Molecular Biology (BIOL.216)
Laboratory Information/Schedule
Course coordinator: Dr. Mary-Anne Courtney, mxcsbi@rit.edu

Laboratory Section	Instructor	TA	Meeting Time	Room
01	Dr. Mary-Anne Courtney mxcsbi @rit.edu	Leora Mouli ltm2035@rit.edu Sonny Salamone srs1520@rit.edu	Tuesdays 2:00-4:50 pm	GOS-1213
02	Dr. Mary-Anne Courtney mxcsbi @rit.edu	Emrys Kerner sjk7191@rit.edu Serena Tuytschaevers sjt@3532@rit.edu	Tuesdays 6:05-8:50 pm	GOS-1213
03	Dr. Mary-Anne Courtney mxcsbi @rit.edu	Zach Black ztb5427@rit.edy Sarah Upwood sru2149@rit.edu	Wednesdays 9:00-11:50 am	GOS-1213
04	Dr. Eli Borrego eli.borrego@rit.edu	Lydia Lenhard lel2921@rit.edu	Wednesdays 6:05-8:55 pm	GOS-1213
05	Dr. Michael Savka massbi@rit.edu	Natalie D'alimonte nmd9930@rit.edu	Thursdays 2:00-4:50 pm	GOS-1213
06	Dr. Premlata Kumar plksbi@rit.edu	Tamara Gazali tjg4196@rit.edu Lily Proskine lrp4634@rit.edu Spencer Sickler srs6984@rit.edi	Thursdays 6:00-8:50 pm	GOS-1213

- ***We start on time! Being "on time" for lab means being in the room, ready to go, 5 minutes before the official start time.***

This is a laboratory-intensive, hands-on course. Learning happens by doing and participating in all activities. Data /artifacts/lab notebooks (which will be graded) will be generated at nearly every laboratory meeting. Therefore, it is important that you are in attendance to participate!

We look forward to getting to know you and working with you during this semester! If you have accommodations in place from Disability Services, it is critical that you reach out and schedule a meeting with your laboratory instructor as soon as possible to outline a successful plan. See the end of the syllabus for more detail.

Required items for lab:

- Laboratory coat
- Safety googles
- Bound notebook

The laboratory portion of this course will allow students to

- Gain hands-on experience in Molecular Biology techniques, including procedures such as gel

electrophoresis, sterile technique, bacterial transformation, isolation and detection of macromolecules PCR, RT-PCR and Western Blots.

- Develop skills in presenting biological information clearly in written form.
- Develop skills in analyzing data.

Grading Scheme

Component	Description	Percentage of grade
Laboratory notebooks	*Lab notebooks will be checked each week for completeness. Lab notebooks will be graded at the completion of labs. See "Lab notebook template" document for instructions on what should be included in notebook entries.*	*20%*
Pre-lab quizzes	*You will have two attempts for each pre-lab quiz and will earn the average score of each. Pre-lab quizzes are due 60 minutes before your lab section meets.*	25%
Post-lab quizzes/ activities	*Post-lab activities will vary; there will be quizzes, worksheets and online activities.*	*20%*
Writing Assignments	*Instead of writing one large laboratory write-up, you will submit a series of smaller assignments that will help you learn how to communicate laboratory methods and results.*	*25%*
Lab Practical	You will be given a lab exam that covers every lab exercise the we have done in class. There will be hands on exercises and you will be given data to interpret. You may use your lab book so make sure it has everything in it.	10%

CORRELATION OF LETTER GRADES AND NUMERICAL SCORES:

Letter Grade	Percentage	GPA scale
A_	93.4 - 100	4.00
A -	90.0 - 93.3	3.67
B+	86.7 - 89.9	3.33
B_	83.4 - 86.6	3.00
B -	80.0 - 83.3	2.67
C+	76.7 - 79.9	2.33
C_	73.4 - 76.6	2.00
C -	70.0 - 73.3	1.67
D_	60.0 - 69.9	1.00
F_	59.9 -0.00	0.00

Note that RIT does not use A+, D+ or D –

Students in the laboratory are expected to

- Attend all laboratory sessions if you miss more than 3 lab sessions you will fail the course.
- Complete all pre-lab quizzes (online) before lab meets.
- Complete all post-lab quizzes (online) after lab meets.
- Complete all laboratory-based written assignments and turn them in (on time) via Assignments Box.
- Be part of a community of learners that respects peers, instructors, and TAs.
- Ask instructors or TAs when things are not clear in the lab.
- Clean up your lab area, and properly care for equipment.

Mandatory Lab Safety Training

Safety training is now required for all students enrolled in wet lab courses in the College of Science. Most of you probably took the course in the fall. If not please follow the instructions below for accessing the required training module, and ask your lab instructor for assistance if you have any questions or trouble accessing the link:

1. Make sure your browser is set to allow Pop-ups and Java before starting.
2. Go to this site https://rit.sabacloud.com/Saba/Web_spf/NA3P1PRD0049/app/dashboard then under search type in
3. Click "Enroll" to register, "RIT Lab Safety Training" module appears in your activities bar.
4. Click "Launch" to begin the training.
5. Use the start arrow to begin the slide presentation.
6. Read each slide completely.
7. Complete questions at the end of the slide presentation.
8. Receive the completion certificate by following instructions to print (to pdf or paper).
9. **Upload the completion certificate to the Assignment folder**

Commitment to Inclusivity

In this course, we will develop a community that is inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, socioeconomic background, and numerous other social identities and life experiences. The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs.

A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication. Both engaging and paying attention are valuable tools for furthering the thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative and excellent learning community.

IMPORTANT!

The academic demands in this course and your other classes can be challenging. It is normal to feel anxious about your academic ability, especially when unexpected life events emerge. Your instructors (Drs. Borrego, Courtney, Kumar and Savka) want to invite you to connect with either of us about any difficulties you have in this course as soon as possible. Your success is important and we want you to get the additional assistance you need before the challenges become too much.

Monday Date	Description	Post lab assignments/quiz (always due on Sunday by 11:59pm)
8/28	**Lab 1**: Introduction to metric conversions, pipetting, and restriction enzymes. Restriction digest reaction setup. *Lab 1 pre-lab quiz is due 60 minutes before your lab section meets.*	Complete the safety training and upload your "completion certificate" to the "Safety certificates" assignment box (graded) Upload the safety agreement to the safety agreement assignment box (graded) **Lab 1 post quiz** (based on Calculations/ conversions/enzymes worksheet)
9/04	**Lab 2**: Introduction to Plasmids, Agarose Gel Electrophoresis and analysis of digestion samples. *Lab 2 pre-lab quiz is due 60 minutes before your lab section meets.*	**Lab 2 post activity**: "Recombinant Paper DNA" assignment due
9/11	**Lab 3**: Transformation of *E. coli* with an inducible expression vector (pGLO). *Lab 3 pre-lab quiz is due 60 minutes before your lab section meets.*	**Lab 3 post activity:** pMB plasmid mapping problem assignment due. **Post Lab 3 quiz**
9/18	**Lab 4**: Transformation results and overnight cultures for GFP expression. *Lab 4 pre-lab quiz is due 60 minutes before your lab section meets.*	**Results 1 assignment**: Agarose gel figure showing results of restriction digestion of pGLO plasmid(with proper figure legends) and explanatory text
9/25	**Lab 5**: Isolation of DNA from experimental/control cultures. *PCR* *Lab 5 pre-lab quiz is due 60 minutes before your lab section meets.*	N/A (you can start working on the methods assignment)

10/2	**Lab 6**: Isolation of RNA from experimental/control cultures RT-PCR *Lab 6 pre-lab quiz is due 60 minutes before your lab section meets.*	**Methods 1 assignment**: Transformation of *E. coli* with pGLO and setup of overnight cultures.
10/09	**No labs, October break week**	
10/16	**Lab 7:** Run agarose gel of PCR and RT-PCR products. *Lab 7 pre-lab quiz is due 60 minutes before your lab section meets*.	**Lab 7 post lab activity:** Interactive Video Vignette Assignment
10/23	**Lab 8:** Isolation of protein from frozen experimental/control pellets. *Lab 8 pre-lab quiz is due 60 minutes before your lab section meets.*	**Methods 2 assignment**: DNA isolation, RNA isolation, PCR and RT-PCR setup.
10/30	**Lab 9:** SDS-Polyacrylamide Gel Electrophoresis (PAGE) and stain. *Lab 9 pre-lab quiz is due 60 minutes before your lab section meets.*	
11/6	**Lab 10:**Western blot detection. *Lab 10 pre-lab quiz is due 60 minutes before your lab section meets.*	**Results 2 assignment***:* PCR and RT-PCR data, which includes the PCR/RT-PCR figure (with proper figure legend) and explanatory text
11/13	**Lab 11: CRISPr** *Lab 11 pre-lab quiz is due 60 minutes before your lab section meets.*	

11/20	No labs (Thanksgiving Break)	**Methods 3 section assignment**: Agarose gel electrophoresis, protein isolation (HIC chromatography), SDS-PAGE, transfer and Western blot.
11/27	**Lab 12: Virtual lab---**GFP Bioinformatics Activity	**GFP Bioinformatics Activity quiz** **Results 3 assignment**: SDS-PAGE and Western blot data, which includes the SDS-PAGE and Western blot figure (with proper figure legend) and explanatory text.
12/04	**Lab Practical**	**Use your lab book.**

Important Notes

- All pre-lab quizzes must be completed 60 minutes prior to the start of lab, except where noted.
- All post-lab assignments and quizzes must be completed by Sunday at 11:59 pm in the week specified.
- A point will be deducted for each day past the due date an assignment is submitted, and won't be accepted beyond one week of the due date.
- Lab notebooks will be completed each week.
- Many laboratory courses require a written laboratory report or manuscript. You will submit six lab assignments throughout the semester that will be methods-based or results-based assignments.
- **Each assignment will be checked by a Plagiarism Detector Program, and any fraudulent document will receive a grade of "zero." If two instances of academic dishonesty occur, the student will receive a grade of "F" for the course. All incidents of academic dishonesty will be reported to the School Head and the Dean of the College of Science.**

What is expected of me in this Laboratory Course?

- To show up, *on time* #, for each and every laboratory session*.
- To prepare by reading the laboratory materials and taking the pre-lab quizzes, each week.
- To try! Mistakes are okay! That's how we learn!
- To ask questions when things are unclear.
- To treat your instructor, TA and peers with dignity and respect.
- To let your instructor know if things are not okay.

Students arriving **later than 15 minutes** after the start time may lose points for graded work for that day.

*if you have an *excused absence,* points for the graded work may be made up by submitting an original, 1,000-1,500 word document explaining the history and practical applications of the technique that happened in the laboratory during your absence. Follow the syllabus to know what was missed and/or ask your instructor about the topic to write about. Please include references in your paper. **This make-up work will be due to the assignment box no later than one week passed the missed laboratory date**. Students must contact their instructor about excused absences (**e.g.,** medical situations) as soon as they are able.

Note: Turn-it-in Plagiarism detector will be activated in all assignment boxes. Any assignment that is not original work will result in a score of zero. If two instances of academic dishonesty occur, the student will receive a grade of "F" for the course.

Participating and carrying out the laboratory exercises and activities is the only way to truly learn the techniques and skills in this course. **Students missing more than three laboratory sessions will receive a "F/I" for the course.**

If breaks during the laboratory session are needed, please signal to the instructor and take the time that you need to leave the lab and re-group.

For students with flexible start times, if students do come late and miss the pre-lab discussion, it will be up to the student to come into the lab and to catch up with where the class is; the instructor cannot give one-on-one instruction after the fact.

All laboratory work must be completed by the end of the class period. Student groups may be reorganized at any time to better reflect the schedules of members.