

# BIOZ310 GENETICS LAB FALL 2019

## COURSE SCHEDULE

Week of Monday:	Lecture / Lab	Topic
[Removed]	Lecture	VCU Fall Classes Begin [Removed]
	Lab 0	Attend Lab Check-in, Lab Safety, and course policies. <i>Lab Safety Quiz and Academic Integrity Quiz both due [Removed] on Blackboard.</i>
[Removed]		Drop/Add deadline
[Removed]	Lecture	Probability, hypothesis testing, & Chi-square
[Removed]	Lab 1	Probability, hypothesis testing, & Chi-square
[Removed]	Lecture	VCU Closed Labor Day Holiday
	Lab	No lab this week
[Removed]	Lecture	Mendel: <i>Drosophila</i> and <i>Zea</i> mono- and dihybrid crosses
[Removed]	Lab 2	Mendel: <i>Drosophila</i> and <i>Zea</i> mono- and dihybrid crosses
[Removed]	Lecture	GLT, GMT
[Removed]	Lab 3	GLT, GMT
[Removed]	Lecture	Linkage, crossing over, and ascospore color in <i>Sordaria</i>
[Removed]	Lab 4	Linkage, crossing over, and ascospore color in <i>Sordaria</i>
[Removed]	Lecture	Exam 1 (Probability, hypothesis testing, Chi-square; Mono- and Di-hybrid crosses, GLT/GMT, genetic mapping, linkage and crossing over)
	Lab	Scientific writing, VCU Library Resources, Detecting Epigenetic Methylation in <i>Arabidopsis thaliana</i> Paper Assignments
[Removed]	Lecture	Detecting Epigenetic Methylation in <i>Arabidopsis thaliana</i> : Part I
[Removed]	Lab 5	Detecting Epigenetic Methylation in <i>Arabidopsis thaliana</i> : Part I
[Removed]	Lecture	Detecting Epigenetic Methylation in <i>Arabidopsis thaliana</i> : Part II
[Removed]	Lab 6	Detecting Epigenetic Methylation in <i>Arabidopsis thaliana</i> : Part II
[Removed]	Lecture	Detecting Epigenetic Methylation in <i>Arabidopsis thaliana</i> : Part III
[Removed]	Lab 7	Detecting Epigenetic Methylation in <i>Arabidopsis thaliana</i> : Part III
[Removed]	Lecture	Bioluminescence: Genetic Transformation of <i>Escherichia coli</i>
[Removed]	Lab 8	Bioluminescence: Genetic Transformation of <i>Escherichia coli</i> Last day to withdraw with a mark of "W"
[Removed]	Lecture	CRISPR Cas9 Transformation of the <i>rpsL</i> gene in <i>Escherichia coli</i>
[Removed]	Lab 9	CRISPR Cas9 Transformation of the <i>rpsL</i> gene in <i>Escherichia coli</i>
[Removed]	Lecture	Exam 2 ( <i>Arabidopsis thaliana</i> Parts I-III, PCR, sequencing, gel electrophoresis, DNA extraction, Bioluminescence: Genetic Transformation of <i>Escherichia coli</i> )
	Lab 12	Bioinformatics Lab: Bioluminescence Genetic Transformation of <i>E. coli</i> & CRISPR-Cas9 Transformation of the <i>rpsL</i> gene in <i>E. coli</i>
[Removed]	Lecture	Population Genetics A: Natural Selection, Genetic Drift, Hardy-Weinberg, Using an <i>Alu</i> Insertion Polymorphism to Study Human Populations (Part I)
	Lab 10	Population Genetics A: Natural Selection, Genetic Drift, Hardy-Weinberg, Using an <i>Alu</i> Insertion Polymorphism to Study Human Populations (Part I)
[Removed]	Lecture	VCU Closed – Fall Break
	Lab	No Lab
[Removed]	Lecture	Population Genetics B: Using an <i>Alu</i> Insertion Polymorphism to Study Human Populations (Part II)
[Removed]	Lab 11	Population Genetics B: Using an <i>Alu</i> Insertion Polymorphism to Study Human Populations (Part II)
[Removed]	Final Exam	[Removed] - Final Exam Cumulative

Schedule subject to change at instructor's discretion.

## BIOZ310 GENETICS LABORATORY FALL 2019 SYLLABUS

**Lecture:** [Removed]

**Lab:** [Removed]

**Course Instructor:**

Colleen B. Higgins, Ph.D.

Office: [Removed]

E-mail address: [BIOZ310@vcu.edu](mailto:BIOZ310@vcu.edu) Office Hours: [Removed]

Phone: [Removed]

**Blackboard (Bb):** Course Webpages

There are two Bb links for this course.

- **(FALL 2019) BIOZ310 Genetics Lab 1/2WI LECTURE** : This is where you will find all information pertinent to the course that is provided on Bb and is not specific to your particular lab section.
- **(FALL 2019) LAB IN GENETICS 1/2WI section day time**: This is where your lab section TA will post information related to you particular lab section.

**Required Materials:**

- ❑ **VCU BIOZ310 Lab Manual – Fall 2019 Version:** *Only available at the VCU Barnes and Noble Bookstore.*

**Recommended Materials:**

- ❑ *A Student Handbook for Writing in Biology* by K. Knisely

**BIOZ310 Lab TAs:**

E-mail address: [BIOZ310@vcu.edu](mailto:BIOZ310@vcu.edu)

[Removed]

**BIOZ310 Lab Sections:**

[Removed]

**Course Preceptors:** *Hold review sessions weekly. Schedule will be posted on Blackboard.*

## Course Objectives

The mission of BIOZ310 is to increase critical skills for careers in the biological sciences. The objectives of this course are to provide students with hands-on lab experience and introduce topics in the field of genetics. We will use live, prepared, and *in silico* materials and activities. Students will be exposed to a working environment in a biological laboratory setting where different methods, instrumentation, experimental design, critical thinking, ethical and social responsibility, data collection, and hypothesis testing are used following the principles of the Scientific Method. Students will apply their knowledge and communication skills through a first and final copy of a **Semester Report** in a standard scientific journal format, as well as **Quizzes, Lab Exercises, Lab Reports, and Exams.**

## Grading:

### Assignments

Weekly Quiz in Lab

Post Lab

Writing Assignment Drafts

*Annotated Bibliography*

*Introduction*

*Methods and Materials*

*Results*

Final Draft Semester Report

Exam I & II

Final Exam (Cumulative)

**Total points possible:**

### Number of possible points

165 (Best 11 of 12 quizzes, 15 pts ea., drop 1 lowest)

275 (Best 11 of 12 Post Labs, 25 pts. ea., drop 1 lowest)

25 pts.

25 pts.

25 pts.

25 pts.

100 points

200 points (100 pts ea.)

200 points

**1040 total points**

**A = 100-89.5%    B = 89.5-79.5%    C = 79.5-69.5%    D = 69.5-59.5%    F = < 59.5%**

## IMPORTANT - To participate in the course, you must:

- Complete the Lab Safety Training and pass the VCI BIORAFT Quiz with a score of 80% or greater (see the Blackboard link in the Assignments tab of your lab section).
- Complete the Academic Integrity Quiz (see the Blackboard link in the Assignments tab of your lab section).

No points are earned toward total points for successfully completing these assignments. **They are a required component.**

- A 20 point penalty at the end of the course will be applied for failure to comply with the Academic Integrity Quiz.

## **Laboratory Safety and Personal Protective Equipment Requirements:**

Unless otherwise specified by your TA, you are **required** to wear safety glasses (not goggles) and a lab coat to participate in the lab. You can purchase safety glasses from the VCU Bookstore, Chemistry Department, and lab coats at either the VCU Medical Campus bookstore or at Uniform City at 402 E Grace St, Richmond, VA 23219. Their phone number is (804) 643-0291. You can purchase either online. If you wear glasses, then you will not need safety glasses.

### **For your safety:**

- Nitrile gloves will be provided.
- **Food and drink are not permitted** in room 211 during laboratory meetings or during review sessions.
- **Open-toes shoes are not permitted** during laboratory meetings.
- Students lacking required safety gear for lab meetings **WILL NOT** be allowed to participate in lab. This absence will be counted as **unexcused**.

### **Lecture, Textbook, and Notebook:**

The weekly lecture [Removed] will provide an overview to the following week's laboratory experience. **Attendance is mandatory.** The corresponding laboratory manual contains the material students need to understand the context of the material, successfully complete the exercise, and to successfully synthesize materials for the report.

### **Attendance Policy:**

**Attendance is mandatory for lecture and laboratory.** Attendance will be recorded in lecture. It is an honor code violation to falsely indicate that another student is in attendance.

**If you are seriously ill or have an excusable reason to be absent from lab, please contact your TA to try to attend another lab section.**

- **4 UNEXCUSED ABSENCES FROM LECTURE WILL RESULT IN AN "F" IN THE COURSE.**
- **3 UNEXCUSED ABSENCES FROM LAB WILL RESULT IN AN "F" IN THE COURSE.**
- **Do not attend another lab section without the permission of your TA and the TA of the alternate section.**
- Each lab is offered only during the week it is scheduled (i.e., you cannot make it up after the last lab Thursday).
- It is your responsibility to provide proof of your excuse to your TA (e.g., a doctor's note, contact number, obituary, etc.) within one week of your return.

### **Tardiness to Lab:**

We have limited time to do each hands-on activity, so in consideration of the other students with whom you are paired, you are expected to be in the lab and ready to commence PRIOR to the start of class.

- Students arriving  $\geq 10$  minutes late are recorded as "absent" and will not be allowed to participate in the lab or Notebook check, although they can observe.
- Students who are late three times will be recorded as having an unexcused absence (in fact, every 3 "late" = 1 "absent").

- Graded work turned in after the start of lab will receive a 20% deduction.
- All students must attend the lab for which they are registered, unless prior permission is given to attend a different section due to an emergency/illness.

### **VCU Honor System & Academic Integrity Quiz:**

Students are **required** to review the **Academic Integrity (AI) Power Module and two related Plagiarism documents** and to complete the on-line **Academic Integrity Quiz** in the *Assignments* section of your lab section Bb web page. Students will not be allowed to perform lab experiments until documentation is provided for completion of the AI Quiz. There will be no make-ups of missed labs due to not completing the Academic Integrity Quiz in a timely manner. Completing the AI Quiz does NOT count towards the total points for the course.

“The **VCU Honor System policy** describes the responsibilities of students, faculty and administration in upholding academic integrity, while at the same time respecting the rights of individuals to the due process offered by administrative hearings and appeals.” According to this policy, “Members of the academic community are required to conduct themselves in accordance with the highest standards of academic honesty and integrity.” In addition, “All members of the VCU community are presumed to have an understanding of the VCU Honor System and are required to:

- Agree to be bound by the Honor System policy and its procedures;
- Report suspicion or knowledge of possible violations of the Honor System;
- Support an environment that reflects a commitment to academic integrity;
- Answer truthfully when called upon to do so regarding Honor System cases;
- Maintain confidentiality regarding specific information in Honor System cases.”

More information can be found at in the [VCU policy library](#).

In this class, because coursework frequently will be collaborative, particular issues of integrity arise. You may not copy or print another student's work without my permission. Any material (this includes IDEAS and LANGUAGE) from another source must be credited, whether that material is quoted directly, summarized or paraphrased. In other words, you will respect the work of others and in no way present it as your own. **All worked submitted for this class must be your own original work from this semester, AND in your own words.** Students are encouraged to work together and to make use of work of others as GUIDES, *DO NOT* rewrite hard copy or electronic versions of your own past work or the work of others and turn this in as your own original work. *Direct quotes “ ” or verbatim copying of the work of others, other than the protocols, is not used in technical biology writing and is not permitted in this class.* Students repeating the course may NOT turn in the same work used in a previous semester. The only exceptions are the weekly handwritten Protocols, which are understood to be a verbatim or nearly verbatim summary of the weekly protocols included in Exercises.

Genetics Laboratory has zero tolerance toward academic misconduct and will strictly enforce the VCU Honor Code without exception. Evidence or suspicion of cheating, plagiarizing, copying (including own work from past semesters), rewriting the work of others, abusing academic materials, facilitating academic dishonesty, or soliciting others to engage in any of these acts will be referred to the Honor System Coordinator for possible disciplinary action. Once concerns are forwarded to the Honor System Coordinator, a student accused of a violation will be contacted by the Office of Student Conduct and Academic Integrity to investigate the concerns. Students should **NOT** contact their TA,

Preceptor, or Dr. H. following submission of a complaint as they are considered witnesses. All formal complaints are strictly confidential. Because the review process can be lengthy, students are strongly encouraged to continue to attend and fully participate in class until all appeals are completed. Be CERTAIN to understand what plagiarism is and is not. The rules may be applied differently in other classes. Please take the time to understand and to apply the rules used in this course. Ask your TA for guidance and clarifications. Students retaking the course also should seek help/clarification from their TA at the start of the semester on how to make the best, safe use of past work, while avoiding self-plagiarism.

### **Exams:**

This course has two exams and a final exam. Each 50-minute mid-term exam will be given during the lecture period covering material presented in lecture and lab, including safety and the library visit. Exams will be in the format of short answer, problem solving and fill in the blank. There are no multiple choice questions. **Students must turn off phone ringers and leave phones, books, purses, backpacks under their seats prior to obtaining exam. Using a phone during an exam, even if off when discovered, is a violation of course policy, and will result in a “0” on the exam. The final exam is cumulative, is in the same format but longer.**

**There is NO FLEXIBILITY to these exam dates and times.** Proper documentation will be required for emergency situations that interfere with scheduled testing dates and should be brought to your TA’s attention as soon as possible. TAs will confirm excuses by phone/email. **Do not schedule travel plans that conflict with exam dates.** If you purchase a non-refundable plane ticket, we WILL NOT reschedule your exams. If a midterm is missed, with an excused absence, your TA may agree to administer a makeup test or else you can opt to allow the final exam to count as your total exam points.

Having a phone in-hand during the exam is a violation of course policy and will result in a “0” on the exam. Using a phone during an exam without specific approval will be treated as an honor violation and a complaint filed with the Office of Student Conduct and Academic Affairs. The course staff reserves the right to record possible instances of honor violations during exams for use as evidence if/when a formal charge is filed with the Office of Student Conduct and Academic Integrity.

### **Semester Report:**

Students are required to write a formal scientific laboratory report. The report will be written in the format of a scientific paper. You will be assigned certain sections for which you will receive feedback, before turning in the final draft of your report.

**All writing assignments must be submitted electronically to Bb-SafeAssign. A hard copy may also be required.**

- **Do not** consider the draft assignments as a “**rough draft**,” this is a graded assignment and must be your own work and your best effort. Cheating, including plagiarism, will be addressed as outlined in the “Honor Code” section. More than 25 significant typographical errors will result in a grade of “0” on the First and/or Final Copy.

- TAs will not proofread (“check over”) the draft of your Report prior to submission. If you have specific questions regarding a concept or idea, contact your TA in a timely manner.
- Electronic copies will be checked against several databases for original content to produce an original report. This report will show how your paper compares to documents available on the Internet, in many print journals, a database of other papers submitted by VCU students, as well as a global database of papers submitted by all users of SafeAssign. All electronic copies will be added to the VCU database for comparison to future papers.

### **Late Work:**

**All assignments are due at the beginning of your lab or lecture, no exceptions.** If you need to turn in assignments outside of class time, turn them in to your TA’s mailbox in the Biology Department Main Office in **LSB Room 126** after having the document time-stamped by the Biology Office Staff. If the assignment is not time-stamped, your TA will assume you turned in the assignment on whatever day they check their mailbox. Work turned in late on the assigned day will be deducted 20%. Each day late will result in a further 10% deduction, including weekends and holidays. No work will be accepted for grading after noon on the Monday after the work is due. Work turned in after noon on the following Monday will receive a grade of “0”.

### **Help Outside of Class:**

TAs will be available by email and appointment. Please contact your TA with any questions regarding assignments, lecture or lab material, or any other concerns regarding the course work or policies. The best way to contact TAs is by e-mail, but please allow a 24-48 hour response time during the week and 48-72 hr during the weekend. Expect that TAs will be available to answer questions by email or in person only during regular business hours of 9:00 am to 5:00 pm.

### **Preceptor-Lead Review Sessions:**

Preceptors will rotate hosting weekly review sessions. Students can ask questions and receive assistance with concepts and expectations from lectures, homework assignments, studying for exams. **DO NOT ASK** preceptors what specifically will be on exams such as how many questions will be on exam etc. Answering these types of questions will cause them to violate confidentiality. Review sessions are formatted the same as SI sessions. The preceptors will not give an answer or confirm whether and answer is right or wrong (especially for graded work), but instead, will help students understand how they reached answers. Preceptors will serve in the role of guides and mentors as students work together to answer questions for and among themselves, challenging students with “Why/Why not” rather than answering “Yes/No.”

Unless prior notice of late arrival has been sent to the Preceptor(s), if no student arrives within **20 minutes** of the start of a review session, the Preceptor hosting the review session may leave.

### **Student Conduct in the Classroom and Laboratory:**

According to the [Faculty Guide to Student Conduct in Instructional Settings](#), “The University is a community of learners. Students, as well as faculty, have a responsibility for creating and maintaining an environment that supports effective instruction. In order for faculty members (including graduate teaching assistants) to provide and students to receive effective instruction in classrooms, laboratories, studios, online courses, and other learning areas, the university expects students to conduct themselves

in an orderly and cooperative manner.” Among other things, cell phones and beepers should be turned off while in the classroom. The Student Code of Conduct also prohibits the possession of or carrying of any weapon. For more information see <http://register.dls.virginia.gov/details.aspx?id=3436>.

Students deemed a distraction to others or behaving in a disrespectful or threatening manner will be asked to leave lecture/lab and **will not receive credit for attending that lab or lecture**. Rude and distracting behaviors during lecture and lab includes, but is not limited to: repeatedly using cell phones/mobile devices other than for coursework, repeatedly leaving to answer cell phones (except for emergencies), leaving lab without permission of your TA, listening to music-playing devices, watching videos/playing games on laptops/mobile devices, sleeping, excessive talking, and rude/disrespectful behavior. If computer/phone usage is abused, TAs will take the appropriate measures to remove the distraction to other students. **Unless specifically approved by the TA, phone/mobile device use during laboratory meetings is prohibited.**

## **University Policies**

The required syllabus statements originally included here are maintained by the Office of the Provost and are regularly updated. To prevent the dissemination of information which may no longer be accurate or complete, the full text of the required syllabus statements have been removed from this document.

Students should visit <http://go.vcu.edu/syllabus> and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.