

**BIOL105L: Eukaryotic Genetics Laboratory (MTWR)**  
**Course Syllabus**  
**Summer 2016 (5 weeks)**

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**Instructor:** Dr. Jennifer Betancourt, Ph.D.

**Office Hours:** Thursdays 2:30-4:30pm; Sinsheimer 128

**E-mail:** [jbetanco@ucsc.edu](mailto:jbetanco@ucsc.edu) (before you email me, please review the “**Email Policy**” below)

**Teaching Assistant:** Dr. Zach Neeb, Ph.D.

**Office Hours:** Thimann 329 Wednesdays 2:00-4:00pm

**Email:** [znee@ucsc.edu](mailto:znee@ucsc.edu) (before you email Zach, please review the “**Email Policy**” below)

**Course Prep Staff:** Suki Arnold [sarnold@ucsc.edu](mailto:sarnold@ucsc.edu)

**Office:** 230 Thimann Labs

**Class hours: Mondays - Thursdays 10:00am-1:00pm; Thimann 203**

*Note: In addition to regular class meeting time, **students are required to come into lab outside of class time to set up and maintain experiments; this can include nights & weekends.***

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**Course Webpage:** (see eCommons) <https://ecommons.ucsc.edu/xsl-portal>

### **Course Description**

Classical and newly developed molecular-genetic techniques used to explore genetic variations in the fruit fly, *Drosophila melanogaster*. Topics include, may not be limited to: fundamentals of Mendelian inheritance, mapping, design of genetic screens, bio-informatic and database analysis and transgenic manipulation. Students are billed a materials fee.

### **Course Pre-requisite(s)**

BIOL 100 or BIOC 100A; BIOL 101L; BIOL 105; satisfaction of Entry Level Writing and Composition Requirements. Enrollment restricted to biological sciences and affiliated majors; biology minors; non-majors by instructor permission.

### **Course Materials**

**eCommons:** It is your responsibility to check eCommons and ucsc email *daily* and print out lab materials/handouts etc as needed, watch assigned videos, and complete assigned readings. (No textbook required).

**turnitin.com:** You are responsible for registering with turnitin.com by the end of Week 1. Pertinent registration information to enroll will be provided. Some assignments will be submitted to this site IN ADDITION TO submission of a hard-copy. It is your responsibility to check the syllabus for how assignments are to be submitted. First submission onto turnitin.com is the final submission.

**Lab Notebook:** You are responsible for purchasing a black/white composition notebook to be used for keeping record of all laboratory activity, during and outside of class time. Class/lecture notes must be written in a separate notebook. You must have this by the 2<sup>nd</sup> day of instruction to avoid late penalties. **Follow “Lab Notebook Guidelines”**

**In-class computer use:** Feel free to bring you computer with you to work on assignments during down time. However, you must take hand written notes during lectures.

## Course Attire

You must wear closed-toed shoes and long pants (no capris), regardless of the day's activities. If you arrive to class NOT wearing the required attire, you will be issued an **unexcused tardy** and be sent home. However, you may return once you have the appropriate. If you do not return to class within 90 minutes of class starting, you will receive an **unexcused absence**. (See attendance section for specific point deduction). NO EXCEPTIONS.

## Overarching Course Goals for Students:

1. To develop a strong background in the principles of Mendelian genetics using the fruit fly as a model system.
2. To improve upon experimental planning based on the scientific method, critically predicting outcomes and interpreting results.
3. To successfully keep record of experiments by maintaining a laboratory notebook.
4. To become familiar with and use proper terminology of genetics and molecular biology.
5. To gain confidence in reading, comprehending and presenting scientific literature.
6. To prepare students for more advanced course work in cell and molecular biology in a laboratory setting.
7. To improve scientific oral and written communication skills.
8. To develop the ability to navigate online scientific databases and use information to conduct research.
9. To develop professional skills that can be applied to *any* professional or educational aspirations. Examples include: teamwork, leadership, formal/appropriate email communication and timeliness.

## Course Grading

Assignment	% / possible points
Lab report #1:	10% 80 points
Lab report #2:	20% 160 points
Lab report #3:	15% 120 points
In-Class Exam:	15% 120 points
Lab Diligence:	5% 40 points
Homework (5):	15% 120 points
Notebook:	10% 80 points
Presentation:	10% 80 points
<b>TOTAL 800 points</b>	

## Grade Scale (no rounding up)

<b>A+</b>	776- 800	(97.0 - 100%)
<b>A</b>	744- 775.9	(93.0 - 96.9%)
<b>A-</b>	720- 743.9	(90.0 - 92.9%)
<b>B+</b>	696- 719.9	(87.0 - 89.9%)
<b>B</b>	664-695.9	(83.0 - 86.9%)
<b>B-</b>	640- 663.9	(80.0 - 82.9%)
<b>C+</b>	616- 639.9	(77.0 - 79.9%)
<b>C</b>	560- 615.9	(70.0 - 76.9%)
<b>D</b>	480- 559.9	(60.0 - 69.9%)
<b>F</b>	0- 479.9	(0.00 - 59.9%)

Assignment grades will be posted on ecommons. Course letter grades are based on the number of POINTS earned, there will be NO rounding to the nearest percentage. NO EXCEPTIONS.

## Email Etiquette Policy

Please allow at least 24-36 hours for an email response. It is possible that I will respond sooner, but it is not guaranteed. If I have not responded in 36 hours, feel free to email me again.

As part of an effort to help you develop your professional communication skills, I am instituting a semi-formal *email etiquette* policy. At a minimum, by addressing the following

prompts, the goal of your email will be clear, and more importantly, I will be able to more efficiently address your question/concern.

1. Can your answer be found in the syllabus or any other class resource? Please make an effort to try and find the answer first. If the answer is not in class resources, then proceed with writing an email. Please note that if your answer *can be found* in class resources, I will simply reply with **“Please review email policy and class resources”**

2. Does your email have a clear subject line? Never leave the subject line blank. Additionally, be clear and concise. i.e. A subject line of “help!” does not tell me what you need help with. I will ignore blank subject lines.

3. Did you include a professional “Greeting”? **“Dear, Hello, Hi”** or simply, just my name (Dr. Betancourt or Dr. B) will suffice. “Hey” is not a professional greeting. You should only refer to a professional by their first name *only after* they have made it clear that you can.

4. Is your email short, concise and to the point? Please keep in mind that I receive many emails from students each day. Convey your thoughts succinctly and quickly. If your email requires you to write a long explanation, or requires ME to write a complicated response, please email me with a **“Request to meet about \_\_\_\_\_”**

5. Use standard punctuation, capitalization, spelling and grammar. I believe that each of my students are intelligent, hard-working and capable individuals. You should always strive to present yourself in that light. Do so, by quickly editing emails.

6. Did you use a professional e-signature or salutation? A simple “Thanks, Sincerely, or Best Regards, etc.” will suffice.

### **Attendance: Absences and Tardies**

Each unexcused absence from lab will result in a deduction of 5% of the total points for the course- **NO EXCEPTIONS**. **Excused absences must be approved by the instructor (not the TA)** to be excused and to incur no deduction.

To have an absence considered for approval as an excused absence, you must do the following:

- 1) Contact the instructor within 24 hours of absence **AND**
- 2) Provide valid written documentation to instructor and as soon as possible (e.g. copy of family death certificate, police report, note from professor, etc.) **NO EXCEPTIONS**.

A tardy refers to arrival to class anytime after the official start of class (i.e. **10:00am sharp**). Each tardy within 15 minutes will result in a deduction of 1% of your course grade, a tardy between 15-59 minutes results in 2.5% deduction of final course grade. If you are 60 or more minutes late, you will be considered absent.

If you are late on the day an assignment is due, you will be considered tardy **AND** your assignment will also be considered late.

### **Late Submission of Assignments**

Assignments are due at the **BEGINNING** of class (**10:00am sharp**) in hard copy **AND** on [turnitin.com](https://turnitin.com) (unless otherwise noted). First submission is your final submission. If you do not submit your assignment to turnitin.com **ON-TIME**, the entire assignment is considered late.

You are allowed to submit **ONE** late assignment per quarter. **YOU MAY NOT** utilize the late submission option for: lab notebooks, lab diligence assignments or the presentation.

Late assignments will earn penalties. Penalties are CUMULATIVE:

- By 11:59 p.m. on the due date: 5% deduction
- Within the next 24 hour period thereafter: 20%
- No submission after that.

General protocol for submitting a late assignment is as follows:

- 1) Email a pdf to Dr. Betancourt as a time-stamp,
- 2) Upload the assignment to turnitin.com (if applicable)
- 3) Print and deliver a hard-copy of the assignment to Dr. Betancourt. I shouldn't have to spend *my* money to print *your* late assignment.

Exceptions to these point deductions will only be made for valid documented excuses approved by the instructor (see attendance policy). Late assignments are not valid for re-grade requests. There are NO make-up exams

### **Academic Integrity** [https://www.ue.ucsc.edu/academic\\_misconduct](https://www.ue.ucsc.edu/academic_misconduct)

All assignments you submit must be entirely your own work. This means you and your lab partner are not allowed to submit copies of the same graphs and tables even if you collected the same data together. Also, you are not allowed to collaborate with another student when actually writing your papers, unless explicitly allowed by the instructor. You may not use any other student's paper as a template for your own. You may not fabricate data under any circumstances, and you may not use anyone else's data unless instructed to do so. Any sharing of data or papers is allowed only with prior approval of the instructor. Sources of information used in your paper must be cited appropriately. Everything you turn in must be stated in your own words even if you cite the source. Changing just one or two words in a sentence from a book, journal article, or internet site is not saying it in your own words; that constitutes plagiarism. To protect you from plagiarism, and to ensure that plagiarism doesn't occur, you will be submitting your reports to Turnitin.com.

If you allow another student to copy your work or you help another student write his/her paper, you will also be violating the University's academic integrity policy and will be subject to disciplinary action. These penalties will apply even if you say you did not understand the rules, *so be sure to ask if you have any questions about this policy.*

**If you break any of these rules, at a MINIMUM, you will automatically receive a grade of 0 for the entire assignment, lose the privilege of submitting late assignments, you will be reported for disciplinary action by your college provost, and will fail the course**

Note: you will not receive credit for ideas that are quoted directly from any source, even if you place the passage in quotation marks and cite the source, This is not committing plagiarism; however, long direct quotes are used only when a passage is highly unique or profound, or there is no other possible way to say the same thing. In general, if you are not able to state a concept in your own words, you don't understand it, and therefore cannot receive credit for that passage (though, in this case, no *disciplinary* action will apply, so long as the quote is cited correctly.)

### **Students that qualify for classroom accommodations**

If you qualify for classroom accommodations because of a disability, please submit your Accommodation Authorization from the Disability Resource Center (DRC) to me during my office hours in a timely manner, preferably within the first week of the quarter. Contact DRC at 831-459-2089 or by email at [drc@ucsc.edu](mailto:drc@ucsc.edu).

## Course Schedule

Week	Day/date	Lecture topic	Experiment	Assignment	What's due?
1	M 06/20	Introduction to Course & Syllabus.  <i>Drosophila</i> : a model organism. Husbandry, mating & maintenance	Observation of developmental stages.  Sexing adults Prepare back-up stocks.	Read “ <i>Dros. husbandry</i> (pdf)” and take notes.	Be ON-TIME. Bring hard-copy of syllabus
	T 06/21	Genetic nomenclature.  Flybase.org	CO <sub>2</sub> clinic. Identifying mutant phenotypes. <b>START Lab #1: Basic Cross</b>  Practice using flybase	HW1: Punnett Square predictions for (Lab1)  Read- Lab #1: Report Guidelines  Watch Recombination Video and Linked genes video (Lab2).	Signed syllabus Notebook Check Notes from reading
	W 06/22	Linked Genes and Recombination mapping	Observing stocks with syntenic mutations(Lab2)  <b>START Lab #2: Two-point Recombination mapping</b>  Clear/collect or check for larvae (Lab1)	Chi-Square Analysis Video (Lab1)  HW2: Recombination planning and prediction (Lab2)	<b>HW1: Punnett Square predictions (Lab1) (15)</b>  Recombination and Linked Genes videos (Lab2)
	R 06/23	Chi Square Analysis  Lab Report #1 Guidelines	Clear/collect or check for larvae (Lab1)  Clear/collect or check for larvae (Lab2)		Chi-Square Analysis Video (Lab1)  Turnitin enrollment
2	M 06/27	Research Presentation-Guidelines  Identifying genetic deletions-	<b>START Lab #3: Molecular Identification</b>  Check crosses and maintain (Lab1 and	HW3: Journal Article Summary  Research Presentation	<b>HW2: Recombination mapping planning and prediction (Lab2) (30)</b>

wk2		Research Scenario	Lab2).		
	T 06/28	Common Molecular Bio methods	Lab #1: Observe and record Lab #2: Observe and record Lab #3: Reagent preparation	Lab#2: Mol. Bio. (Video)  HW4: Calculations	
	W 06/29	Common Molecular Bio methods	Lab #1: Observe and record Lab #2: Observe and record Lab #3: Experiment set-up (Part 1)	HW5: Molecular Predictions	Lab#2: Mol. Bio. (Video)  HW4: Calculations (15)
	R 06/30	Common Molecular Bio methods	Lab #1: Observe and record Lab #2: Observe and record Lab #3: Analysis of Experiment (I) results		HW5: Molecular Predictions (20)  Declaration of Presentation Partner.
3	M 07/04	<b>HOLIDAY- No class</b>			
	T 07/05	Journal Club Presentations	Lab #1: Observe and record Lab #2: Observe and record		HW3: Journal Article Summary (40)
	W 07/06	Lab Report #3 guidelines	Lab #1: Observe and record Lab #2: Observe and record Lab #3: Experiment set-up (II)	Lab #3: Report guidelines (read)	Presentation Outline ( <i>optional</i> )
	R 07/07  R 07/07	Review of Biotech methods Lab #3- report guidelines	Lab #1: Observe and record Lab #2: Observe and record Lab #3: Experiment (II) analysis	Read: Lab #2- report guidelines	Lab #3- Experiment (II) predictions (in-class)

4	M 07/11	Lab #2- report guidelines Lab #3- planning follow-up experiments	Lab #2: Observe and record Lab #3: Interpret Data, propose future experiment	Polytene Prep (Video/Reading)	Lab #1 Report: Basic Cross (80)
	T 07/12	Polytene Chromosomes	Polytene Squash		Polytene Prep (Video/Reading)
	W 07/13	Presentation Meetings Open Lab	Lab #2: Observe and record		
	R 07/14	Presentation Meetings Open Lab	Lab #2: Observe and record		Lab #3 Report: Identification of genetic mutations (120)
5	M 07/18	Final EXAM (120)			
	T 07/19	Open Lab Open Office Hours Clean-up lab stocks	Lab #2: Observe and record	Clean-up station	
	W 07/20	Presentations			Presentations on flashdrive (ppt file) (80)
	R 07/21	Presentations			Lab #2 Report: 2-point mapping (160)

I, \_\_\_\_\_(print name)  
certify and acknowledge that I have read and understand all the terms of the syllabus. I understand the policies for academic integrity, turning in assignments, grading, attendance and overall duties expected/required of me as a student in BIOL105L.

student ID# \_\_\_\_\_

Preferred First name: \_\_\_\_\_

Preferred Pronoun: \_\_\_\_\_

If you had to choose one Pandora station: \_\_\_\_\_

One area of science that you find fascinating: \_\_\_\_\_

Your 3-yr career goal: \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_