technical Support if you have problems.** Any problems associated with the website such as registering, logging on, etc. are to be directed to technical support. It is your responsibility to get these issues resolved. Having “technical problems” is not an acceptable excuse for not getting assignments completed.
2. **Follow instructions carefully. Spelling is important. Read carefully and spell correctly.** Incorrect spelling will result in an answer being incorrect, and **your grade will not be changed. Answers in an improper format (e.g question asks for a ratio and you give a percentage) will be incorrect and will not be changed.**
3. Use **Firefox** or **Internet Explorer** only. Other browsers do not always save your answers. If you use the wrong browser, **you will not be given a second chance to re-do the assignment.**
4. **Once you submit your answers, they are final, and no changes will be made to them for any reason.** Make sure when you are ready to submit your answers as final, and you click on the correct option.
5. Lastly, it is your responsibility to ask/discuss Blackboard feedback (e.g if you want to know answers/incorrect problems) with your respective TA. An answer key WILL NOT be given out for any of the Blackboard assignments.

****Deadlines** for “Accessing”/completing online assignments are stated within this syllabus. They will be notated with availability dates and times. After period expires, access to Blackboard (BB) assignments will be closed. **NO RESETS** will be given within 24 hours of assignment deadline. Please do not wait until the last minute to complete these assignments. ******

Registering to BISC 336 and the corresponding lab section translates to full recognition and acknowledgement of the expectations, policies, guidelines, and information stated above.

***This schedule is subject to change at the discretion of the instructor ***

BISC 336 SPRING 2014 TENTATIVE LAB SCHEDULE

WEEK	LAB
Week 1; 8/25	Introduction – Syllabus, Setting up Fly Crosses
Week 2; 9/1	F1 Parent Removal; open lab for homework questions
Week 3; 9/8	Count F ₁ Flies Record numbers of male and females with each phenotype. Hypothesize mode of inheritance for phenotype. Cross F ₁ to themselves
Week 4; 9/15	Remove F1 mating pairs from Fly crosses, Chi-square WALKTHROUGH
Week 5; 9/22	Count F ₂ Flies Record numbers of males and females with the phenotype. Calculate observed phenotypic ratios. Conclude mode of inheritance for phenotypes. Perform chi-square test.
Week 6; 9/29	FLY QUIZ Molecular Genetics Polymerase Chain Reaction; Crime Scene Analysis set up and prepare PCR samples
Week 7; 10/6	Molecular Genetics Polymerase Chain Reaction; Crime Scene Analysis PCR electrophoresis receive image
Week 8; 10/13	Molecular Genetics Plasmid Mini-prep (one prep/student)
Week 9; 10/20	Molecular Genetics Restriction Digests of purified plasmid 3 single digests, 3 double digests, 1 triple digest pour agarose gels (1 gel/group)
Week 10; 10/27	Molecular Genetics Restriction Digest Electrophoresis 8 lanes per group; 7 digests, 1kb DNA ladder Image gels
Week 11; 11/3	Molecular Genetics Restriction Map of Digested Plasmid Generate standard curve with DNA ladder Determine size of digested fragments Generate restriction map of digested plasmid DNA
Week 12; 11/10	Molecular Quiz Handout population genetics Outside Lab Sampling

Week 13; 11/17 Analyze Population Genetics
Population genetics Blackboard Set

THANKSGIVING BREAK 11/24-11/28

Week 14; 12/1 **FINAL CUMALATIVE LAB EXAM**

BISC 336 – Genetics –List of Assignments with TENTATIVE deadlines – FALL 2014
****DATES SUBJECT TO CHANGE AT THE DISCRETION OF THE INSTRUCTOR ****

1. **F1 predictions** Completed through Blackboard
Assigned: 8/29 by 5pm
Due: 9/1 @ 8am
2. **BB problem set #1** Completed through Blackboard
Posted: 8/29 by 5pm
Due: 9/8 @ 8am
3. **HW problem set #1** To be **HANDED IN**
Posted: 8/29 by 5pm
Due: IN LAB; week of 9/8
4. **F1 Results** Completed IN LAB; week of 9/8
Due: IN LAB; week of 9/8
5. **F2 Predictions** Completed through Blackboard
Posted: 9/12 by 5pm
Due: 9/15 @ 8am
6. **BB problem set #2** Completed through Blackboard
Posted: 9/12 by 5pm
Due: 9/22 @ 8am
7. **HW problem set #2** To be **HANDED IN**
Posted: 9/12 by 5pm
Due: IN LAB; week of 9/22
8. **F2 Results** Completed IN LAB; week of 9/15
Due: IN LAB; week of 9/15
9. **Chi-square Analysis + Conclusions** Completed through Blackboard
Posted: Full class data to be posted 9/26 via spreadsheet
Due: week of 9/29 @8am
10. **Polymerase Chain Reaction Figure** To be **HANDED IN**
Assigned: IN LAB; week of 10/6
Due: IN LAB; week of 10/13
11. **PCR Figure Online Response** Completed through Blackboard
Posted: 10/6
Due: 10/10, @ 5pm
**** Included with your overall figure grade****
12. **Restriction Digest Figure** To be **HANDED IN**
Assigned: IN LAB; week of 11/3
Due: IN LAB; week of 11/17

13. **Restriction Dgst Figure Online Response** Completed through Blackboard
Posted: 11/3
Due: 11/14 @ 5pm
**** Included with your overall figure grade****

14. **Population Genetics Problem Set** Completed through Blackboard
Posted: 11/21 by 5pm
Due: 12/1 @ 8am