Syllabi for Re-registration of Biology B.S. Degree

ABIO 201 Introduction to Biological Investigations Fall 2020 Syllabus

Course number: ABIO 201
Class no:
Credit Hours: 1
Lab times: TBD
Lab location: TBD

Course Coordinator: Dr. Christine Gervasi Ph.D. (she, her, hers)
E-mail: cgervasi@albany.edu
Office: Biology 109

Office Hours: Zoom office hours are available by appointment.

How to Contact Me: by email is best. Due to high email traffic, please allow at least 24 hours for a response, and don't expect responses on weekends or after 8pm.

Lab Instructor: note name, office location and hours: _____

Prerequisites: ABIO 130, 131, and ACHM 120, 121, 124, 125. This course has Hybrid-Alternate Attendance (online modules plus face-to-face options) or Online only sections. All online material is mandatory.

Course Description: This is a 1-credit hour first course in a two-semester laboratory sequence designed for biology majors. Students will learn the process of scientific investigation, collaborate in designing, conducting and analyzing experiments, develop the ability to communicate in scientific format, and gain expertise in a variety of laboratory instrumentation, techniques, skills and procedures.

Course Goals: Biology is the science of life and life is complex and interrelated on every level, from molecules to cells, tissues, organs, organ systems, organisms, populations, communities, ecosystems, biomes and finally the biosphere. This theme of complexity and the responsibility we have for this planet will accompany you as we explore the diversity of life, how it evolved, how animals have adapted to their environments in their anatomy, physiology and behavior, and how they are affected by it, all with an eye to how other life forms impact us and how we humans impact them. Other themes that will lead you through the semester are learning important tools and skills regarding scientific instruments and techniques, using a methodical and logical approach to experimentation, finding, understanding and evaluating appropriate scientific literature and using it to support scientific communications, and presenting scientific information.

Course Objectives: At the end of this course successful students will be able to:

- Understand and apply the scientific method through formulating hypotheses/predictions, manipulating variables, collecting and analyzing data, constructing and interpreting graphs
- Find and evaluate appropriate scientific information and use it to communicate scientific concepts
- Communicate scientific content in an oral presentation

- Understand the function of scientific instruments
- Understand fundamental biological concepts

Course Requirements:

Required Course Materials

Labster. Purchase a site license for online lab simulations through the UAlbany bookstore or from Labster directly (cheaper!), using the link that will be emailed to you specifically.

1. **Computer:**
   - A PC or Mac that runs the latest version of Windows or Mac OS or Chrome OS. Supported browsers are Firefox or Chrome. A Chromebook with at least 4 GB SDRAM and a dual core 2GHz processor should also work. Without a computer or a licence you will not be able to complete this course successfully.
   - If you do not have a PC or Mac, you may be able to request assistance through one of the following sites:
   - https://albany.jotform.com/200777729657066, https://home.treasury.gov/policy-issues/cares,
   - If you have financial aid, you may qualify for a one-time cost of attendance supplement https://www.albany.edu/financialaid/
   - For software available through the university, check here:
   - https://wiki.albany.edu/display/public/askit/ITS+Software+Catalog
   - If you have a computer, check here for minimum system requirements for Labster: https://help.labster.com/en/articles/1077008-what-are-the-minimum-system-requirements-for-labster-simulations

2. **Blackboard:**

We will use Blackboard for delivery of course materials. If you need help with Blackboard please go to https://help.blackboard.com/Learn/Student?utm_source=odhm.

3. **Zoom:**

We will also use Zoom, which you have access to through your Albany NetID and password. Help with Zoom is here https://wiki.albany.edu/display/public/askit/Getting+Started+on+Zoom,

4. **PPE for Face-to-Face Modules:**

Mask and Safety Goggles are required for face to face modules

Grading Policy:

There is no curve. Grades are normalized at the end of the semester only for instructors whose grades fall below average.

How to calculate your letter grade:
Your lab instructor will provide your current points upon request. Add up the points you have earned so far, add up the number of points each assignment was worth (on syllabus), divide the first number by the second and multiply by 100. This will give you the % points you have earned so far. Compare to grading scale.

Labster Quizzes	28.8%	144 pts
Blackboard Assignments	44%	220 pts
Final Presentation	24%	120 pts
Participation	3.2%	16 pts
Total	**100%**	**500 pts**

Grading Scale Cutoffs	
100 - 92.5%	A
92.4 - 89.5%	A-
89.4 - 86.5%	B+
86.4 - 82.5%	B
82.4 - 79.5%	B-
79.4 - 76.5%	C+
76.4 - 72.5%	C
72.4 - 69.5%	C-
69.4 - 66.5%	D+
66.4 - 62.5%	D
62.4 - 59.5%	D-
< 59.44% or less:	E

Assessments:
Assessment types and points are subject to change! Due dates are Fridays midnight as listed in the lab schedule and on Blackboard. Late policy is 48 hours for 80% possible credit. Submissions after that receive no credit so plan ahead. If you have a serious illness or personal emergency that keeps you from doing your work for a week or more, please get documentation from the Dean of Undergraduate Education. All work has to done by you. Do not Google answers on the internet and submit them as your own.

1. Labster Quizzes ---------- total 144 pts (28.8%) These are completed during Labster simulations and graded. You will have one attempt to answer the questions during the simulations correctly, so refer to the Theory button. Use Dr. One for problems with the missions or https://help.labster.com/en/ or the live chat function if you have theoretical or practical difficulties. 9 Labster Quizzes --- 16 pts each

2. Blackboard Assignments ---------- 20 points each, total 220 pts (44%) All submitted through Blackboard and all graded; please check the Assessment folders for each module for specific instructions. Due dates are on the lab schedule and in the module overview document on Blackboard.

a. Quizzes: Administered on Blackboard. Please check Blackboard for specifics.
b. Writing Assignments: Consist of Worksheets, Graphing or Writing Assignments. Instructions and submission links oN Blackboard.
c. Discussions: You will need to pick a topic, post and comment following the instructions on Blackboard. Please be courteous with any comments on your peer's posts and post/comment by the due dates specified.

3. Participation ---------- total 16 pts (3.2%) Points are associated with certain beginning of the semester assignments and participation in Zoom meetings. Details on Blackboard

4. Final Presentation ---------- total 120 pts (24%)

Follow the instructions and rubric on Blackboard.

a. Slide Outline --- 20 pts
b. Presentation ---- 80 pts
   Narrated presentation with slides and your face visible. Zoom will work; so may other platforms.
c. Comments on Presentations ---- 20 pts

Bonus Assignments

Will be provided online and standardized across labs. In fairness to all students, bonus assignments will not be given on an individual basis so make sure you take advantage of the opportunities when they are given. All bonus assignments have to be completed independently (don't work together or use other student's work) and submitted by the respective due dates. If you join face to face labs, you will receive credit incrementally, up to but not exceeding bonus credit offered online. You cannot do both and achieve bonus points above and beyond what your fully online peers can achieve.

Grading Discrepancies

Must be brought to the attention of your instructor no less than 24 hours and no more than one week after the graded item is returned to you. We won't review your grades at the end of the semester. No exceptions.

Academic Help:

Make use of your instructor's virtual office hours. He/she is there to help. In addition, tutors are available through CARSS http://www.albany.edu/carss/ and A+ https://www.albany.edu/ascplus/. Our Counseling and Psychological Services Center on campus has helpful online information and in person services and can be reached at 518-442-5800 or https://www.albany.edu/counseling_center/.

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, medical, cognitive, learning and mental health (psychiatric) disabilities. Please notify the Disability Resource Center (https://www.albany.edu/disability/ at drc@albany.edu or 518 -442-5490) if you require accommodations.

If you need background information, you can find free access to a Biology textbook here https://openstax.org/details/books/biology-2e

Course Policies For Face To Face:

1. Attendance: Face-to-face labs are only possible if you chose Hybrid-Alternate Attendance sections. All online material is mandatory, face to face labs start the week of 9/7, for 6 students at a time on a rotating basis. You will need to indicate your participation preferences to your lab instructor at the beginning of classes, and a schedule for face-to-face labs will be posted after answers are submitted.
2. There are 6 workstations per lab room. If you have indicated to your lab instructor that you will be present at face-to-face portions for lab, please attend and be on time, so that you do not waste material prepared for you. In the event of an unforeseen (unavoidable) personal emergency or illness, you must contact your instructor ahead of lab, or if not possible, within 24 hours. If you are experiencing any illness, especially symptoms of COVID-19, DO NOT attend class, but contact Student Health Services at 518-442-5454 and email your lab instructor.
3. Watch the pertinent videos before coming to class. Classroom instruction by your lab instructor will limited.
4. PPE: You must wear your mask at all times while in lab and it must cover mouth and nose. If you are participating in a lab that uses microscopes, you must bring your own goggles (available at the CAS store, or you may have some from your Chemistry lab). You will be provided gloves when you enter the lab. We encourage you to wash your gloved hands frequently. If you leave the lab room, you must dispose of the gloves into the waste bin and put on a new pair upon re-entry. Please try not to leave the room multiple times.
5. Social distancing: You must observe 6 feet social distancing from other students and avoid unnecessary movement in the classroom. Where it is possible, we will set up all material and equipment on your bench so that you can avoid unnecessary movement in the classroom. You must observe all health and safety signage in the classroom and any directions for traffic flow, if provided. If you remove your mask during lab or violate social distancing rules, class will have to be ended for all participants.
6. Cleaning: You must disinfect your bench with 70% alcohol and 10% bleach before and after use! When using a microscope, you must wipe the head thoroughly with a cotton ball soaked with alcohol.
7. Eating and drinking is not permitted during lab. Bulky items such as coats and bags should be left on the coat rack. All items except a pen should be left in your bag and not on the bench.

Course Policies For Online

1. All Learning Material and instructions for Assessments will be accessed through Blackboard. Familiarize yourself with the layout, make sure you know where to find materials, that videos load, and that you can upload assignments. Due dates for assignments are Fridays midnight; make sure you know which week what is due.
2. Modules will become available as the semester proceeds to make sure that you are learning the material and acquire skills in a progressive fashion and can build on your knowledge and skills as the semester progresses.
3. Netiquette requires that all communications with your instructors and lab mates are respectful and courteous.
4. Make sure you keep up communications with your instructors. If there are any issues, please let us know so that we can help.
5. You must attend the mandatory Zoom meetings. The first one will be during the first week of classes and you will receive a link from your lab instructor. If you have a legitimate conflict, you must indicate this to

your lab instructor before the meeting.

6. Assessment due dates are Fridays midnight as listed in the lab schedule and on Blackboard. Late policy is 48 hours for 80% of possible points. Submissions after that receive no credit, so plan ahead. If you have a serious illness or personal emergency that keeps you from doing your work for a week or more, please get documentation from the Dean of Undergraduate Education.
7. All work has to done by you and be in your words. Do not Google answers on the internet or copy from your peers and submit them as your own, or you will lose credit.

Academic Dishonesty

All work in this course has to be your own. It is every student's responsibility to become familiar with the standards of academic integrity at the University (www.albany.edu/undergraduate_bulletin/regulations.html). Claims of ignorance, unintentional error, or personal or academic pressures cannot be used as excuses for violating academic integrity. See here on how to avoid violating academic integrity.
https://library.albany.edu/infolit/playlists/academic-integrity
Academic Dishonesty is most often in the form of: cheating (copying or rephrasing all or parts of other student's work or copying verbatim from the internet), or plagiarism (using sources without citation), but also unauthorized collaboration on assignments (working together when not allowed), falsification of data (making up data), resubmission of work that has already been submitted for a grade.

Faculty are required to uphold these standards and any acts of academic dishonesty as outlined above are subject to penalty; no credit will be given for the affected work. In addition, faculty is required to report violations of academic integrity to the Dean of Undergraduate Education.
Do your own homework, don't ask to look at other students' assignments, and don't lend out yours!

How To Succeed:

1. We aim for success in this course! Most often, points are lost because instructions are not read or followed or are misunderstood.
2. Read this syllabus. It contains information crucial for your success in this class.
3. Always use your UAlbany email address; email from or to other sources may be rejected by the University server. Include your full name and ID. Allow at least 24 hours for a response, and please don't expect your instructor to answer emails after 10pm or on weekends; they too have classes and do research on top.
4. Monitor your UAlbany email closely. You will probably get a lot of emails, but this is how your lab instructor and the course coordinator communicate and send you important information!
5. Make use of your lab instructor's help. It's easy to get lost in a virtual environment so check in with your instructor!
6. Keep track of your points. Contact your instructor for current point totals. See Grading Policy below on how to calculate your letter grade. If you are struggling, talk to your instructor early in the semester.
7. Follow the instructions/rubric for assignments. Not handing in assignments by the due date or not following instructions will affect your grade! If you have problems with an assignment, please ask your instructor for help in advance (your instructor cannot help you if you start assignments the night before the due date).
8. Due dates are set before semester begins and knowing them is your responsibility. We give you plenty of

time to complete the assignments. Be proactive and start them well in advance of the due date. We will not be sympathetic if you miss a due date or do poorly on a quiz because you procrastinated. If you have legitimate issues (no computer/WiFi access or a personal emergency, contact your lab instructor immediately and be prepared to provide some proof.

9. Deadline for withdrawal without a "W" is Friday, September 4. Last day to withdraw with a "W" is Wednesday, October 28. Students who do not officially withdraw by November 4 will receive a letter grade.
10. S/U grading. A C or better is required for "S". A C- or lower will result in "U" and will not give you credit for this course. The last day to change your mind on this is October 28!

Religious Observance:

New York State Education Lab (section 224-A) requires all campuses to provide opportunities for make-up work for students who are missing class due to religious beliefs. Our online schedule is extremely flexible giving you ample of time to complete assessments. If you can't be in a face-to-face module because of a religious holiday, inform your lab instructor two weeks ahead of time so you can get rescheduled.

Title IX:

Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits discrimination on the basis of sex in federally funded education programs and activities. The SUNY-wide Sexual Violence Prevention and Response Policies prohibit offenses defined as sexual harassment, sexual assault, intimate partner violence (dating or domestic violence), sexual exploitation, and stalking and apply to the entire University at Albany community, including students, faculty, and staff of all gender identities. The University at Albany provides a variety of resources for support and advocacy to assist individuals who have experienced sexual offenses. Confidential support and guidance can be found through the Counseling Center (518-442-5800, https://www.albany.edu/counseling_center/), the University Health Center (518-442-5454, https://www.albany.edu/health_center/), and the Interfaith Center (518-489-8573, https://www.albany.edu/spirituality/onCampus.shtml). Individuals at these locations will not report crimes to law enforcement or university officials without permission, except in extreme circumstances, such as a health and/or safety emergency. Additionally, the Advocates at the University at Albany's Advocacy Center for Sexual Violence are available to assist students without sharing information that could identify them (518-442-CARE, https://www.albany.edu/advocacycenter/). Sexual offenses can be reported non- confidentially to the Title IX Coordinator within The Office for Equity and Compliance (518-442-3800, https://www.albany.edu/equity-compliance/, Building 25, Room 117) and/or the University Police Department (518-442-3131, http://police.albany.edu/). Please note, faculty members are considered "responsible employees" at the University at Albany, meaning that they are required to report all known relevant details about a complaint of sexual violence to the University's Title IX Coordinator, including names of anyone involve or present, date, time and location. In case of an emergency, please call 911.

ABIO 201 Online Lab Schedule – Fall 2020

This schedule, assessments and due dates are subject to change!

(Q): Quiz. Labster quizzes (L Quiz) are submitted as part of the simulation and graded through the Labster site. Blackboard quizzes (BB Quiz) are on material posted on Blackboard and submitted and graded through Blackboard.
(W): Written Assignments. Worksheets, graphing or writing assignments submitted through Blackboard.
(D): Discussions. On Blackboard. Topic choice, posts and comments must occur in a timely fashion; due dates in blue.
Presentation. The deadlines for steps in the process are different and highlighted in purple.

All due dates are Fridays midnight in the respective week and have been spaced in two week increments to give you flexibility, but you are encouraged to complete and submit assignments in a weekly fashion. Submissions by Sunday midnight of the respective week will be graded for 80% of possible points. Submissions after that will receive no credit. More detailed Instructions on Backboard. Schedules for face-to-face labs will be posted separately. There are no face-to-face labs during the first week of classes. Mandatory Zoom meeting*: second and third mandatory Zoom meeting date subject to change.

Module	**Week**	**Topics and associated assessment mode**	**Due midnight**	**Assessments**
1 - Introduction	Week 1 8/24 – 8/28	Introduction/Icebreaker Blackboard Material and Assessments (Q) Mandatory Zoom meeting. No face-to-face labs!	8/28	BB Q: All introductory material W: Email Plagiarism tutorial; Upload Labster screenshot, Meet Your Classmates discussion forum
2 - Scientific Tools	Week 2 8/31 – 9/4	Experimental Design/The Scientific Method Labster Experimental Design (Q) Blackboard Scientific Method (W)		
	Week 3 9/7 – 9/11	The Microscope Labster Microscope (Q) Blackboard Material/Assessments Microscope (Q)	9/11	L Q: Experimental Design L Q: Microscope W: The Scientific Method BB Q: Microscope
3 - Basics	Week 4 9/14 – 9/18	Evolution/Scientific Literature Labster Evolution (Q) Blackboard Scientific Literature (W)	9/18	(D: Pick topic for Biodiversity) (D: Pick topic for Presentation)
	Week 5 9/21 – 9/25	Biomes/Biodiversity Labster Biomes (Q) Blackboard Biodiversity (D)	9/25	L Q: Evolution L Q: Biomes W: Evolution/Scientific Literature D: Post in Biodiversity
4 - Factors Affecting Biodiversity	Week 6 9/28 – 10/2	Marine Biology/Bioindicators Labster Marine Biology (Q) Blackboard Bioindicators (W)	10/2	D: Comment on Biodiversity (D: Pick topic for Human Impact)

	Week 7 10/5 – 10/9	Landscape Ecology/Human Impact Labster Landscape Ecology (Q) Blackboard Human Impact (D) Mandatory Zoom meeting*	10/9	L Q: Marine Biology L Q: Landscape Ecology W: Daphnia D: Post in Human Impact
5 - Anatomy & Physiology	Week 8 10/12 – 10/16	Sensory Transduction/Vision Labster Sensory Transduction (Q) Blackboard Vision (W)	10/16	D: Comment on Human Impact (D: Pick topic for Human Health) W: Submit slide outline for presentation
	Week 9 10/19 – 10/23	Mammalian Anatomy/Immune System Labster Introduction to Immunology (Q) Blackboard Human Health (D)	10/23	L Q: Sensory Transduction L Q: Introduction to Immunology W: Vision D: Post in Human Health
6 - Global Issues	Week 10 10/26 – 10/30	Homeostasis/Climate Change Labster Thermal Homeostasis (Q) Blackboard Climate Change (W)	10/30	W: Climate Change (D: Pick topic for The Plastic Problem) D: Comment on Human Health
	Week 11 11/2 – 11/6	The Plastic Problem Blackboard The Plastic Problem (D) Mandatory Zoom meeting*	11/6	L Q: Thermal Homeostasis D: Post in The Plastic Problem
7 - Presentation	Week 12 11/9 – 11/13	Communicating in Scientific Format Blackboard Presentation (D)	11/13	D: Comment on The Plastic Problem D: Post your Presentation
	Week 13 11/16 – 11/20	Communicating in Scientific Format Blackboard Presentation (D)	11/20	D: Comment on presentations Bonus assignments

ABIO 202Z Introduction to Biological Investigations II Spring 2020 Syllabus

Course number: ABIO 202Z
Class no:
Credit Hours: 1
Lab times: TBD
Lab location: TBD

Course Coordinator: Dr. Christine Gervasi Ph.D. (she, her, hers)
E-mail: cgervasi@albany.edu
Office: Biology 109

Office Hours: I'm typically on campus 7am to 4pm; I have official office hours Mo 1PM-2PM and Tue 9AM-10AM, however feel free to stop in any time my door is open and I'm available, or just email me for an appointment!

Lab Instructor: note name, office location and hours: _____

Prerequisites: ABIO 130, 131, 201 and ACHM 120, 121, 124, 125.

Course Description: This is the second 1-credit hour course in a two-semester laboratory sequence designed for biology majors. Students will learn the process of scientific investigation, collaborate in designing, conducting and analyzing experiments, develop the ability to communicate in scientific format and gain expertise in a variety of laboratory instrumentation, techniques, skills and procedures. This course fulfills the general education requirement for lower-level written discourse. Students will research a topic using appropriate sources of information, produce coherent text in scientific style, and demonstrate the ability to revise and improve these texts.

Course Goals …
… are what we think you should get out of this course. Perhaps you are here because you need this lab to apply to your professional school of choice. And perhaps you are not interested in water fleas or photopigments but want to be a physical therapist or medical doctor. But a Biology degree prepares students for a broad range of careers: pharmaceutical sales, medical or health fields, research, industry, or wildlife and conservation; this lab sequence lays the foundation for this. You may not particularly enjoy working with bugs or enzymes but think about what you are learning in the process: how science works, things you never knew about the world around you, and how to use basic biology laboratory equipment and techniques. On top of that, there are skills you are improving without noticing much: critical thinking, troubleshooting, working in a team, communicating effectively, writing in a concise and logical manner, public speaking, and, perhaps, time-management. Why is this important? Just Google "Top 10 skills employers are looking for" and regardless of discipline, you'll find teamwork, communication and thinking skills right at the top of desired qualifications. And even if you decide to leave the field of biology altogether, you'll vote in elections and make life decisions that will be influenced by your understanding of science, biology and the environment. Most likely you'll forget details about water

fleas and photopigments. This is ok; but what you should get out of this course are skills; those will serve you well wherever you go. So, learn, acquire skills, and have some fun while you're at it.

Course Objectives: At the end of this course, successful students will be able to:

- operate laboratory equipment confidently, perform fundamental laboratory techniques competently, and be able to detect and resolve procedural problems
- successfully employ the scientific method through formulating hypotheses, designing and performing experiments, and collecting, analyzing and evaluating data
- clearly communicate experimental findings in written and oral form
- find and evaluate appropriate scientific information and use it in a scientifically meaningful way
- understand fundamental biological concepts

Course Requirements:

Material Required or Recommended

1. A lab manual will be provided in class as part of your lab fee (paid during registration).
2. A textbook is recommended but not required for the lab. Free: https://openstax.org/details/books/biology-2e
3. We use Blackboard for Supplemental Material, Instructions, Announcements and Submission of Assignments.
   Please make yourself familiar with Blackboard. Not knowing how to use the site or where to find instructions
   cannot be accepted as an excuse for submitting incomplete or late assignments.
   Budget for copies. You will have to bring two hard copies of some assignments for in class peer review. Feel free to use the smallest margin possible and single spacing (11 font).

Assessments and Grading:

It's not your instructor's responsibility to remind you of due dates or point values, as they are listed in the lab schedule (last page of syllabus). Grading may change
slightly to adjust to the needs of the course.

Grading Scale Cutoffs	
100 - 92.5%	A
92.4 - 89.5%	A-
89.4 - 86.5%	B+
86.4 - 82.5%	B
82.4 - 79.5%	B-
79.4 - 76.5%	C+
76.4 - 72.5%	C
72.4 - 69.5%	C-
69.4 - 66.5%	D+

Prelab Quizzes (8 at 18 points each)	28.8%	144 pts
Lab Performance/Worksheets	15.2%	76 pts
Project Plant Defenses	30%	150 pts
Final Exam and Competencies	26%	130 pts
Total	**100%**	**500 pts**

How to calculate your letter grade:
Your lab instructor will provide your current points upon request. Add up the points you have earned so far, add up the number of points each assignment was worth (on lab schedule in syllabus), divide the first number by the second and multiply by 100. This will give you the % points you have earned so far. Compare to grading scale.

66.4 - 62.5%	D
62.4 - 59.5%	D-
< 59.44% or less:	E

Total points: 500.

1. Prelab Quizzes ---------- total 144 pts (28.8%)
   Quizzes will be given promptly when lab begins, and you will not receive extra time to complete them, so don't be late. Makeup quizzes require a legitimate and documented excuse (see Attendance). Quizzes are based on lab manual and online videos and will include questions on the theoretical and practical aspects of the upcoming experiment. They may also include questions from previous lab experiments, and will regularly include math problems. They may be in short answer or multiple-choice format and may require an i-clicker. 8 Prelab Quizzes ---- 18 pts each

2. Lab Performance ---------- total 76 pts (15.2%)
   Laboratories are team-driven environments and learning proper lab etiquette is valuable to anybody who will work in any laboratory or team environment. Lab performance points are easily earned by following course policies and instructions, actively contributing to all class activities and experiments, and cleaning up thoroughly. Lab Performance points may be lost by the entire class if the lab room is not left clean. Worksheets are graded and typically have to be completed by the end of lab (though prelab worksheets are due for some labs, see lab schedule due dates).

3. Final Project Plant Defenses ---------- total 150 pts (30%)
   This is an assessment of your competency in Information Literacy, Critical Thinking, and Writing in the discipline. You will write a Hypothesis and a Paper in scientific format for one experiment. Written assignments have a rubric and instructions (on Blackboard and in the lab manual); make sure you read both carefully. These are assessments, like exams/quizzes; you will have to do them on your own. Assignments will be checked for plagiarism and any cases of plagiarism or unauthorized collaboration will be treated according to the University's rules on Academic Integrity (see Academic Integrity). Final versions are graded for quality and not effort. Making revisions following any constructive feedback will improve your grade but will not guarantee you 100% of points. Final assignments submitted within 48 hours after beginning of your lab will have a 10% deduction. Assignments submitted more than 48 hours after lab will not be graded (0 credit). Bring two hard copies of each section to lab for peer review (2 points per part/section, check lab schedule to see when individual sections are due in class). Revise your drafts following reviews (5 point penalty if there is no revision).
   a. Hypothesis Plant Defenses ---------- 30 pts
      You must upload a draft and your final version on Blackboard!
   b. Final Paper Plant Defenses ---------- 120 pts
      You must upload both your complete paper draft and your final revised version on Blackboard and return the hard copies of the complete drafts with their reviews to class (5 point penalty if not). You do not need to upload all the individual sections.

4. Final Exam ---------- 120 pts (20%)
   Consists of a written and a practical portion.

a. Written cumulative exam ---- 70 pts
   If you miss the exam you will need to provide legitimate and official documentation.
b. Competencies ---------- 60 pts
   For competencies, you will have to demonstrate your proficiency in using all or some of the following lab techniques/equipment: balances, micropipettes, electrophoresis setup/gel, spectrophotometer, microscope, centrifuge. There will only be one assessment for each competency, you will not be able to repeat one for a higher grade.

Bonus Assignments
Will be announced in lab and are standardized across labs. In fairness to all students, bonus assignments will not be given on an individual basis so make sure you take advantage of the opportunities when they are given. All bonus assignments have to be completed independently (don't work together or use other student's work) and submitted by the respective due dates.

Grading Discrepancies
Must be brought to the attention of your instructor no less than 24 hours and no more than one week after the graded item is returned to you. We won't review your grades at the end of the semester. No exceptions.

There is no curve. Grades are normalized at the end of the semester only for instructors whose grades fall below average.

Academic Help:
Make use of your instructor's office hours. They are here to help you. In addition, tutors are available through the OAAE http://www.albany.edu/oaae/index.shtml and CARSS http://www.albany.edu/carss/. Our Counseling and Psychological Services Center on campus has helpful online information and in person services http://www.albany.edu/counseling_center/selfhelpapps.shtml.
Reasonable accommodations will be provided for students with documented physical, sensory, systemic, medical, cognitive, learning and mental health (psychiatric) disabilities. Please notify the Disability Resource Center (drc@albany.edu, 518 -442-5490) if you require accommodations.

Lab Policies:
Labs are collaborative environments. You will be working with sensitive equipment, share lab space and materials, and collaborate with your fellow students in experiments; proper lab etiquette is important!

1. Always follow all safety procedures! Use personal protective equipment when instructed to do so (it will be provided for you). In the case of an accident, notify your instructor immediately!
2. Eating, drinking, using cell phones (including text-messaging), wearing headphones or earbuds is unsafe and disruptive and not permitted during lab.
3. Bulky items such as coats and bags should be left on the coat rack or tucked safely underneath your bench, out of the way of traffic, not on top of your work bench or in the aisles.
4. Proper lab etiquette includes coming prepared, following course policies and instructions, actively participating in experiments and lab activities, and cleaning up thoroughly after lab.

5. Uncooperative, disrespectful or disruptive behavior interferes with an instructor's ability to teach and your peers' ability to learn. If disruptive behaviors are severe or persist after a student has been made aware of them, they will be asked to leave the class and will lose the points associated with that lab exercise. Disrespectful correspondence will not be answered. Any issues that cannot be resolved in the class room should be brought to the attention of the course coordinator.

Attendance:

You will be learning hands-on skills so attending all labs is mandatory; don't miss lab, be late or leave before you are done. We do not offer a makeup lab experiment at semester end. In the event of an unforeseen (unavoidable) personal emergency or illness, you must contact your instructor ahead of lab, or if not possible, within 24 hours) to discuss rescheduling options. Don't wait, reach out promptly and respond promptly! You may be asked to provide documentation regarding your absence and submit your assignments at the scheduled time. Should you miss a lab without a legitimate and documented excuse (such as a note from a doctor or the Dean of Undergraduate Education, LC30) you will lose all points associated with that lab (including homework assignments). If you miss more than two labs you are strongly encouraged to consider withdrawing. Check here for the University's Medical Excuse Policy http://www.albany.edu/health_center/medicalexcuse.shtml.

Academic Integrity:

- It is every student's responsibility to become familiar with the standards of academic integrity at the University. Claims of ignorance, unintentional error, or personal or academic pressures cannot be used as excuses for violating academic integrity. See (www.albany.edu/undergraduate_bulletin/regulations.html).
- Examples of behaviors defined as academic dishonesty include (but are not limited to): cheating during exams and quizzes (using manual or phone, talking, copying from other students), plagiarism on written assignments (using sources without citation, copying or rephrasing all or parts of other student's work), unauthorized collaboration on assignments (working together when not allowed), falsification of data (making up data), resubmission of work that has already been submitted for a grade. Assume that all homework has to be done by yourself unless you are specifically permitted to work with other students!
- You will work as pairs on some experiments in class and discussing ideas and concepts during lab is encouraged. However, you should not copy on your in-class worksheets, and unless explicitly permitted by the instructor, you must do your homework entirely on your own, including generating graphs and tables. Like exams, homework tests your skills and understanding; if you don't do it yourself we can't give you a grade that is fair to your peers. Therefore, examining, copying or paraphrasing all or parts of other student's work (past or present), or working together on homework assignments when not permitted violates the University standards of academic integrity the same way cheating on exams does. Faculty is required to uphold these standards and any acts of academic dishonesty as outlined above are subject to penalty; no credit will be given for the affected work. In addition, faculty is required to submit a written report of violations of academic integrity to the Dean of Undergraduate Education.
- Do your own homework, don't ask to look at other students' assignments, and don't lend out yours!

Religious Observance

New York State Education Law (Section 224-A) requires all campuses to provide opportunities for make-up work for students who are missing class due to religious beliefs. Students must notify the lab instructor or course coordinator two weeks in advance of religious observances so that alternatives can be arranged.

Title IX

Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits discrimination on the basis of sex in federally funded education programs and activities. The SUNY-wide Sexual Violence Prevention and Response Policies prohibit offenses defined as sexual harassment, sexual assault, intimate partner violence (dating or domestic violence), sexual exploitation, and stalking and apply to the entire University at Albany community, including students, faculty, and staff of all gender identities.

The University at Albany provides a variety of resources for support and advocacy to assist individuals who have experienced sexual offenses. Confidential support and guidance can be found through the Counseling Center (518-442-5800, https://www.albany.edu/counseling_center/), the University Health Center (518-442-5454, https://www.albany.edu/health_center/), and the Interfaith Center (518-489-8573, https://www.albany.edu/spirituality/onCampus.shtml). Individuals at these locations will not report crimes to law enforcement or university officials without permission, except in extreme circumstances, such as a health and/or safety emergency. Additionally, the Advocates at the University at Albany's Advocacy Center for Sexual Violence are available to assist students without sharing information that could identify them (518-442-CARE, https://www.albany.edu/advocacycenter/). Sexual offenses can be reported non-confidentially to the Title IX Coordinator within The Office for Equity and Compliance (518-442-3800, https://www.albany.edu/equity-compliance/, Building 25, Room 117) and/or the University Police Department (518-442-3131, http://police.albany.edu/).

Please note, faculty members are considered "responsible employees" at the University at Albany, meaning that they are required to report all known relevant details about a complaint of sexual violence to the University's Title IX Coordinator, including names of anyone involve or present, date, time and location. In case of an emergency, please call 911.

How To Succeed:

1. We aim for success in this lab. Often students lose points simply for misunderstanding or not following instructions. Therefore, please read the following rules and suggestions very carefully.
2. Read this syllabus. It contains information crucial for your success in this class.
3. Biology lab courses are intense; you only pay tuition for 1 credit's worth of 'Introduction to Biological Sciences' class but you will learn a lot. However, this means that to be successful you have to invest time. A 1 credit class requires about 3 hours outside class each week.
4. Be prepared for each lab exercise. To be prepared for each week's experiment (and the prelab quizzes), read the pertinent part of the lab manual and watch prelab videos before you come to class. Your instructor will assume you come prepared and not give you a detailed lecture on the experiment, and experiments will be faster, easier, smoother and more fun if you know what you are doing.
5. Be proactive and take responsibility for your learning. Most pertinent information will be in this syllabus/lab schedule/lab manual and on Blackboard. Make sure you can navigate Blackboard with confidence. It is your responsibility to know the due dates and follow instructions.

6. Please follow the requirements of your instructor.
7. Always use your UAlbany email address; email from or to other sources may be rejected by the University server. Include your full name and ID. Allow at least 24 hours for a response, and please don't expect your instructor to answer emails after 10pm or on weekends; they too have classes and do research on top.
8. Keep track of your points. Contact your instructor for current point totals. See Grading Policy above on ow to calculate your letter grade. If you are struggling, talk to your instructor early in the semester.
9. Keep all your quizzes, worksheets and other assignments and use them for studying. Anything you encountered or did during lab, or that was part of an assignment can appear on the final exam.
10. Follow the instructions/rubric for assignments. Not handing in assignments by the due date or not following instructions will affect your grade! If you have problems with an assignment, please ask your instructor for help in advance (your instructor cannot help you if you start assignments the night before the due date).

Emergencies: Attendance in lab is mandatory and due dates are set before semester begin. However, we understand that life happens. If you become seriously ill or struck by unforeseen personal emergencies during the semester, contact your instructor immediately. With appropriate documentation, we will try to accommodate a missed lab/due date as best as possible. If you have to miss more than two labs, you are encouraged to discuss withdrawing from the course with your instructor and advisor.

Due dates are set before semester begin and knowing them is your responsibility. Don't try to upload assignments to Blackboard 3 minutes before lab! Should there be a legitimate Blackboard glitch, contact your instructor immediately and provide proof (such as screenshot of error message and time stamp).
Deadline for withdrawal without a "W" is Tuesday, February 4. Last day to withdraw with a "W" is Monday, April 6. Students who do not officially withdraw by April 6 will receive a letter grade.
S/U grading. A C or better is required for S. C- or lower will result in U and will not give you credit for this course. Last day to change your mind on this is April 6!

ABIO 202Z Lab Schedule - Spring 2020

Schedule and assignment due dates are subject to change! Changes to due dates and assignments announced later in the semester will override this schedule. Assignment details will be posted on Blackboard and/or announced by your instructor at the beginning of lab. See bottom for footnotes!

Date	Lab	Assignments (subject to change)
Jan. 27 – 31	Introduction Organization, syllabus, refreshers	Due: Worksheets1 at end of lab (5)3 Homework: Prelab Preparation2 Basic Skills Boot Camp I
Feb. 3 - 7	Basic Skills Boot Camp I Basic math, metric system, molarity and pH, Beer's law (balance, solution preparation, spectrophotometer).	Due: Basic Skills I Quiz (18), Lab Performance4 (LP) + Worksheets (7) Homework: Math Problems; Prelab Assignment Hypothesis Photosynthesis and Respiration; Prelab Preparation Basic Skills Boot Camp II
Feb. 10 - 14	Basic Skills Boot Camp II Basic math, standard curve, serial dilution, Hypothesis development, (spectrophotometer, pipetting, graphing).	Due: Math problems (1); Basic Skills II Quiz (18), LP + Worksheets (7), Prelab Assignment Hypothesis Photosynthesis and Respiration (5) Homework: Hypothesis Plant Defenses; Prelab Preparation Photosynthesis and Respiration
Feb. 17 - 21	Photosynthesis and Respiration Photosynthesis in Elodea, respiration in yeast, indicators (hypothesis development, experimental design, graphing, scientific writing). Peer Review Hypothesis	Due: Hypothesis Plant Defenses - bring two hard copies3; Photosynthesis and Respiration Quiz (18), LP + Worksheets (7) Homework: revised Hypothesis Plant Defenses; Prelab Preparation Cell Structure and Function; Prelab Preparation Plant Defenses
Feb. 24 - 28	Cell Structure and Function I Cell organization, structure, function; cell cycle (microscope use, wet-mount preparation, staining techniques). Plant Defenses Setup Seed germination and growth, allelopathy, antibacterial properties (hypothesis development, experimental design, graphing, scientific writing, sterile technique)	Due: revised Hypothesis Plant Defenses (30); Plant Defenses Quiz (18), LP + Worksheets (7) Homework: Prelab Preparation Cell Structure and Function
Mar. 2 - 6	Plant Defenses Analysis Cell Structure and Function II Cell organization, structure, function; cell cycle (microscope use, wet-mount preparation, staining techniques).	Due: Cell Structure and Function Quiz (18), LP + Worksheets (7) Homework: Paper - Methods and Results; Prelab Preparation Analysis of Photopigments
Mar. 9 – 13 Midterm point	Analysis of Photopigments Gel electrophoresis, thin layer chromatography, isoelectric point, Rf (pipetting, chromatography, standard curve, centrifuge, graphing). Peer Review Methods and Results	Due: Analysis of Photopigments Quiz (18), LP + Worksheets (7), Paper - Methods and Results - bring two hard copies3; Homework: Paper – Introduction, Discussion, Abstract; Prelab Preparation Transformation

Mar. 16 - 20	Spring Break	No Bio 202Z labs all week
Mar. 23 - 27	Transformation I Bacterial transformation, biotechnology (sterile and molecular biology techniques). Peer Review Introduction, Discussion, Abstract	Due: Paper - Introduction and Discussion - bring two hard copies3; Transformation Quiz (18), LP + Worksheets (7) Homework: revise Paper Plant Defenses
Mar. 30 - Apr. 3	Transformation II Analysis of transformations Practice Competencies	Due: Transformation LP + Worksheets (7) Homework: Prelab Preparation Writing Review, revise Paper Plant Defenses
Apr. 6 - 10	Writing Review Lab report components, criteria for good writing, (editing, peer review). Practice Competencies	Due: Complete draft Paper - bring two hard copies3; Writing Review Quiz (18), LP + Worksheets (7) Homework: revise Paper Plant Defenses
Apr. 13 - 17	Competencies Demonstrate competency in lab techniques and equipment	Due: Paper Plant Defenses final revised version, submit hardcopies of your drafts and reviews (120); LP (2); finish competencies Homework: study for final
Apr. 20 – 24	Final Exam/Competencies	Due: Final Exam (70 + 60 for competencies); finish competencies
Apr. 27 – May	(Competencies)	

- Worksheets are due generally at the end of lab period unless otherwise indicated
- To prepare for lab/quiz, read the lab manual including procedures and rules, complete prelab assignments if applicable, and watch respective videos on Blackboard
- Assignment points in parenthesis (providing 2 hard copies for peer review are part of assignment points, 2 points per paper section)
- LP: Lab Performance (being on time, participating in classroom activities, following safety and other class policies, cleanup, providing thorough reviews): 2 points/week as indicated; worksheets 5 pts each, unless otherwise indicated.

ABIO 301 Molecular Cell Biology Fall Syllabus

Course number: ABIO 301
Class no:
Credit Hours: 3
Class times: TBD
Class location: TBD

Instructor: Dr. Cara Pager PhD (she, her, hers)
E-mail: ctpager@albany.edu
Office: Life Science Research Building (LSRB) 2051
Office phone: 518-591-8841
Office hours: By appointment and TBD

Contacting the instructor: The best way to get help from Dr. Pager is to participate in the weekly Q&A sessions or to attend office hours. If you have questions, please send an e-mail with ABIO 301 in the subject line and include your list of questions. If I can, I will do my best to first answer your questions in a timely fashion. If necessary, we can talk about the questions further during office hours. Office hours will be held online during scheduled office hours through a Zoom link that will be provided. If you cannot attend office hours, please e-mail me to arrange an alternate time, and I will try to accommodate you. I have also created a Discussion forum on Blackboard that you can use to ask questions. *Please do not* call and leave questions via voicemail.

Pre-requisites: The pre-requisites for this course are General Biology I (ABIO 130) and II (ABIO 131). A Grade of C- or better in ABIO 131 is required. If you have not completed these pre-requisites, please withdraw from the class or you will be deregistered automatically unless you have made special arrangements with the instructor.

Course description: This is an introductory course in cell structure and function. It is intended for biology majors and others planning careers in the biomedical sciences. The course covers the chemical composition of cells, molecular structure and function of organelles, cell communication with their environment and the basic molecular processes underlying normal cellular behavior and disease.

Learning objectives: At the end of this course, students should understand and be able to describe:

- the structure and function of nucleic acids, proteins, and cellular membranes
- the molecular structure of a cell; how cellular structure relates to cellular function
- how cells interact with their environment
- how chemical signals are generated and interpreted by the cell
- how defects in cell architecture and function lead to disease.

Students should also understand how the scientific method is applied in cell biology through the use of common techniques to further develop knowledge in the field of cell biology. Students are expected to develop an

understanding of fundamental principles that will allow them to make predictions and think through questions rather than simply memorizing the lecture material.

Overview of the course:

Instruction: All lectures, assignments, quizzes and exams will be delivered online. This class is designated asynchronous, that is lectures will not be given live during class time and we do not have a scheduled time for lectures. Office hours will be via Zoom, and we will have a weekly synchronous Q&A session via Zoom. This Q&A session will be recorded for those who are unable to participate in the session. The time of the Q&A session is still to be determined.

Lecture materials: All lecture materials will be available for download from Blackboard (https://blackboard.albany.edu/) which is accessible through MyUAlbany. **Recorded lectures and lecture notes for each weekly module will be available prior to the lectures.** The lecture notes will be provided as powerpoint slides and as a pdf version. Prior to starting each lecture, I recommend reading the learning objectives for each lecture and the required reading in the textbook. If you cannot find each weekly module, feel free to notify Dr. Pager.

Required textbook: We will be using free texts that are available through the National Center for Biotechnology Information bookshelf. https://www.ncbi.nlm.nih.gov/books/

- *"Molecular Cell Biology"* 4th edition, Lodish H, Berk A, Zipursky SL, et al. New York: W.H. Freeman; 2000 https://www.ncbi.nlm.nih.gov/books/NBK21475/?term=molecular%20biology%20of%20the%20cells
- *"Molecular Biology of the Cell"* 4th edition. Alberts B, Johnson A, Lewis J, et al. New York: Garland Science; 2002 https://www.ncbi.nlm.nih.gov/books/NBK21054/?term=molecular%20biology%20of%20the%20cells

Readings: The reading for each lecture is listed in the Class Schedule below and will be included in the lecture materials. You should make an effort to read the text as it will help you understand the lecture, as well as any additional information material presented and explained in class but is not in the textbook.

Computer, tablet, or smart phone, with internet connection that can access Blackboard: As the course is now online, you will need to secure a computer with an internet connection. If you do not have a computer with an internet connection, please try to find one that you can access. If you are not able to reliably secure a device with an internet connection, please contact me immediately. **Please check the deadlines and let me know immediately if you will not be able to secure internet access that would allow you to complete an assignment, quiz, or exam as posted in the syllabus.**

Exams: Exams count for 60% of your grade. There will be four (4) equally weighted midterm exams given during the semester, each of which is worth 100 points. The exam format will be 40 multiple choice questions, with each question worth 2.5 points. Exams will be delivered online through a link in Bb in the content folder "online exams". The exams will be available to you for 24 hr (see syllabus for exact times for each exam). You

will have a 1 hour 20 min period to complete the exam anytime during the available period. Contact me immediately if you will not be available during that period. Exam questions will be derived primarily from the lecture material and assignments. Some more difficult questions will require critical thinking or interpretation of the material as on the MCAT. The lowest exam score of the first three exams will be dropped. **The fourth exam is a midterm and is not comprehensive, but it CANNOT be dropped.** Exams can be taken in advance with conflicting UAlbany-related activities if a note from the Dean's office or supervisor for the activity is provided at least 48 hours prior to the exam. For medical excuses, I follow the Medical Excuse Policy: https://www.albany.edu/health_center/medicalexcuse.shtml

Policy on make-up exams: A make-up exam will be given only for **valid excuses**. Family vacations are not valid excuses. One make-up exam will be scheduled at the end of the course. If you have missed an exam with a potentially valid excuse, it is your responsibility to contact me immediately to find out when the make-up will be given. A delay may result in missing the make-up without a valid excuse. If you miss one of the semester exams without a valid excuse, that will be the exam dropped. If you miss more than one exam without valid excuses, you will fail the course.

Assignments: The homework assignments will account for 25% of your grade. There will be 10 assignments throughout the semester. The assignment component of the course is broken down into Blackboard and Flipgrid/Voicethread assignments.

Blackboard assignments: There will be 5 assignments posted on Blackboard that will require you to navigate and use free online bioinformatic databases. Each assignment is designed to complement the content of the lectures and are intended to make the material more relevant and to help build analytical and critical thinking skills. Each Blackboard assignments will be graded out of 20 points and contribute to 20% of the assignment grade.

Voicethread assignments: The remaining 5% of the Assignment grade will come from activities using either Voicethread. These assignments will require you to give short 1-2-minute presentations. These can be written, voice or videos on the assigned topic. There will be 5 Voicethread assignments, each will be graded out of 5 points.

Due dates for Assignments: The assignments will have 2 deadlines. The first is a suggested due date that will be every week on Sunday evening starting. Assignment 1 will be due XXXXXXXX. All assignments must be submitted by latest XXXXXX at 11:59 pm. **Absolutely no late or make-up assignments will be given.** The due dates for the assignments are listed on the list of scheduled lectures.

Quizzes: Quizzes count for 10% of your grade. There will be 8 short quizzes given through Blackboard on scheduled dates. Each quiz with consist of 5 questions, with each question worth 2 points, for a total of 10 points. **There will be no make-ups for quizzes! If you miss a quiz, it cannot be made up but the 3 lowest quiz scores will be dropped.** Quiz questions will be based primarily on information contained in prior 1-2 lectures. The purpose of these quizzes is to encourage you to study consistently throughout the semester. Note that the quiz questions are easier than the exam questions. The quizzes will be available to you for 24 hours (see syllabus for exact times for each quiz). You will have a 10 minutes period to complete the quiz anytime during the available period. All quizzes are open book. You may use your notes, books or another resource available to you.

Class participation: New to Cell Biology this semester, you will each be asked to listen to the Voicethread assignments of colleague in the ABIO 301 class. To earn points for class participation you will need to provide constructive feedback and ask one question. There are 5 Voicethread assignments. To earn points for Class Participation, you will need to review 5/5 of the Voicethread assignments. Each review will be scored out of 5 points (or 1% of your final grade) for a total of 5% of your grade.

Grade policy: Grading is A-E. Student grades will be calculated by summing points earned from exams and quizzes (not including dropped scores) and dividing the acquired points by the points possible (500) and multiplying by 100 to yield a percentage score. I do not grade on a curve. It is each student's responsibility to verify that their grades posted on Bb are accurate. *All queries about assignment, quiz, and exam 1-3 grades must be resolved with me by midnight on XXXXXXXX.*

	Points	% of grade
Midterm Exams (100 points each, 2 best scores out of exams 1-3 + exam 4) …..	300	60%
Assignments:		
Blackboard assignment (20 points each, 5 assignments) ……	100	20%
Voicethread assignment (5 points each, 5 assignments) ……..	25	5%
Quizzes (10 points each, 5 best scores out of 8 quizzes) ……	50	10%
Class participation (5 points each, 5 VT assignments to review) …….	25	5%
Total ……	500	100%

Grade	% - %
A	95 and above
A-	90 - 94
B+	85 - 89
B	80 - 84
B-	75 - 79
C+	70 - 74
C	65 - 69
C-	60 - 64
D+	55 - 59
D	50 - 54
D-	45 - 49
E	44 and below

A roadmap to success in this course:

Develop consistent study habits to stay engaged with the material: To learn how cells function, you will need to be engaged in the content. I recommend that you download the lecture, read the learning objectives and follow along with the lecture and take your own notes as you watch the videos. Be brave and ask questions on the discussion board or during virtual office hours and Q&A session or through the anonymous google forms link. Read the book particularly for concepts that are not clear to you but avoid focusing on material that was not included at all in the lecture. Focus on understanding the major concepts outlined in the learning objectives rather than simply memorizing the material. Use the learning objectives to help guide your understanding of the lecture and to create your own notes. Writing your own notes will help you solidify the material in your mind. Working on your own in isolation can be challenging for many people. Many of you who feel you work best with other people may want to find virtual study partners that you can connect with using Zoom.

Get extra help: Make notes on concepts that are not clear to you. Come to virtual office hours to get answers to your questions. You can also post a question in the discussion forum on Bb.

Prepare for exams: Download the previous exam questions provided on Bb and answer them as if they were an exam without looking at the answers. After using the key to grade your exam, review your notes and the book to fill in gaps in your knowledge for the questions you missed. Review your notes. Focus on material that is in the lecture notes, on assignments, and is discussed in class. Don't worry about detailed information in the textbook that is not mentioned in class or on an assignment – that won't be on the test. Be sure to attend the exam review sessions and ask questions! If you have test taking anxiety, get help! You can start by contacting Middle Earth. Here are some additional tips on preparing for exams from Middle Earth: http://www.albany.edu/main/features/2004/12-04/1exams/exams.html

Attend exam reviews: Interactive exam reviews will be held before each exam using Zoom. Zoom sessions will be recorded and uploaded to a new folder in course content "exam reviews" for viewing after the session is over.

Note on external sources providing study guides for my class: Please note that all the material you need to succeed in my class is presented in the lecture notes, previous exams, virtual office hours, Q&A sessions and exam reviews. **For this course you are not required to spend additional $$$ on a study guide from an external company.** These materials are not supplied or reviewed by me. Buyer beware.

Other Important Information:

Instructor's responsibilities: 1) to be prepared for each lecture; 2) to present the most important information from assigned reading in a clear and concise fashion; 3) to be available outside of posted online lectures to answer questions; 4) to reply to electronic mail promptly; and 5) to return exam scores in a timely fashion.

Student's responsibilities: 1) review and pay attention to all lectures; 2) download all course materials from Blackboard and check email and Blackboard for messages relevant to the course regularly; 3) complete

assignments, quizzes and exams by due dates; and 4) seek assistance from the instructor when appropriate.

Reasonable accommodation policy: Reasonable accommodations will be provided for students with documented physical, sensory, systemic, medical, cognitive, learning and mental health (psychiatric) disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Disability Resource Center (518- 442-5490; drc@albany.edu). Upon verification and registration, the DRC will provide you with a letter that you should give to me. You will be given extra time to complete online exams.

Digital devices: Digital devices with internet access are required to complete the online assignments, quizzes, and exams.

Academic misconduct: The online quizzes and exams are open book. You may use any books, notes, online content to complete the work but you may not consult with anyone else. Getting help from another person with your online quizzes or exams is against the Standards of Academic Integrity and can result in an E for the class. For more information see: https://www.albany.edu/undergraduate_bulletin/regulations.html

ABIO 301 Molecular Cell Biology Schedule of Classes for Fall 2021

DATE (2021)	MODULE	TOPIC	Due Date
Week 1	1	The Dynamic Cell & Chemical Foundations	
		Assignment 1	
Week 2	2	Protein Structure and Function	
		Quiz 1 (Module 1)	
		Assignment 2	
Week 3	3	Methods in Cell Biology	
		Quiz 2 (Module 2)	
		Assignment 3	
Week 4	4	Biomembranes	
		EXAM 1 (Modules 1-3)	
Week 5	5	Endomembrane System I	
		Quiz 3 (Module 4)	
		Assignment 4	
Week 6	6	Endomembrane System II	
		Quiz 4 (Module 5)	
		Assignment 5	
Week 7	7	Cell Motility and Shape I	
		EXAM 2 (Modules 4-6)	
Week 8	8	Cell Motility and Shape II	
		Quiz 5 (Module 7)	
		Assignment 6	
Week 9	9	Cell Signaling	
		Quiz 6 (Module 8)	
		Assignment 7	
Week 10	10	Integrating into Tissues	
		EXAM 3 (Modules 7-9)	
Week 11	11	Nucleus Structure and Function	
		Quiz 7 (Module 10)	
		Assignment 8	
Week 12	12	Cell Cycle Regulation	
		Quiz 8 (Module 11)	
		Assignment 9	
Week 13	13	Stem Cells	
		Assignment 10	
		EXAM 4 (Modules 10-13)	

ABIO 330 Principles of Ecology & Evolution Spring 2020 Syllabus

Course number: ABIO 330
Class no:
Credit Hours: 3
Class times:
Class location:

Lecturer: Dr. Ing-Nang Wang Ph.D.
E-mail: ingnang@albany.edu
Office: Life Sciences Research Building 2077
Phone: 518-591-8844

Lecturer: Dr. Samantha Hoff
E-mail: shoff@albany.edu
Office: Life Sciences Research Building 2082
Phone: 518-591-8845

Office Hours: Zoom office hours are available by appointment.

Prerequisites: ABIO 110-111 General Biology (or equivalent) and ABIO 212 Genetics (or equivalent).

Course Description: In this course, we will emphasize the patterns and processes of Ecology and Evolution as biological phenomena. In the ecology part of the course, we will cover fundamental concepts and integrative principles of Ecology, spanning levels of organization from individual organisms to populations, communities, ecosystems and beyond. In the evolution part of the course, we will explore the mechanisms of Evolution at the genetic and population levels in order to understand how biological variation arises and is acted upon by selective pressures. Throughout the course, we will highlight techniques and issues relevant to modern evolutionary and ecological researchers through various examples, while stressing the importance of critical thinking and data analysis. We will demonstrate how rigorous ecological and evolutionary analyses are highly significant to human activity. Above all, we will draw attention to the reasons why Dobzhansky (1973) stated, “Nothing in biology makes sense except in the light of evolution.”

Course Objectives: Some of the most controversial scientific topics in society today fall under the umbrella of ecology and evolution. We have two goals for this course: the first is to present the wealth of scientific evidence and methodology to dispel myths about complex evolutionary and ecological concepts, the second is to help produce a more informed, and scientifically literate citizenry. Finally, we hope to instill a sense of wonder at how the biological world works, from the molecular to the global scales.

Course Requirements:

Textbooks (Optional):

1. Bowman, W.D., S.D. Hacker, M.L. Cain. 2017. Ecology (4th edition). Sinauer Associates Inc.
2. Freeman, S, and J.C. Herron. 2014. Evolutionary Analysis (5th Edition). Pearson Prentice Hall, New Jersey.

We recognize that having multiple texts for a course is a significant investment. Our lectures are based upon the listed textbooks, but we do not require you to purchase them. If you need additional references about certain topics, we recommend you come speak with us by appointment, and we can point you toward useful sources.

Lecture and Notes: Lecture videos will be posted online. Lecture slides will be made available on the Blackboard system.

Grading Policies:

Exams: There are 4 exams in this course, two for the Evolution component and two for the Ecology component. Three exams are scheduled during the normal lecture hours and one during the Final Exam Week (12/01/2020 –12/07/2020). The final exam is NOT cumulative. See below for exam dates.

Exam Make-Up Policy: The only individuals allowed to take the makeup exams are those who missed the normally scheduled exams with legitimate reasons established by the University. The make-up exams may or may not be the same as the normally scheduled exams. The time and date for each make-up exam will be arranged by the instructors.

Online Quizzes: These quizzes are designed to familiarize you with materials you have just learned.

Grading: Grades will be calculated based on the following two assessments:

1. Online Quizzes: 10 points for each lecture and 120 points for the course (ignore the points showing on Blackboard),
2. Exams: A mix of True-or-False and multiple-choice questions with a total of 120 points for each exam

The maximum points obtainable are 600. The final grade is calculated by adding both parts of the assessment points together. The sum is then converted to the letter grade with the following cutoff values:

Cutoffs:	510 and up	A
	480 – 509	A-
	450 – 479	B+
	420 – 449	B
	390 – 419	B-
	360 – 389	C+
	330 – 359	C
	300 – 329	C-

270 – 299	D
0 – 269	E

Extra Credits: There will be NO extra credits. Any emails asking for the possibility of extra credits will be ignored.

Academic Integrity: It is every student's responsibility to become familiar with the standard of academic integrity at the University. Claims of ignorance, of unintentional error, or of academic or personal pressures are not sufficient reasons for violations of academic integrity. For more information, please see the undergraduate bulletin: http://www.albany.edu/undergraduate_bulletin/regulations.html

Reasonable Accommodation: Any student in this class who has a disability that may restrict him/her/them from fully demonstrating his/her/their ability must contact us personally as soon as possible, so that we can discuss accommodation necessary to ensure full participation.

ABIO 330 Lecture Schedule – Spring 2020

Week 1 – 4
Lecture 01: Disease Ecology and Emerging Infectious Diseases
Lecture 02: Physiological Ecology: how organisms cope with environmental variation
Lecture 03: Behavioral Ecology: where animal behavior meets evolution
Lecture 04: Population Ecology I: distribution and abundance of organisms; growth and limitation of populations
Lecture 05: Population Ecology II: dynamics of populations
Lecture 06: Community Ecology & Biogeography

Exam I: 09/14 – 09/18

Week 5 – 8
Lecture 07: Species Interactions I: predation and parasitism
Lecture 08: Species Interactions II: competition, mutualism, and commensalism
Lecture 09: Ecological Communities: structure and change
Lecture 10: Conservation Biology: applying ecological principles to the protection of biodiversity
Lecture 11: Landscape Ecology: spatial properties of ecosystems
Lecture 12: Climate Change and the ecology of global systems

Exam II: 10/12 – 10/16

Week 9 – 12
Lecture 13: What Is Evolution?
Lecture 14: How Do We Know Who Is Related To Whom? – Phylogenetic Inference
Lecture 15: What Cause Evolution? – Evolutionary Mechanisms
Lecture 16: Mutation and Genetic Variation Lecture 17: Natural Selection And Adaptation Lecture 18: Genetic Drift and Molecular Evolution

Exam III 11/09 – 11/13

Week 13 – 16
Lecture 19: Who Is Fairest/Strongest of Them All? – Sexual Selection Lecture 20: Is Altruism for Suckers? – Evolution of Social Interactions Lecture 21: Of Mice and Men – Evolution of Life History Traits Lecture 22: Where Do Species Come From?
Lecture 23: Let There Be Life! – Origin of Life
Lecture 24: Is "Evolution" Useful? – Evolution of HIV

Exam IV 12/03 – 12/07

TCHM 130 Advanced General Chemistry I Fall 2020 Syllabus

Course number: TCHM 130
Class no: 4607
Credit Hours: 3
Lecture times: MWF 9:30 A.M. – 10:25 A.M.
Lecture location: Lecture Center 23 (LC 23)

Instructor: Dr. Priyantha Sugathapala PhD
E-mail: psugathapala@albany.edu
Office: Chemistry 337

Office Hours: Zoom office hours are available by appointment.

Prerequisites: None

This syllabus contains important information about the organization and conduct of TCHM 130 this semester. It should be read carefully and retained, together with the course schedule for future reference by each student taking the course. Information related to the course will be posted on the Blackboard Learning System.

Course Description: Energy, enthalpy, thermochemistry, quantum mechanics and atomic theory, general concepts of bonding, covalent bonding and orbitals, gases, liquids, and solids. Students will be introduced to faculty research within the Department of Chemistry, as well as interdisciplinary areas. TCHM 130 is the Honors College version of A CHM 130; only one version may be taken for credit.

This course consists of three lecture periods per week. A tentative lecture schedule is given at the end of this syllabus. The laboratory program for General Chemistry is a separate course, ACHM 124. While it will be coordinated to the greatest practicable extent with TCHM 130, it is taught and graded separately.

Learning Objectives: At the end of this course students should have:

- a broad knowledge of the scientific facts and laws which have been developed from chemists' observations of the natural world
- Be able to explain the theories and models that chemists employ to explain these natural phenomena
- Be able to describe the quantitative nature of chemistry
- Be able to apply principles they have learned to the mathematical solution of chemical problems.

Course Requirements:

1. Books/Resources:

Sapling Plus; Required for homework, quizzes and exams.
ISBN: 9781319316709 (use the following link or the bookstore)

https://store.macmillanlearning.com/us/product/Chemical-Principles/p/1464183953

Option I: 6 months (good for Fall 2020).

Option II: 2 years (good for Fall 2020 and Spring 2021). If you are planning to take both TCHM130 and TCHM131, option II would be cheaper.

Note: Sapling plus comes with online homework and the e-book: Chemical Principles: The Quest for Insight 7th edition, by Peter Atkins and Loretta Jones. A hard copy of the text book is not required. However, the textbook is available if necessary.

For detailed instructions on how to register for your course: https://macmillan.force.com/macmillanlearning/s/article/Sapling-Learning- Registering-for courses: Course name: TCHM 130 - Fall20 - SUGATHAPALA (See page 4 in this syllabus for detailed instructions for Sapling registration).

2. Lectures:

Lectures will be in LC-23 and live via Zoom (meeting ID:919-2483-8525; Pass code: 628622). Lecture recordings and PowerPoint lecture slides will be posted on Blackboard Learning System (BLS). You have the option to be in LC-23 or join the class via Zoom. It is essential for the success in this course that the homework be accomplished in a conscientious, routine and timely manner. There is much material to be covered, and while lectures can hopefully provide an overview, insight and flavor to the subject matter, each student is expected to master the content of the assigned chapter sections through his/her personal study.

3. Quizzes:

There will be a quiz each week. Your ten quiz scores will be used to construct a quiz average with a maximum possible of 100.

4. Examinations:

Examinations may include questions related to anything presented during lectures, whether that information is in the text or not. This includes problems discussed during the class, problems from quizzes, and assigned homework problems. The format of examinations is variable. You should be prepared for multiple choice, fill in the blank, short answer and work out the answer questions. Some examinations may consist of only one of these types. For all examinations you are expected to have mastered all chapters studied back to and including FUNDAMENTALS.

No make-up examinations will be given except for the Final Examination. If you miss an examination and have an excused absence, your score for that examination is determined by your score on the final exam for the material that exam would cover. An excused absence is a "documented serious medical condition, or a family or personal emergency, or a previously scheduled varsity athletic competition, or other exceptional circumstances approved by the instructor". In so far as possible, you must contact the instructor prior to the exam to receive an excused absence. A score of (0) will be assigned for an unexcused absence.

Calculators during exams: You may use a handheld scientific calculator. You are not allowed to use a device

with the capacity to communicate with other students in the room, or with any source of information outside the examination room. If you are observed to have or to be using such a device, you will be asked to remove it from your desk and place it in your bag. Two such infractions will be considered cheating and we will give you a score of zero on the examination of the second infraction. You are responsible for bringing an acceptable and working calculator. Borrowed or replacement calculators will not be available. If you have questions about your calculator see your instructor BEFORE the day of the exam. There is no sharing of calculators during exams.

Grading Policy:

Letter grades will be assigned by the instructor, based on the overall average, on the equivalent of 600 points of exams. Each of the four hour exams is counted as 100 points and the final is 100 points. The quiz grade will contribute 100 points and the homework will contribute 100 points. Of these 600 points, the lowest exam equivalent (100 points) is dropped in the computation of your average score and grade. If a student has taken the four hour exams and completed the quizzes, he/she will be given a grade based on those exams and quizzes on the last day of classes and need not take the final if that grade is acceptable.

Type	Points	% of course grade
Home work	100	16.67
Quiz	100	16.67
Exam 1	100	16.67
Exam 2	100	16.67
Exam 3	100	16.67
Exam 4	100	16.67
Final (optional)		
Total	600	100

The policies, penalties, procedures & standards on Academic Integrity outlined in the Undergraduate Bulletin & in the University code of conduct Community Rights & Responsibilities are followed.

Lecture/Test Schedule:

DATE			TOPIC	FOCUS/Sections
August	24	M	Introduction/syllabus/Fundamental review	A,
	26	W	Fundamental review	B, C
	28	F	Quiz-; Fundamental review	D ,E
	31	M	Fundamental review	F, G
September	2	W	Fundamental review	H, I
	4	F	Quiz-2; Fundamental review	J, K
	7	M	Fundamental review	L
	9	W	Fundamental review	M
	11	F	Quiz-3; Systems, states and energy (Thermodynamics-First Law)	4A, 4B
	14	M	Exam-1 (one hour)	
	16	W	Enthalpy	4C
	18	F	Quiz-4; Enthalpy of Chemical Reactions	4D
	21	M	Enthalpy of Chemical Reactions	4D
	23	W	Enthalpy of the environment	4E
	25	F	Quiz-5; Investigating atoms (Atoms-Quantum World)	1A
	28	M	Quantum Theory	1B
	30	W	Models of Atoms	1C
October	2	F	Quiz-6; The Structures of Many-Electron Atoms	1D, 1E
	5	M	The Periodicity of Atomic Properties	1F
	7	W	Exam-2 (one hour)	2A
	9	F	Ionic Bonds (Chemical Bonds)	2B
	12	M	Quiz-7; Covalent Bonds	2C
	14	W	Exceptions to the Octet Rule	2D
	16	F	Ionic versus covalent bonds	2A
	19	M	Quiz-8; Strengths and length of covalent bonds	2B
	21	W	Infrared Spectroscopy	2E
	23	F	The VSEPR Model (Molecular Shape and Structure)	2G
	26	M	Quiz-9; Molecular Orbital Theory	2A
	28	W	Exam-3 (one hour)	

	30	F	Ultraviolet and Visible Spectroscopy	3F

November	2	M	Intermolecular Forces (Liquids and Solids)	3G
	4	W	Liquid Structure	3H
	6	F	Quiz-10; Solid Structure	3I
	9	M	The Impact of Materials	3A
	11	W	The Nature of Gases (The Properties of Gases)	3B-3D
	13	F	Quiz-11; The Gas Law, Molecular Motion	3E-3F
	16	M	Exam4 (part-I, 30 minutes); Real Gases	
	18	W	Phases and Phase Transitions (Physical Equilibria)	5A-5B
	20	F	Solubility, Colligative Properties	5D, 5F
	23	M	Exam4 (part-II, 30 minutes)	

Sapling registration instructions

1. Go to www.saplinglearning.com/login to create an account. If you already have a Macmillan Learning account you can log in with your existing credentials and skip to step 3.
a. Create your password and set all three security questions.
b Start typing in your institution to select from the options that appears in the Primary Institution or School name field. If you institution does not appear you can add it by typing in the full name.
c. Accept the terms of use and click "Sign Up".
d. Check your email for the confirmation link to complete your registration and return to the login page.
2. Set your institution by searching using your institution's full name and selecting the appropriate option from the menu that appears.
3. Under Enroll in a new course, you should see Courses at [Your College]. Click to expand this list and see courses arranged by subject. Click on a subject to see the terms that courses are available.
4. Click on the term to expand the menu further (note that Semester 1 refers to the first course in a sequence and not necessarily the first term of the school year).
5. Once the menus are fully expanded, you'll see a link to a specific course. If this is indeed the course you'd like to register for, click the link.
6. If applicable, to access your e-book click on the image of the cover on the right sidebar of your course site. Create an account or log in with an existing Macmillan Learning eBook account.
7. Need Help? Our technical support team can be reached by phone, chat, or by email via the Student Support Community. To contact support please open a service request by filling out the web form: https://macmillan.force.com/macmillanlearning/s/
8. The following link includes more detailed instructions on how to register for your course: https://macmillan.force.com/macmillanlearning/s/article/Sapling-Learning-Registering-for-courses

TCHM 131 Advanced General Chemistry II Spring 2020 Syllabus

Course number: TCHM 131
Class no: 6898
Credit Hours: 3
Lecture times: MWF 9:20 A.M. – 10:15 A.M.
Lecture location: Chemistry Building (CH 151)

Instructor: Dr. Priyantha Sugathapala PhD
E-mail: psugathapala@albany.edu
Office: Chemistry 337

Office Hours: MWF 10:30 A.M. – 11:30 A.M., and by appointment.

Prerequisites: ACHM 120 or TCHM 130

This syllabus contains important information about the organization and conduct of TCHM 131 this semester. It should be read carefully and retained, together with the course schedule for future reference by each student taking the course. Information related to the course will be posted on the Blackboard Learning System.

Course Description: Chemical kinetics, chemical equilibrium, spontaneity, entropy, free energy, electrochemistry, transition metals, coordination chemistry, organic and biochemical molecules. TCHM 131 is the Honors College version of ACHM 131. Only one version of this class may be taken for credit.

This course consists of three lecture periods per week. A tentative lecture schedule is given at the end of this syllabus. The laboratory program for General Chemistry is a separate course, ACHM 124. While it will be coordinated to the greatest practicable extent with ACHM 131, it is taught and graded separately. Colin Henck supervises ACHM 124.

Learning Objectives: At the end of this course students should have:

- a broad knowledge of the scientific facts and laws which have been developed from chemists' observations of the natural world
- Be able to explain the theories and models that chemists employ to explain these natural phenomena
- Be able to describe the quantitative nature of chemistry
- Be able to apply principles they have learned to the mathematical solution of chemical problems.

Course Requirements:

1. Books/Resources:

Sapling Plus (required): Buy only Sapling Plus (see next page for instructions or go to the university bookstore)
Note: Sapling plus comes with online homework and the e-book: Chemical Principles: The Quest for

Insight 7th edition, by Peter Atkins and Loretta Jones. A hard copy of the textbook is not required. However, the textbook is available if necessary.

2. Lectures:

Students are expected to attend the lectures. Lectures will focus student's attention on the most important topics. The PowerPoint lecture slides will be posted on the Blackboard Learning System.

It is essential for success in this course that the homework be accomplished in a conscientious, routine and timely manner. There is much material to be covered, and while lectures can hopefully provide an overview, insight and flavor to the subject matter, each student is expected to master the content of the assigned chapter sections through his/her personal study.

3. Quizzes:

There will be a 10-minute quiz each week. It will be graded and returned. Your ten highest quiz scores will be used to construct a quiz average with a maximum possible of 100.

4. Examinations:

Examinations may include questions related to anything presented during lectures, whether that information is in the text or not. This includes problems discussed during the class, problems from quizzes, and assigned homework problems. The format of examinations is variable. You should be prepared for multiple choice, fill in the blank, short answer and work out the answer questions. Some examinations may consist of only one of these types. For all examinations you are expected to have mastered all chapters studied.

If you miss an exam and have an excused absence, contact the instructor as quickly as possible to have a make-up exam. An excused absence is a "documented serious medical condition, or a family or personal emergency, or a previously scheduled varsity athletic competition, or other exceptional circumstances approved by the instructor". A score of (0) will be assigned for an unexcused absence.

Calculators during exams: You may use a handheld scientific calculator. You are not allowed to use a device with the capacity to communicate with other students in the room, or with any source of information outside the examination room. If you are observed to have or to be using such a device, you will be asked to remove it from your desk and place it in your bag. Two such infractions will be considered cheating and we will give you a score of zero on the examination of the second infraction. You are responsible for bringing an acceptable and working calculator. Borrowed or replacement calculators will not be available. If you have questions about your calculator see your instructor BEFORE the day of the exam. There is no sharing of calculators allowed during exams.

Grading Policy:

Letter grades will be assigned by the instructor, based on the overall average, on the equivalent of 600 points (based on four exams: 400; quiz grade: 100; and Sapling: 100). The final is 100 points (optional). If a student has taken the four hour exams and completed the quizzes, he/she will be given a grade based on those exams and quizzes on the last day of classes and need not take the final if that grade is acceptable.

Type	Points	% of course grade
Home work	100	16.67
Quiz	100	16.67
Exam 1	100	16.67
Exam 2	100	16.67
Exam 3	100	16.67
Exam 4	100	16.67
Final (optional)		
Total	600	100

The policies, penalties, procedures & standards on Academic Integrity outlined in the Undergraduate Bulletin & in the University code of conduct Community Rights & Responsibilities are followed.

Sapling registration instructions:

1. Go to www.saplinglearning.com/login to create an account. If you already have a Macmillan Learning account you can log in with your existing credentials and skip to step 3.
    a. Create your password and set all three security questions.
    b. Start typing in your institution to select from the options that appears in the Primary Institution or School name field. If your institution does not appear you can add it by typing in the full name.
    c. Accept the terms of use and click "Sign Up".
    d. Check your email for the confirmation link to complete your registration and return to the login page.
2. Set your institution by searching using your institution's full name and selecting the appropriate option from the menu that appears.
3. Under Enroll in a new course, you should see Courses at [Your College]. Click to expand this list and see courses arranged by subject. Click on a subject to see the terms that courses are available.
4. Click on the term to expand the menu further (note that Semester 1 refers to the first course in a sequence and not necessarily the first term of the school year).
5. Once the menus are fully expanded, you'll see a link to a specific course. If this is indeed the course you'd like to register for, click the link.
6. If applicable, to access your e-book click on the image of the cover on the right sidebar of your course site. Create an account or log in with an existing Macmillan Learning eBook account.
7. Need Help? Our technical support team can be reached by phone, chat, or by email via the Student Support Community. To contact support please open a service request by filling out the web form: https://macmillan.force.com/macmillanlearning/s/
8. The following link includes more detailed instructions on how to register for your course: https://macmillan.force.com/macmillanlearning/s/article/Sapling-Learning-Registering-for-courses

Lecture/Test Schedule:

DATE			TOPICS	Focus (section)
January	22	W	Entropy (macroscopic)	4 (F-J)
	24	F	Entropy (microscopic) Global Changes in Entropy	
	27	M (Q-1)	Free Energy	
	29	W		
	31	F		
February	3	M (Q-2)	Reactions at Equilibrium Equilibrium Calculations	5 (G-J)
	5	W	The Response of Equilibria to Changes in	
	7	F(Q-3)	conditions	
	10 # 1	Monday Examination		
	12	W	Reaction Rates	7 (A-E)
	14	F	Reaction Mechanisms Models of Reactions	
	17	M (Q-4)	Catalysis	
	19	W	The Nature of Acids and Bases pH	
	21	F	Weak Acids and Bases	
	24	M (Q-5)		6 (A-C)
	26	W		
	28	F (Q-6)		
March	2	Monday Examination		
	4	W	Polyprotic Acids and Bases Mixed Solutions and	6 (E-J)
	6	F	Buffers	
	9	M (Q-7)	Titrations	
	11	W	Solubility Equilibria, precipitation	
	13	F		
		SPRING BREAK 14 - 20		
	23	M (Q-8)	Redox Reactions	6 (K)
	25	W		
	27	Friday Examination		

	# 3			
	30	M	Galvanic Cells	6 (L)

April	1	W	Standard potentials, Electrolytic Cells	6 (M-O)
	3	F (Q-9)	Group 2 and Group 13/III	8 (D-F)
	6	M	Group 14/IV: The Carbon Family	
	8	W		
	10	F (Q-10)	The d-Block Elements and their Compounds	9 (A)
	13	M		
	15	W		
	17	F (Q-11)		
	20 Monday Examination # 4			
	22	W	Selected Elements	9 (B-C)
	24	F	Coordination Compounds	
	27	M		
	29	W (Q-12)		

May	1	F	The Electronic Structures of Complexes	9D
	4	M		

APHY142 Physics I: Advanced Mechanics Fall 2020 Syllabus

Course number: APHY 142
Class no:
Credit Hours: 3
Lecture times: Tuesday/Thursday 1:15 PM - 2:35 PM
Lab location: PH 229

Instructor: Dr. Alexander Khmaladze PhD
E-mail: akhmaladze@albany.edu
Office: PHY111

Office Hours: Tuesday 4:00 – 6:00 pm; I will be available after each class for as long as you need me. I will also be available by appointment

Pre-requisite(s) or co-requisite(s): AMAT 111 or AMAT 112

Course Description: A calculus-based introduction to the fundamentals of classical mechanics and thermodynamics. The concepts of force, energy and work applied to the kinematics and dynamics of particles and rigid bodies are some of the topics covered in this course. APHY 142 intended for students who are well prepared to undertake a more advanced course in introductory physics and are interested in careers in physical science and engineering. This course uses a more advanced textbook and expands on the content covered in APHY 140 and APHY 141. Students with a strong interest in physical sciences are encouraged to take APHY 142 instead of APHY 140 or TPHY 141.

Course Objectives: At the end of the course, students will be able to:

- explain the basics of classical mechanics: Newton's 3 Laws of Motion, vectors, energy, momentum, rotational dynamics, angular momentum, gravitation, and oscillations
- apply the foundational concepts behind these and be able to describe how they apply to daily life
- resolve (calculus-based) problems in physics

Course organization:

Text: Physics for Scientists and Engineers, R. A. Serway and J. W. Jewett, course materials will be posted on Blackboard: https://blackboard.albany.edu/.

Lectures are given in PowerPoint. Some derivations will be shown on a whiteboard. We will also do some homework/exam problems in class. I will make homework/exam solutions available to everyone via Blackboard.

Reading Assignments: I will assign sections of the textbooks to read. Please take it seriously.

Homework Assignments: Homework assignments will be given and are due at the time specified. Submit all assignments when they are due. You are free to ask anyone for help on homework. If you do not hand homework in directly to me during class, you are responsible to ensure that I get it. If you are worried about me not getting it should you drop it in my mailbox, please make a scanned copy of it.

Exams: There will be two in-class midterm exams and a final exam (cumulative). All exams are closed book. Calculators are allowed. Laptops and phones are not allowed.

Using computers/web resources: You are free to use whatever you can find on the internet (provided that you reference it), but you are responsible for the accuracy of the content. You are encouraged to use any software packages available to you, as well as write your own programs. I will be happy to provide you with any assistance.

Grading Policy:

Your grade will be determined as follows:

Home Assignments	20%
Midterm Exam 1	15%
Midterm Exam 2	15%
Midterm Exam 3	15%
Final Exam	35%
Total	**100%**

APHY142 Lecture schedule:

Thursday, August 27, 2020	Introduction - Chapter 1
Tuesday, September 1, 2020	Chapter 2
Thursday, September 3, 2020	Chapter 3
Tuesday, September 8, 2020	Problem Solving Session 1
Thursday, September 10, 2020	Chapter 4
Tuesday, September 15, 2020	Problem Solving Session 2
Thursday, September 17, 2020	Chapter 5
Tuesday, September 22, 2020	Chapter 6
Thursday, September 24, 2020	Problem Solving Session 3
Tuesday, September 29, 2020	Chapter 7
Thursday, October 1, 2020	Chapter 8
Tuesday, October 6, 2020	Problem Solving Session 4
Thursday, October 8, 2020	**First Exam**
Tuesday, October 13, 2020	Chapter 9
Thursday, October 15, 2020	Problem Solving Session 5
Tuesday, October 20, 2020	Chapter 10
Thursday, October 22, 2020	Problem Solving Session 6
Tuesday, October 27, 2020	Chapter 11
Thursday, October 29, 2020	Problem Solving Session 7
Tuesday, November 3, 2020	Chapter 12
Thursday, November 5, 2020	Problem Solving Session 8
Tuesday, November 10, 2020	Chapter 13
Thursday, November 12, 2020	Problem Solving Session 9
Tuesday, November 17, 2020	Chapter 15
Thursday, November 19, 2020	Problem Solving Session 10
Tuesday, November 24, 2020	**Second Exam**

APHY150 Physics II: Electromagnetism Spring 2019 Syllabus

Course number: APHY 150
Class no: 7206
Credit Hours: 3
Lecture times: Tuesday/Thursday 8:45-10:05am
Lecture location: BB B008

Instructor: Professor William A. Lanford PhD
E-mail: wlanford@albany.edu
Office: PHY110

Office Hours: Tuesday and Thursday 10:30am - 11:00am in Physics 110

Pre-requisite(s): APHY 140 or APHY 141 or APHY 142
Pre-requisite(s) or co-requisite(s): AMAT 111 or AMAT 112

Course Description: A calculus-based introduction to the fundamentals of electricity and magnetism and includes topics on electric and magnetic fields, electric potential and basic circuits; the laws of Gauss, Ampere, and Faraday; Maxwell's equations; geometrical optics.

Course Objectives: At the end of the course, students will be able to use Maxwell's equations. These are the equations that govern the creation of both electric and magnetic fields. In addition, students will be able to apply the force laws that govern how charged particles respond to these fields.

Course organization:

Text: "Physics for Scientists and Engineers" R. A. Serway and J. W. Jewett, Hybrid 9th edition.

Homework will be assigned and submitted over the web using WebAssign. In addition to submission over WebAssign, you will turn in hand-written solutions in the first class after the assignment was due. You must do the home assignments. If you fail to submit 2 home assignments, your course grade will be lowered. In summary, submit all assignments when they are due. Attendance will be taken and you are required to attend class. You are free to ask anyone for help on homework. We will have tutors available in Physics 224. However, I urge that you not just copy solutions. If you do so, your quiz grades will likely be poor.

- WebAssign Class Key: albany 3519 3130

Quizzes can be given any time. However, you should expect a quiz the week following when the corresponding home assignment was due.

Exams: There will be two 1-hour exams and a final exam (cumulative). The tentative dates for the hour exams are listed in the schedule of classes below. Do not even think of cheating on quizzes or exams. If I detect cheating, I will do whatever I can to get the cheater removed from the University.

Grading policy:

Your grade will be determined approximately as follows:

Hour exams	20% each
Quizzes	35%
Homework	5% but note late home assignment policy above
Final Exam	40%

APHY 150 Lecture Schedule

Week beginning	Chapter	Topic
Jan. 21	23	Electric Field
Jan.28	24	Gauss's Law
Feb 4	25	Electric Potential
Feb. 11	26	Capacitance
Feb. 18	27	Current and R
Feb. 25	28	Circuits
March 4	29	B fields
March 11	**Exam 1 on Thursday**	
March 18	*Spring break*	
March 25	30	Sources of B
April 1	31	Faradays Law
April 8	**Exam II on Thursday**	
April 15	31	Faraday's Law
April 22	32	Inductance
April 29	33	AC Circuits
May 6	**Reading Day**	

APHY155 Physics II Lab Fall 2020 Syllabus

Course number: APHY 155
Class no:
Credit Hours: 1
Lab times:
Lab location:

Instructor: Dr. Keith Earle PhD
E-mail: kearle@albany.edu
Office: PHY112

Office Hours: By Appointment

Pre-requisite(s): APHY 150 or TPHY 151 or APHY 152

Course Description: This is a 1-credit lab course that allows students to explore experiments in electricity and magnetism, and circuits and optics.

Course Objectives: At the end of this course successful students will be able to:

- apply the scientific method by formulating hypotheses or predictions, altering variables, collecting and analyzing data, constructing and interpreting graphs
- apply experimental procedures to explore foundational concepts of electricity and magnetism, and their applications to simple, passive element circuits.
- communicate scientific content in a written lab report

Overview of the course:

Labs: There are 8 labs in this lab course, and all will count towards your final grade. I have changed the order of the labs compared with previous years to correspond better with the material covered in lecture. There is also a gap between Lab 1 and Lab 2 so that we may return graded Lab 1 writeups to you so that you have a better idea what to expect. As we are providing the data and have omitted prelabs, there is a premium on producing a well-written lab report. I have posted examples of good style from a fictitious lab on Blackboard. I have also posted a writeup on uncertainty which you may find helpful.

Blackboard: There will be video links on Blackboard for each of the labs, as well as a lab handout for you to review. Please work through each before your lab section meets during the week of the lab. During your lab section meeting, you may work with your lab TA to address any questions you might have.

I understand that this is a challenging semester with limited face to face contact. Please feel free to contact me if you have questions or need further information.

Grading Policy:

The student will prepare a lab writeup for each experiment that will count equally towards the final grade. If the student participates in an in-class lab session, the data collected by the student will count 20% of the grade for that lab, with the writeup constituting the remaining 80%. If a student participates in an online version of the lab, data will be provided to the student and the writeup will count for 100% of that lab's grade. All labs will be counted equally in the final grade. Late lab writeups will be marked down for lateness. It is therefore to the student's advantage to submit work in a timely fashion.

APHY155 Lab Schedule

Week	Lab	APHY 150 Lecture	Serway and Jewett
24 Aug – 28 Aug	No Lab	Math Review	App. B
31 Aug – 4 Sep	No Lab	Electric Fields	c. 23
7 Sep – 11 Sep	Electric Fields	Gauss's Law	c. 24
14 Sep 18 Sep	No Lab	Electric Potential	c. 25
21 Sep 18 Sep	Electric Potential	Capacitance	c. 26
28 Sep – 2 Oct	Ohm's Law	Current & Resistance	c. 27
5 Oct – 9 Oct	Series and Parallel Circuits	Direct Current Circuits	c. 28
12 Oct – 16 Oct	RC Circuits	Magnetic Fields	c. 29
19 Oct – 23 Oct	Current Balance	Magnetic Field Sources	c. 30
26 Oct – 30 Oct	Magnetic Fields	Faraday's Law	c. 31
2 Nov – 6 Nov	e/m ratio	Inductance	c. 32
9 Nov – 13 Nov	No lab	Alternating Current	c. 33
16 Nov – 20 Nov	No Lab	Electromagnetic Waves	c. 34
23 Nov – 24 Nov	No Lab	Course Review	

TBIO 260 / ABIO 460 The Neural Basis of Behavior **Spring Syllabus**

Course number: TBIO 260 (Class no.) / ABIO 460 (Class no.)
Credit Hours: 3
Class times: TBD
Class location: TBD

Lecturer: Dr. Gregory Lnenicka Ph.D.
E-mail: gregl@albany.edu
Office: Life Sciences Research Building 1038
Phone: 518-591-8812

Office Hours: By appointment

Prerequisites: ABIO 130 or 121, ABIO 131 or 120

Course Description from the Undergraduate Bulletin: An analysis of the neural basis of innate and learned behaviors, as well as the neurological deficits accompanying lesions of different parts of the brain. Emphasis will be placed on sensory processing, reflexive behavior, feature extraction and behavioral triggers, using simple learned behaviors amenable to analysis at the neuronal level, including analysis of membrane electrical activity, chemical synaptic activity and neuromodulation. Feature extraction will be considered as the basis of visual localization and prey (insect) capture in toads and in echo localization and insect capture in bats. Analysis of brain lesions will include both behavior and simultaneous brain imaging to connect the deficits with specific brain regions, and will cover semantic/episodic learning and amnesia, as well as speech/language comprehension. We will also discuss prospects for transplanting brain stem cells to cure diseases caused by cell death of specific neurons. *TBIO 260 is the Honors College version of ABIO 460.* Only one can be taken for credit. Neuroscience minors can take only one of TBIO 260 and TPSY 214 for credit toward the minor requirements. TBIO 260 is only open to Honors College students only.

Course Objectives: At the end of this course, students should understand and be able to describe:

- the structure and function of neurons
- membrane potential and action potential and how these contribute to neuron function.
- the neural basis of innate and learned behaviors
- sensory processing, reflexive behavior, feature extraction and behavioral triggers
- how simple learned behaviors and membrane electrical activity, chemical synaptic activity and neuromodulation are amenable to analysis at the neuronal level
- feature extraction and localization cues facilitate animal behavior
- the outcomes of neural disease on behavior

Course Requirements:

Textbook: Simmons and Young: Nerve Cells and Animal Behavior, 3rd Ed (2001)

Readings: The course will include the basics of neural signaling, followed by extensive readings from Scientific American and books as well as selected papers from the primary literature. After reviewing the initial basics of neural function, the course will feature *discussions* (dates marker ***D*** below) centered around the readings on the variety of topics listed above.

Blackboard: Readings and powerpoint slides will be posted on Blackboard

Assessment: Grades will be based upon one midterm and one final exam, class participation, and class presentations. Class participation and class presentations will be graded by fellow students and the instructor.

1. **Exams** will be written answer essays, and sample exam questions will be given ahead of time for practice.
2. **Class presentations** (in last 2 weeks of class) by pairs of students will be 25-30 minutes and cover research papers (not reviews) from the literature. Suggested topics will be listed on the website with possible references, and further readings on topics from the textbook. Topics and partners must be submitted for approval by midsemester.
3. **Attendance** is required. Non-attendance will be noted as lack of participation and affect your grade.

Grading Policy:

The following provides the percentage breakdown of the final grade:

Assessment	Percentage
Midterm Exam	25%
Final Exam	25%
Class presentation	20%
Class participation	30%

TBIO 260 / ABIO460 Lecture Schedule:

Lecture no.	Topic	Readings
1	Introduction and History of Neuroscience	• Albright et al. (2000) History of Neuroscience in Review, Neuron 44
2	Neurons as building blocks, basics of the membrane potential and action potential	• Simmons & Young, Ch 1 • Edwards, Permeant Ions Impermeant Ions… Nichols et al (2001) From Neuron to Brain, 4th Ed. Ch 6
3	Synaptic transmission and simple synaptic circuits for innate reflexes	• Simmons & Young, Ch 2. • Nichols et al (2001) From Neuron to Brain, 4th Ed. Ch 9
4 [D]	Command Neurons: prey capture in toad and escape responses in cockroach	• Simmons & Young, Ch 3
5 [D]	Command Neurons and escape responses in crayfish and vertebrate fish	• Simmons & Young, Ch 4
6 [D]	Insect Vision: Sensory filtering and course control	• Simmons & Young, Ch 5
7 [D]	Vision: processing in the retina, the retinotectal maps and visual localization.	• Johnston & Lagnado (2012) What the fish's eye tells the fish's brain. Neuron 76: 257-259. • Semmelhack et al. (2014), A dedicated visual pathway for prey detection in larval zebrafish. eLife 3:e04878
8 [D]	Papers on prey capture in the toad, fish	• Gahtan et al (2005), Visual prey capture in larval zebrafish is controled by identified reticulospinal neurons downstream of the tectum. J Neuroscience 25: 9294-9303. • Del Bene et al. 2010, Filtering of visual information in the tectum by an identified neural circuit. Science 330: 669-673.
9 [D]	Retinotectal plasticity and prey capture	• Schmidt JT 1982 The formation of retinotectal projections. Trends in Neuroscience 5: 111-116. • Northmore DPM 1981 Visual localization after rearrangement of retinotectal maps in fish. Nature 293: 142-43. • Schmidt JT & Buzzard M 1993 Activity-driven sharpening of the retinotectal projection in goldfish: Development under stroboscopic illumination prevents sharpening. J Neurobiology 24: 384-99.
10 [D]	Hunting and localization by bats	• Simmons & Young Ch. 6. (Bat section)
11 [D]	Localization via auditory map in owl tectum	• Simmons & Young Ch. 6. (Owl section)
12 [D]	Localization via auditory map in owl tectum & plasticity	• Knudsen, EI (2002) Instructed learning in the auditory localization pathway of the barn owl. Nature 417: 322-328. • Knudsen, EI and Knudsen PF (1990) Sensitive and critical periods for visual calibration of sound localization by barn owls. J Neuroscience 10: 222-232.
Pass out Take Home exam questions for Midterm exam – complete in 1-week.		

13 [D]	Developmental plasticity during critical periods, learning and the Hebb Mechanism	• Lisman 1989 A mechanism for the Hebb and anti-Hebb processes underlying learning and memory. PNAS 86: 9574-9578. • Lisman et al 2002. The molecular basis of CamKII function in synaptic and behavioral memory. Nature Reviews Neuroscience 3: 175-190.
-	*No class—time off to work on midterm exam*	
-	*Spring break*	
14 [D]	Localization and plasticity of Brain maps of sensory input (homunculus in somatosensory and motor cortices, enlarged nose representation in star mole, barrel fields for analysis of whisker inputs in rodents. Discussion of papers on plasticity of cortical maps in systems above. ***Midterm due at end of lecture***	• Merzenich M 1998. Long term Change of Mind. Science 282: 1062-64. (Short commentary) • Merzenich M & Jenkins WM 1993. Reorganization of cortical representations of hand following alterations of skin inputs induced by nerve injury, skin island transfers, and experience. J Hand Therapy p89-104.
15 [D]	Mammalian visual cortex: Eye-specific & orientation selective columns in Cortex and their plasticity during development	• Hubel & Wiesel 1963 The Visual Cortex of the Brain Sci. Am. • Tropea, van Wart & Sur 2009 Molecular Mechanisms of experience-dependent plasticity in Visual Cortex. Phil. Trans Royal
16 [D]	Human recording of the fusiform face area—recognition of faces, analysis of objects.	• Quiroga RQ et al. 2005. Invariant visual representation by single neurons in the human Brain. Nature 435; 1102-1107. • Quiroga RQ et al. 2009. Explicit encoding of multimodal percepts by single neurons in humans. CurrBiol 19: 1308-1313. • Gross C. 2010 Making sense of printed symbols. Science 327: 524-525. (a brief commentary)
17 [D]	Drosophila mating behavior and effects of dark rearing and visual deprivation	• Hirsch 1994 The Flexible Fly J Exp Biol 195: 1-18.
18 [D]	Speech and Language Comprehension in brain—Wernicke and Broca's areas & Split Brain in man—two consciousnesses in one person after section of the corpus callosum	• Geschwind, N "Specializations of the Human Brain" Scientific American • Gazzaniga, MS "The Split Brain in Man" Scientific American
19 [D]	The strange story of Henry Molaison and his total amnesia after surgical removal of his hippocampus. Types of memory.	• Mishkin, M and Appenzeller, T "The Anatomy of Memory" Scientific American • Squire, LR Memory and Brain. Ch • Blakemore C Mechanics of the mind, Ch 4 A Child of the Moment
20 [D]	Sleep and memory consolidation; manipulation of memory consolidation	Oudiette and Paller (2013) Upgrading the sleeping brain with targeted memory reactivation Trends in Cogn. Sci 17:142-149.
21 [D]	The Social Brain	• Frith & Frith (2010) The Social Brain: allowing man to go … Phil Trans Royal Soc • Hillis (2014) Inability to empathize: brain lesions that disrupt sharing and understanding another's emotions. Brain 137: 981-7.
22 [D]	Mirror Neurons and Mirror test for consciousness –	• Buccino et al. 2004 The Mirror Neuron

	what makes us different from the great apes?	System and action recognition. Brain & Language 89: 370-376. • Mukamel et al. 2010 Single neuron responses in humans during execution and observation of actions. Current biology 20:750-756.
23	Synthetic heroin drug toxicity causing Parkinsons Disease in young users and the research spurred by this unfortunate human experiment.	Video - Nova program/PBS
24	Class presentations of pairs of students.	
25	Class presentations of pairs of students.	
26	Class presentations of pairs of students.	

ABIO 296 Biological Sciences with Laboratory Fall Syllabus

Course number: ABIO 296
Class no:
Credit Hours: 2-4
Lab times: TBD
Lab location: TBD

Course Coordinator: Dr. Pauline Carrico PhD
E-mail: pcarrico@albany.edu
Office: Biology 111
Phone: (518) 461-9352

Office Hours: When my door is open or by appointment by text or email.

Lab Teaching Assistant: note name, office location and hours: _____

Prerequisites: None

Course Description: The topic covered in this semester of Biological Sciences with Laboratory is *Behavioral Genetics*. Behavioral Genetics is the study of how an organism's genetic composition influences its behavior and the interaction of heredity and environment in terms of how they affect behavior. The question of whether genetics or environment determines behavioral abilities and disabilities is commonly known as the "nature vs nurture" controversy. In this course we will use model organisms such as nematodes, planarians, drosophila, as well as humans to investigate how behavior is influenced by genetics. Students will look at the effect of mutations, polymorphisms, gene expression and epigenetics on organismal responses to addiction, learning, aggression and on sleep patterns. Students will use classic animal behavior techniques, as well as molecular genetics and genomics approaches to understand evolutionary relationships that affect behavior. Students will have the opportunity to design and implement an independent research project in the final weeks of the course.

Learning Objectives: Students who complete this course will:

- Operate basic laboratory equipment and demonstrate proficiency in basic laboratory techniques (preparing solutions, pipetting, serial dilutions, sterile technique)
- Detect and resolve procedural problems
- Demonstrate the appropriate quantitative expertise as applies to behavioral genetics (algebra, statistics)
- Be able to culture and/or manipulate model organisms (fruit flies, nematodes and Planaria)
- Formulate hypotheses and design and perform experiments following the scientific process using primary literature as the basis for experimentation
- Critically analyze, evaluate, and clearly present experimental results.
- Communicate experimental findings in written and oral form
- Use basic bioinformatics tools to identify DNA and protein sequences, scientific literature, and design primers for use in students' own experiments

- Conduct literature reviews to obtain scientific information, including accessing all forms of scientific literature, to investigate topics, critiquing sources, and organizing information in a scientifically meaningful way

Learning Activities:

Readings: There is no formal lab manual for this course. Instead, handouts, videos and other resources will be available on Blackboard at least one week prior to the designated lab. Handouts should be printed and kept in a three-ring binder independently of the lab notebook. Students are expected to carefully review all information prior to the laboratory.

Working in Teams: The kinds of thinking and tasks required in this laboratory course work well in a team-driven environment. Several graded assignments will involve in class collaboration with other students. In-class collaborations include several presentations, independent experimentation, online written discussions and peer review.

Online Discussions: Out of class collaborations include using Blackboard discussion spaces to develop and revise individual group protocols based upon comments from the instructors and classmates.

Weekly Quiz: Online pre-lab quizzes will occur periodically throughout the semester and face-to-face quizzes will be announced. Pre-lab quizzes will be open book and the higher of two grades will be used to calculate grade. Face-to-face quizzes will be short answer closed book and will be announced a week ahead of time. The lowest grade of the face-to-face quizzes will be dropped.

Online data slides: For each experiment, one data slide-table or a figure representing one of the experiments done the week before will be submitted the following week by noon online. These should be journal article quality, be labelled, and include a figure legend and a short results discussion. These can be submitted as one or two powerpoint slides.

Notebooks: There are no formal lab write-ups for this course-each student is required to keep careful lab notes, including hypothesis or purpose, procedures, observations, calculations, results and conclusions. Notebooks will be spot checked several times throughout the semester and collected at the end of the semester. Notebooks must be kept separate from the binders with the papers and handouts and should include a table of contents. Each activity should include the date, the purpose of the experiment, materials and methods, results and discussion. Figures and observations should also be included. Handouts are not to be stapled into notebooks.

Presentations: Each group will present three times this semester:

1. Independent Experiment Results
2. One journal article
3. Final presentations in conjunction with the Microbiology lab the final two weeks of lab.

Points will be earned for preparative materials as well as for the presentation itself.

Grade Policy:

Grades for this course will be assigned as follows:

1. Lab notebooks will be "pop" evaluated several times during the semester. (20 points)
2. Pre-lab quizzes. Two in lab closed book quizzes. Announced and cumulative. (20 points each; 40 points total)
3. Pre-lab online quizzes. Two quizzes. 20 points each. The higher of two attempts (40 points will be used to calculate grade)
4. Journal Club Presentation. One journal article per group. Assigned. (25 points)
5. Presentation on Independent Experiment. There will be two independent experiments per semester. Each group can select either of the two to present. (25 points)
6. Final Oral Presentation. Oral presentation on an approved behavior genetics topic, done with your lab partner. Points will be earned for preparative materials as well as for the presentation itself. (35 points)
7. Online discussions. Two online discussions in which each group describes the rationale and methodology for Independent Experiments. Each student then submits an NSF based review of one proposed experiment. (10 points for the experiment, 10 points for the review; For 2 discussions 40 points)
8. Data slides. Each group must submit two data slides per experiment, with figure legend and short results section per experiment. These are due by noon the day of the following week on Blackboard. (10 points each. Five labs. 50 points)
9. Lab performance is based on effort, promptness, team contribution, and bench practices. (10 points)

Possible Total: 285 points.

Note: The lowest of any quiz grade can be dropped or extra credit can be earned by attending a pre-approved departmental seminar and submitting a short half-page report.

Grade Scale:

A	> 93%	C	73 - 76%
A-	90 - 92%	C-	70 - 72%
B+	87 - 89%	D+	67 - 69%
B	83 - 86%	D	63 - 66%
B-	80 - 82%	D-	60 - 62%
C+	77 - 79%	E	< 60%

How to determine your current grade average:

a) add up the number of points you have earned so far.
b) add up the number of points that each assignment was worth.
c) divide the number from (a) by the number from (b) and multiply by 100.
like this: (a)/(b) x 100 = your numerical average

Rounding Your Average:

0.1 - 0.4 = round down
0.6 - 0.9 = round up
0.5 = if preceding number is even, round down if preceding number is odd, round up

for example: 89.4% = 89% = B+ 86.4% = 86% = B
89.6% = 90% = A- 86.6% = 87% = B+
89.5% = 90% = A- 86.5% = 86% = B

****** THERE ARE NO GRADE CURVES *****

Grading discrepancies: Must be brought to the attention of your instructor no less than 24 hours and no more than one week after the graded item is returned to you. No trolling for points at the end of the semester. No exceptions.

Lab performance points: Loss is usually one point per infraction. However, this may be increased if the offense is repeated or dangerous. More than three incidents may cause loss of all lab points.

Missing a lab: Lab exercises cannot be made up. Unexplained/unapproved absences will result in a full letter reduction, per absence, of your final grade.

Tardiness: Do not underestimate the importance of being on time. If you are not in lab when quizzes or exams are handed out, you will not receive any extra time to complete them. Three instances of tardiness = one missed lab (see above).

Lab Policies:

1. Nothing consumable is allowed in this lab except during the two weeks of presentation. Nothing. No food, water, coffee, cough drops, chewing gum. None.
2. Dress safely! Pull back long hair, no hats with brims, no shorts, no open-toed shoes.
3. Cell phones on silent.
4. Wash lab benches with disinfectant cleaner both before and after experiments. WASH YOUR HANDS BEFORE WALKING OUT OF THE LAB, EVEN IF YOU ARE RETURNING.

Maintaining a Lab Notebook: Here is the format:

1. Table of Contents on the first page. You can fill it in as you go.
2. Numbered pages. Each sheet is considered a page. Begin with the page after the Table of Contents. It is probably best to write the number in the outer upper corner of the page.
3. Everything in your lab notebook must be written in ink.
4. On the first page for each experiment in your lab notebook, you need to include the title and the procedure. This needs to be complete before each lab. Any changes to the procedure must be recorded. You need not make a materials list.
5. On subsequent experiment pages in your lab notebook, you will add collected raw data, and figures (graphs) and gel photos that you may create based on the data as needed. The first experiment pages are for setup and methods; the latter ones are for data/results. You should make tables in which to enter your results BEFORE you come to lab.

6. Lab notebooks must be bound, not spiral.
7. ALL DATA COLLECTED IN THE LAB MUST BE WRITTEN DIRECTLY INTO YOUR LAB NOTEBOOK. DO NOT USE A DIFFERENT NOTEBOOK/PIECE OF PAPER/PAPER TOWEL IN LAB AND TRANSCRIBE INTO THE NOTEBOOK LATER. THIS IS NOT ACCEPTABLE AND WILL COST PERFORMANCE POINTS.
8. NO LECTURE NOTES IN YOUR LAB NOTEBOOK.

ABIO 296 Tentative Schedule of Experiments and Assignments (both dependent upon progress and subject to change):

Date	Lab
1/31 and 2/1	Introduction, organization, syllabus Group assignments - these are your lab partners and presentation partners
2/7 and 2/8	Behavioral effects of Splenda, Equal and Sucrose on planaria Instructor does sample journal club F2F quiz
2/14 and 2/15	C. elegans and alcohol Submit group data slides for planaria lab online. Due by noon day of lab. Journal Club 1 Online quiz 1 due by 1 PM day of lab
2/21 and 2/22	Learning and Toxicity in C. elegans Journal Club 2 Online quiz 2 due by 1 PM day of lab Submit group data slides for C. elegans and alcohol lab online. Due by noon day of lab.
2/28 and 3/1	Fruit Fly Behavior DUE: draft outline for final presentation, with three references minimum (students can work in lab on this-hand in hard copy by the end of the day) First group experiment design-due by end of day on online discussion Friday-March 3 all students must submit a response to one group's proposal by 5 PM Journal Club 3 F2F quiz 2 Submit group data slides for Learning and Toxicity in C. elegans
3/7 and 3/8	Students do own experiment Journal Club 4
3/14 and 3/15	***No lab - Spring break***
3/21 and 3/22	Sleep genotyping and PCR Work on research design in lab- First group experiment design-due by end of day on online discussion Friday-March 25 all students must submit a response to one group's proposal by 5 PM Journal Club 5 Online quiz due by 1 PM day of lab Submit group data slides for Fruit fly behavior in C. elegans online. Due by noon day of lab.
3/28 and 3/29	Finish Genotyping Work on group experiments Journal Club 6 DUE: two presentation slides with oral description (hard copy-for Final Presentations with Microbiology group) F2F quiz Submit data slides for genotyping experiment by noon on day of lab.

4/4 and 4/5	Students work on group experiments Journal Club 7 and 8
4/11 and 4/12	*No lab*
4/18 and 4/19	Presentations on Group experiments Notebooks due

ABIO 309 Genetics Laboratory Spring 2019 Syllabus

Course number: ABIO 309
Class no:
Credit Hours: 2
Lab times:

	Monday Course # 7147	1:40-5:40
	Tuesday Course # 7920	1:15-5:15
	Wednesday Course # 7913	1:40-5:40
	Thursday Course# 7148	1:15-5:15

Lab location: B20

Course Coordinator: Dr. Pauline Carrico PhD
E-mail: pcarrico@albany.edu
Office: Biology 111
Phone: (518) 461-9352

Office Hours: Location-B111 or B20; Tuesday 11 am- 12 pm, Wednesday 10 am -11 pm or email for an appointment outside of these hours.

Lab Teaching Assistant: note name, office location and hours: _____

About me (Pauline Carrico):
I use the pronouns she, her and hers. I actually received my BS in Biology from UAlbany in 1988. I worked as a lab tech for a few years and then came back in 1990 for my Ph.D., which I completed in May 1998. (I know- took me awhile!) From 1998 I worked as a genome annotator, did cancer, aging and infectious disease research, was a Medical Writer and taught online courses. I came back to UAlbany to teach in April 2013.

Prerequisites: ABIO 201, ABIO 202 and ABIO 212Y

Course Description: This laboratory course focuses on the principles of transmission and molecular genetics of prokaryotes and the significance of these principles to other aspects of biology. The laboratory exercises in ABIO 309 are meant emphasize the experimental use of model organisms to discover genetic principles, and current applications of modern molecular genetics. Please note that while most of the laboratories will be completed during the scheduled lab, there may be weeks when you are required to come to the lab outside of the scheduled period. If you don't think that this will be possible, you should consider withdrawing from this lab and enrolling in another.

Course Objectives: Students who complete this course will:

- Demonstrate proficiency in basic laboratory techniques (preparing solutions, pipetting, serial dilutions, sterile technique)
- Operate basic laboratory equipment and perform laboratory techniques competently.
- Demonstrate the appropriate quantitative expertise as applies to genetics (algebra, statistics)
- Be able to culture and/or manipulate prokaryotes

- Employ tools of classical transmission (Mendelian) genetics, as well as demonstrate some of the techniques used in modern genetics laboratories, such as PCR amplification, using bioinformatics in the elucidation of gene identity and function
- Be able to identify reliable sources of scientific information (journal articles and online sources)
- Formulate hypotheses and design and perform experiments following the scientific process.
- Detect and resolve procedural problems.
- Critically analyze, evaluate, and clearly present experimental results.
- Communicate experimental findings in written and oral form.
- Conduct literature reviews to obtain scientific information, including accessing all forms of scientific literature, to investigate topics, critiquing sources, and organizing information in a scientifically meaningful way.

Learning Activities:

Readings: There is no formal lab manual for this course. Instead, handouts, videos and other resources will be available on Blackboard at least one week prior to the designated lab or handouts will be brought to lab. When available, students are expected to carefully review all information prior to the laboratory. Lab procedures should be WRITTEN out in lab notebooks before lab. DO NOT PRINT, CUT AND PASTE the directions into your notebook.

Working in Teams: The kinds of thinking and tasks required in this laboratory course work well in a team-driven environment. Several graded assignments will involve in class collaboration with other students, however, assignments are all individually submitted and must be completed alone. Weekly Quiz:
There will be a quiz administered the first 10 minutes of class weekly. If you are late you DO NOT GET EXTRA TIME. No makeups. You can drop the two lowest grades.

Notebooks: There are no formal lab write-ups for this course-each student is required to keep careful lab notes, including hypothesis or purpose, procedures, observations, calculations, results and conclusions. Notebooks will be spot checked several times throughout the semester and collected at the midterm and end of the semester. Notebooks must be kept separate from the binders with the papers and handouts and must include a table of contents, which has the date, title of the activity, and page number of the activity. Each activity should include the date, the purpose of the experiment, materials and methods, results and discussion. Figures and observations should also be included. Handouts are not to be stapled into notebooks. Table of contents with date and title of each activity are required.

Breakdown of notebook grading:

Table of Contents -20 points
Ability to read and neatness-20 points
Each lab write-up is worth 20 points
Purpose or hypothesis of lab-3 points
Procedure-3 points
Results-7 points
Discussion questions-7 points

Presentations: Each student will present two times this semester: 1) One journal article 2) One case study. Students can opt to work alone or in teams for presentations. Single presentations should be seven minutes. Group presentations should be 14 minutes. Presentation slides should be color coordinated, meaning that the slides that each participant created should be one color and another for the other participant.
Lab performance points. Up to six points can be earned weekly as described above. If you miss lab you cannot make up these points.

Lab procedure is written in notebook ……..….	1 point
Students are not on phones or computers while instructor or other students are speaking ……..…	1 point
Students are engaged in experiment during lab ……...	1 point
Instructions given by instructor are followed ……...	1 point
Students clean up per instructions ……	1 point
Students ask questions during presentations …….	1 point/day

Grade Policy:

1.	Lab notebooks will be evaluated two times during the semester.	200 points
2.	Final Exam	100 points
3.	Weekly lab quizzes. 7 quizzes. 10 points each	70 points
4.	Journal Club Presentation	20 points
5.	Case study	20 points
6.	Lab performance	60 points
	Total no. points	470 points

Grade Scale:

A	> 93%	C	73 - 76%
A-	90 - 92%	C-	70 - 72%
B+	87 - 89%	D+	67 - 69%
B	83 - 86%	D	63 - 66%
B-	80 - 82%	D-	60 - 62%
C+	77 - 79%	E	< 60%

How to determine your current grade average:

a) add up the number of points you have earned so far.
b) add up the number of points that each assignment was worth.
c) divide the number from (a) by the number from (b) and multiply by 100.
like this: (a)/(b) x 100 = your numerical average

Rounding Your Average:
0.1 - 0.4 = round down
0.6 - 0.9 = round up
0.5 = if preceding number is even, round down
if preceding number is odd, round up

for example: 89.4% = 89% = B+ 86.4% = 86% = B
89.6% = 90% = A- 86.6% = 87% = B+
89.5% = 90% = A- 86.5% = 86% = B

****** THERE ARE NO GRADE CURVES *****

Grading discrepancies. Must be brought to the attention of your instructor no less than 24 hours and no more than one week after the graded item is returned to you. No trolling for points at the end of the semester. No exceptions.

Missing a lab. Lab exercises cannot be made up. If you have to miss lab for any reason, you cannot make up the quiz or the performance points. You are responsible for the purpose, material and methods, and discussion questions of the lab exercise. However, for excused absences you will not be deducted any points for missing results.

Tardiness. Do not underestimate the importance of being on time. If you are not in lab when quizzes or exams are handed out, you will not receive any extra time to complete them. Three instances of tardiness = one missed lab (see above).

Lab Policies:

1. Nothing consumable is allowed in this lab except during the two weeks of presentation. Nothing. No food, water, coffee, cough drops, chewing gum. None.
2. Dress safely! Pull back long hair, no hats with brims, no shorts, no open-toed shoes.
3. Cell phones on silent.
4. Wash lab benches with disinfectant cleaner both before and after experiments. WASH YOUR HANDS BEFORE WALKING OUT OF THE LAB, EVEN IF YOU ARE RETURNING.

Maintaining a Lab Notebook: Here is the format:

1. Table of Contents on the first page. You can fill it in as you go.
2. Numbered pages. Each sheet is considered a page. Begin with the page after the Table of Contents. It is probably best to write the number in the outer upper corner of the page.
3. Everything in your lab notebook must be written in ink.
4. On the first page for each experiment in your lab notebook, you need to include the title and the procedure. This needs to be complete before each lab. Any changes to the procedure must be recorded. You need not make a materials list.
5. On subsequent experiment pages in your lab notebook, you will add collected raw data, and figures (graphs) and gel photos that you may create based on the data as needed. The first experiment pages are for setup and methods; the latter ones are for data/results. You should make tables in which to enter your results BEFORE you come to lab.
6. Lab notebooks must be bound, not spiral.

7. ALL DATA COLLECTED IN THE LAB MUST BE WRITTEN DIRECTLY INTO YOUR LAB NOTEBOOK. DO NOT USE A DIFFERENT NOTEBOOK/PIECE OF PAPER/PAPER TOWEL IN LAB AND TRANSCRIBE INTO THE NOTEBOOK LATER. THIS IS NOT ACCEPTABLE AND WILL COST PERFORMANCE POINTS.
8. NO LECTURE NOTES IN YOUR LAB NOTEBOOK.

ABIO 309 Tentative Schedule of experiments (dependent upon progress and highly likely to change):

Week of:	Laboratory exercise
1/27	Introductions Syllabus, Blackboard, journal club sign-up, Group me-sign up
2/3	Lecture – DNA damage and yeast as a model system Lab 1: Studying the Impact of UV Light using yeast as a model system
2/10	Quiz 1 Presentation skills I Finish up studying the impact of UV light using yeast as a model system Lab 2: Haplotyping using Mitochondrial DNA
2/17	Quiz 2 Lecture-Genomics Finish up haplotyping experiment Lab 3: Crime Scene I
2/24	Quiz 3 Crime Scene II-Real time PCR Lab 4: Examining the RNAi Mechanism using *C. elegans* as a model system
3/2	Quiz 4 Finish up examining the RNAi mechanism using *C. elegans* as a model system Lab 5: Epigenetics using *Arabidopsis* as a model organism Wrap up and discussion of four labs
3/9	Finish up epigenetics Wrap up and discussion of five labs Notebooks due
3/16	**No lab – Spring break**
3/23	No quiz Lab 6: GMO
3/30	Quiz 5 Finish up GMO Lab 7: Behavioral Genetics using fruit flies as a model organism
4/6	Quiz 6 Finish up Behavioral Genetics using fruit flies as a model organism Lab 8: Human Behavior and Genotyping
4/13	Quiz 7 Finish up Human Behavior and Genotyping Wrap up labs 5-8
4/20	Final exam Collect notebooks
4/27	Come back to get finals, notebooks

ABIO 328 Invertebrate Ecology **Fall 2020 Syllabus**

Course number: ABIO 328
Credit Hours: 2
Lab times: Wednesday # 8319 1:10-5:10 PM
Thursday 8318 1:30-5:30 PM
Lab location: B20

Course Coordinator: Dr. Pauline Carrico PhD
E-mail: pcarrico@albany.edu
Office: Biology 111
Phone: (518) 461-9352

Office Hours: Wednesdays 10-11 AM by zoom, Thursdays 10-11 AM in Bio 111. You can also make an appointment by email outside of these hours.

Lab Teaching Assistant: note name, office location and hours: _____

About me (Pauline Carrico):
I use the pronouns she, her and hers. I actually received my BS in Biology from UAlbany in 1988. I worked as a lab tech for a few years and then came back in 1990 for my Ph.D., which I completed in May 1998. (I know- took me awhile!) From 1998 I worked as a genome annotator, did cancer, aging and infectious disease research, was a Medical Writer and taught online courses. I came back to UAlbany to teach in April 2013.

Prerequisites: ABIO 201, ABIO 202 and ABIO 212Y

Course Description: Invertebrate Ecology will explore the amazing diversity found across terrestrial and aquatic habitats. We will examine taxonomic descriptors of different groups but will more specifically focus on the ecology of these organisms through experimentation, field work and critical reading of the primary literature. Through the semester, we will confront topics that impact many invertebrates such as invasive species, habitat, chemical communication, predator- prey interactions, and competition.

Course Objectives: This course will give the student an understanding and familiarity with invertebrate animal:

- be able to identify aquatic invertebrates to genus and use invertebrates to ask ecological or conservation questions.
- understand the phylogeny, life histories, behaviors, trophic importance
- be familiar with methods for measuring invertebrate density, biomass, and diversity.
- be able to use invertebrate bio-assessment protocols to test for environmental impacts.

Learning Activities:

Readings: There is no formal lab manual for this course. Instead, handouts, videos, podcasts, and journal articles will be available on Blackboard at least one week prior to the designated lab. Online labs will be accessible through Labster. Please review https://help.labster.com/en/articles/1077008-what-are-the-minimum-system- requirements-for-labster-simulations Students are expected to carefully review all information prior to the laboratory. In addition, students will be expected to participate in a weekly discussion of an assigned journal article that pertains to invertebrate ecology.

Attendance: Face to face meetings will be scheduled and on a rotating basis. Online instruction will be asynchronous, but there are three mandatory scheduled zoom sessions (see schedule) unless students have made alternative arrangements.

Laboratory Attire: All students must wear a facemask in lab. Failure to comply will result in class cancellation.

Field days: For the Indian pond activities we may be getting wet!!! Wear shorts and bring closed-toed shoes you can wear in the water. 'Wet shoes' are best because they cling while protecting your feet. Closedtoe shoes are important. You will be vigorously kicking rocks and sandals and bare feet are NOT up to the task! If you don't have any shoes that will work, pick up some old sport shoes at a thrift shop or let me know and I will loan you a pair. If we do go to the Pine Bush, Huyck Preserve and Thatcher Park we will be doing some walking on paths-wear sneakers or hiking boots and long pants tucked into white socks-ticks are prevalent in this area! I will bring bug spray each week, and since we stay on trails, there is a low likelihood of being exposed to ticks. After each field trip we will do a tick search. We will be going outside unless there are thunderstorms, so a rain poncho or jacket is also a good idea. Facemasks must be worn while we are hiking.

Lab days: All ABIO328 students must wear a face mask. Shoes must be closed toe. Long pants must be worn. Eating and drinking are prohibited in room B-20.

Academic Integrity: See Undergraduate Bulletin for details. Deviations will be treated according to university regulations.

Grade Policy:

Final course evaluation will be based on the following percentage weight of each type of Online Learning Activity:

Online Learning Activity	Point Allocation	Points Total
Discussions	(7)-30 points 15 points for primary post and 5 points for each of three responses	210
Online labs	(7)-Each online lab is worth 20 points	140
Writing assignments	(7) - Each online written assignment is worth 20 points	140
Online quizzes	(7) - Each online quiz is worth 20 points	140
Final Presentations	(1)-Each presentation is worth 30 points	210
Total		**840**

Grade Scale:

A	> 93%	C	73 - 76%
A-	90 - 92%	C-	70 - 72%
B+	87 - 89%	D+	67 - 69%
B	83 - 86%	D	63 - 66%
B-	80 - 82%	D-	60 - 62%
C+	77 - 79%	E	< 60%

How to determine your current grade average:

a) add up the number of points you have earned so far.
b) add up the number of points that each assignment was worth.
c) divide the number from (a) by the number from (b) and multiply by 100.
like this: (a)/(b) x 100 = your numerical average

Rounding Your Average:
0.1 - 0.4 = round down
0.6 - 0.9 = round up
0.5 = if preceding number is even, round down
if preceding number is odd, round up
if preceding number is odd, round up

for example: 89.4% = 89% = B+ 86.4% = 86% = B
89.6% = 90% = A- 86.6% = 87% = B+
89.5% = 90% = A- 86.5% = 86% = B

****** THERE ARE NO GRADE CURVES *****

ABIO 328 Lab Schedule

Date	Module	Class Topic		Assignment
Aug 26	1	Course Introduction. Set the schedule. Get to know Labster. How is the BB course organized	Mandatory Zoom Session	
Sep 2	1	Finish scheduling; Address logistics; Invertebrate characteristics	September 2- Mandatory Zoom Session	Online lab 1 – https://www.labster.com/simulations/action- potential/ squid neurons Online quiz 1- Phylum Mollusca Ice-breaker discussion-Responses Written assignment 1 Due by noon September 9
Sep 9	2	Using Macroinvertebrates to Assess Water Quality	Bio B20 group 1- Indian Pond	Online Lab 2- https://www.labster.com/simulations/marine- biology/ Discussion Primary post Written Assignment 2 Online quiz 3-Phylum Arthropoda
Sep 16	2	Using Macroinvertebrates to Assess Water Quality	Bio B20 group 2- Indian Pond	Online Lab 2- https://www.labster.com/simulations/marine- biology/ Discussion-Responses Written Assignment 2 Online quiz 3-Phylum Arthropoda Due by noon September 16
Sep 23	3	The big Invertebrate Extinction? Challenges to pollinators How can this be mitigated	Bio B20 group 1-TBD	Online Lab 3- https://www.labster.com/simulations/landscape- ecology/ things like mowing lawns and pollinators Discussion-Primary Post Written Assignment 3 Online quiz 3-Phylum Annelida
Sep 30	3	The big Invertebrate Extinction? Challenges to pollinators How can we address	Bio B20 group 2-TBD	Online Lab 3- https://www.labster.com/simulations/landscape- ecology/ things like mowing lawns and pollinators Discussion-Responses Written Assignment 3 Online quiz 3-Phylum Annelida Due by noon September 30
Oct 7	4	The Human/Invertebrate interface	Bio B20 group 1-TBD	Online Lab 4- https://www.labster.com/simulations/invertebrate- model-system/ Discussion-Primary Post Written Assignment 4 Online quiz 4-Phylum Nematoda

Oct 14	4	The Human/Invertebrate Relationship	Bio B20 group 2-TBD	Online Lab 4- https://www.labster.com/simulations/invertebrate-model-system/ Discussion-Responses Written Assignment 4 Online quiz 4-Phylum Nematoda Due by noon October 14
Oct 21	5	Invasive species Focus on local invasions of emerald ash borer, beech bark disease and hemlock woolly adelgid	Bio B20 group 1-TBD	Online Lab 5- https://www.labster.com/simulations/biomes/ Discussion-Primary Post Written Assignment 5 Online quiz 5-Phylum Coelentera
Oct 28	5	Invasive species Focus on local invasions of emerald ash borer, beech bark disease and hemlock woolly adelgid	Bio B20 group 2-TBD	Online Lab 5- https://www.labster.com/simulations/biomes/ Discussion-Responses Written Assignment 5 Online quiz 5-Phylum Coelentera Due by noon October 28
Nov 4	6	Animal behavior with a focus on Invertebrate behavior	Bio B20 group 1- Invertebrate behavior	Online Lab 6- https://www.labster.com/simulations/behavioral-thermoregulation/ Discussion-Primary Post Written Assignment 5 Online quiz 5-Phylum Echinodermata
Nov 11	6	Animal behavior with a focus on Invertebrate behavior	Bio B20 group 2- Invertebrate behavior	Online Lab 6- https://www.labster.com/simulations/behavioral-thermoregulation/ Discussion-Responses Written Assignment 6 Online quiz 5-Phylum Echinodermata Due by noon November 11
Nov 18	7	Presentations and wrap up	Presentations Mandatory zoom session	Online Lab 7- https://www.labster.com/simulations/ecological-niches/ Discussion-Primary Post Written Assignment 7 Online quiz 5-Phylum Echinodermata
Nov 25	7	Finish all online assignments	TG break	Online Lab 7- https://www.labster.com/simulations/ecological-niches/ Discussion-Responses Written Assignment 7 Online quiz 5-Phylum Echinodermata Due by noon November 25

ABIO 344 Mammalian Anatomy Laboratory Spring 2020 Syllabus

Course number: ABIO 344
Class no:
Credit Hours: 2
Lab times:
Lab location:

Instructor: Caroline B. Girard Cartier
E-mail: cgirard@albany.edu
Office: Biology 254B
Phone: TBA

Office Hours: Tuesday 10:30-11:30am and Wednesday 11am-12pm

Prerequisites: ABIO 201, ABIO 202Z and ABIO 301

Course Description: There are approximately 5000 mammalian species and they all share the same basic body plan. In this hands-on gross anatomy lab, we will explore the anatomical structures and organ systems of mammals. We will perform dissections on a variety of preserved specimen and further our investigations under the lens of a microscope. Skeletal and anatomical models will also supplement our study.

Learning Objectives: After completing the course, successful students will be able to:

- Identify and describe the basic anatomical structures associated with mammalian skeletal, muscular, and organ systems.
- Examine and correctly identify anatomical structures of each organ system.
- Recognize and explain the interrelationships within and between anatomical systems of the mammalian body.
- Synthesize ideas to make a connection between knowledge of anatomy and real- world situations, including healthy lifestyle decisions and homeostatic imbalances.
- Demonstrate proficient dissection skills and use of microscopy.

Overview of this course:

Required Course Materials: There is no required lab manual for this course. Any necessary materials (readings, videos, etc.) will be provided via Blackboard. A binder will be required for handouts.

Personal Protective Equipment: All students must wear a lab coat and eye protection when performing dissections. These items may be purchased at the CAS Store. Items purchased for chemistry labs will suffice if

they are in good condition. These items are not included in the lab fee. Students will be instructed on other safety measures during the first lab meeting and any additional PPE will be provided in the lab.

Laboratory fee: There is a $120 lab fee for this course. This fee will cover all necessary tools for dissections done in class. Students will not need to provide their own dissections tools.

Grade Policy:

Your grade in this course is based on your performance in laboratory as follows:

1. **Weekly Readiness Assessment Tests (RATs) (30%):** In order to participate in laboratory activities and discussions students must come to class prepared. Preparation requires that students read and comprehend assignments and watch assigned videos. RATs are designed to ensure that students come to class prepared. A total of 10 RATs will be given.
2. **Lab Notebook (5%):** The lab notebook will serve as a memory aide and study guide. All handouts should be organized and maintained in a binder. Participation (5%): Participation in group activities requires class attendance and preparation. These activities are designed to reinforce concepts covered.
3. **Practical Exams (60%):** Practical exams are designed to demonstrate your skills, capabilities and knowledge of anatomical structures and systems. They will require familiarity with dissected specimens, microscope slides, skeletons and models. There will be 2 cumulative practical exams.

Grading (by percentage):

A	95-100%	B-	80-82%	D+	67-69%
A-	90-94%	C+	77-79%	D	63-66%
B+	87-89%	C	73-76%	D-	60-62%
B	83-86%	C-	70-72%	E	<59%

Team-Based Learning Class

What is Team-Based Learning?
This laboratory will incorporate the Team-Based Learning (TBL) methods of teaching.
There's a large body of research showing that students learn best from concrete experience, engaging in writing tasks, interacting with concepts and other learners, receiving frequent feedback on their progress, and being held accountable for their work. Conceptual and procedural knowledge is essential for students to develop into knowledgeable, critical- thinking scientists.

How Team-Based Learning will be used in our laboratory?
The laboratory is designed to teach learners comprehensive mammalian gross anatomy (see the course learning objectives) and for students to practice working collaboratively. On the first day of the laboratory students will be assigned to teams and will remain in those teams for the duration of the semester. Your interactions and performance in your team will be crucial to your success in the course.

What can students expect during each laboratory?

1. Students will read a set of foundational material on their own and/or observe video(s) prior to the laboratory. We will have a Readiness Assessment Test (RAT) on the assigned readings/videos at the beginning of each laboratory. Each student will take the RAT twice- once on your own and once in your team. Your individual and team RAT grades will be averaged to calculate your final score on the test.
2. Prior to dissections there will be a review of the anatomical system(s) that will be observed in the lab that day. Students will work in their team on in-class activities and assignments to ensure their preparedness for the day's dissection, microscopic work and observation of models, etc. If needed, there may be occasional mini-lectures to assist students in gaps in conceptual knowledge, as well as demonstrations of the dissection(s).

Attendance:

- Attendance at each lab session is mandatory.
- Absences and tardiness will affect your grade. The weekly Readiness Assessment Tests will be given at the beginning of the lab period.
- Contact the instructor as soon as possible if you miss a lab or anticipate missing a lab.
- An excused absence does not excuse you from any assignments.
- If you miss a lab it is your responsibility to contact the instructor for assignments and due dates.
- Missing the first week of lab will result in automatic deregistration.
- Missing two or more lab periods will result in deregistration.
- In the event of extreme extenuating circumstances that prevent you from attending lab, please notify the instructor by email. You must take the documentation of your extenuating circumstances to the office of undergraduate education and request an accommodation request be sent to the instructor.

Lab Rules:

- E-mails must be sent via your University at Albany email account. They must contain your full name. Unidentifiable emails will not be responded to. You must allow the instructor 48 hours for a response.
- Tardiness is disruptive. Points will be deducted from your grade for arriving late to the lab. It will also affect your eligibility to take the weekly Readiness Assessment Test.
- Cell phone use and texting is prohibited during labs.
- You will be expected to be in lab on time and remain in the lab room until the end of the lab period. Please do not schedule appointments, interviews, or other obligations that overlap with lab time.
- All equipment used during the lab must be thoroughly cleaned and returned to designated areas.
- Benches must be wiped at the end of the lab period.
- You will be expected to follow all safety instructions given by the instructor at the start of lab and throughout the lab time. Failure to follow safety guidelines and other instructions will result in you being asked to leave the lab and the loss of all points associated with the day's lab activities.

Academic Integrity Policy: Choices that reflect academic honesty and integrity are fundamental to the work that you do for this course. Students are required to demonstrate ethical behavior on all assignments. All assignments are expected to be done independently, unless otherwise instructed. Cheating, plagiarism and copying the work of other individuals are subject to penalty. Please refer to the University's Standards of

Academic Integrity, which can be found at: http://www.albany.edu/undergraduate_bulletin/regulations.html.

Reasonable Accommodation Policy: Reasonable accommodations will be provided for students with documented disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center. That office will provide the course instructor with verification of your disability and will recommend appropriate accommodations. Reasonable Accommodation Policy: Reasonable accommodations will be provided for students with documented disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center. That office will provide the course instructor with verification of your disability and will recommend appropriate accommodations.

ABIO 344 Class Schedule

Note: Schedule is subject to change.

Date	Topic	Assignment
Week of 1/22-1/24	No Lab	
Week of 1/27-1/31	Introduction/Systems Overview	Practice RAT, rat dissection, microscope review session
Week of 2/03-2/07	Heart/Circulatory System	RAT 1, sheep heart dissection
Week of 2/10-2/14	Respiratory System/ Cardiovascular Interaction	RAT 2, fetal pig dissection
Week of 2/17-2/21	Reproductive System	RAT 3, fetal pig continued and pig uterus
Week of 2/24-2/28	Skeletal Anatomy	RAT 4, cat skeleton
Week of 3/02-3/06	Comparative Skeletal Anatomy	RAT 5, skeletal models
Week of 3/09-3/13	MIDTERM EXAM	Practical Exam #1
Week of 3/16-3/20	Spring Break- No Lab	
Week of 3/23-3/27	Skin and connective tissue/Muscles Part I	RAT 6, cat dissection
Week of 3/30-4/03	Muscles Part II	RAT 7, cat dissection
Week of 4/06-4/10	Digestive/Urinary Systems	RAT 8, cat dissection, pig kidney
Week of 4/13-4/17	Endocrine System/Lymphatics	RAT 9, cat dissection
Week of 4/20-4/24	Nervous System/ Brain	RAT 10, sheep brain and cow eye
Week of 4/27-5/01	FINAL EXAM	Practical Exam #2
Week 0f 5/04-5/05	No Lab	

ABIO 367 Biochemistry Laboratory Spring 2020 Syllabus

Course number: ABIO 367
Class no:
Credit Hours: 2
Lab times:
Lab location: B15

Course Coordinator: Dr. Robert Osuna PhD
E-mail: rosuna@albany.edu
Office: Biology 324
Phone: (518) 461-9352

Office Hours: Location-B324 Mondays 3-5 pm

Lab Teaching Assistant: note name, office location and hours: _____

Prerequisites: ABIO 201 and ABIO 202Z. Prerequisite or corequisite ABIO 365 or equivalent and permission from the instructor

Course Description from the Bulletin: This laboratory course is designed to provide basic training in various procedures used in present day biochemical research. These will include methods for protein purification, enzyme kinetics, peptide sequencing, and fractionation of intracellular components. In addition, biochemical processes such as glucose metabolism and photosynthesis will be studied. One laboratory period each week.

Learning Objectives: The principal educational goal of this biochemistry laboratory course is to equip students with biochemical techniques, knowledge, and hands-on experience that will allow them to appreciate and more confidently apply the scientific method of inquiry in areas involving chemical properties and function of cellular proteins. At the completion of this course, a student should be able to:

1. Execute biochemical techniques widely used in research today, such as:
    a. various types of liquid chromatography columns to purify proteins
    b. cell lysis, dialysis, salting out, and centrifugations to purify proteins
    c. denaturing and native gel electrophoresis to examine the purity, molecular weight, and enzymatic activity of proteins
    d. enzyme kinetics to understand and analyze kinetic constants and inhibition mechanisms
    e. ligand binding to examine some of the functional properties of a protein.
2. Display confidence in the use of certain research tools and equipment used to manipulate and analyze proteins
3. Design, execute, and interpret the results of an experiment.
4. Graphically and orally communicate experimental results with clarity and precision.
5. Apply fundamental biochemical concepts associated with laboratory techniques used in this course in the analysis and interpretation of results.

Course Requirements:

1. **Textbook:** *Fundamental Laboratory Approaches for Biochemistry and Biotechnology* (2nd edition) by Alexander J. Ninfa, David P. Ballou, and Marilee Benore. (ISBN 978-0-470-08766-4)
2. A **lab fee** will be charged directly to your student account.
3. **Materials and equipment needed for this lab:**
    a. Textbook
    b. Lab notebook: Must be a squared composition notebook.
    c. Ruler (to draw lines and tables on your notebook)
    d. Pen
    e. Watch, or some means to measure time in minutes and seconds
    f. Lab coat
    g. A digital camera (e.g. cell phone with camera) will be useful if you have one.
    h. Scotch tape (to tape results onto notebook or turned in assignments)
    i. Computer (with Microsoft Word, Microsoft Excel & Microsoft Powerpoint
    j. Printer

Grade Policy:

The breakdown of your grade will be as follows:

5. **Assignments (125 points)**
    Assignments associated with points are due on the designated due dates. Lab reports will consist mainly of:
    a. a statement of the purpose
    b. results in the form of graphs and tables
    c. A concise statement of the main conclusion(s) from each set of results
    d. answers to questions that appear in the experimental section of the textbook.
    Tardy assignments: All assignments must be submitted at the beginning of lab to be considered "on time". All late assignments that are no more than one day late will receive a 10% deduction of the grade. Assignments more than one day late will not be accepted and will receive a score of 0. You are given ample time to complete your lab reports. Not being able to print your lab report on time (for whatever reason) will not be considered a valid excuse. Work on your assignments as early as possible to avoid “last minute issues”.

    Assignment 1: (10 pts)
    Assignment 2: (15 pts)
    Assignment 3: (15 pts)
    Assignment 4: (20 pts)
    Assignment 5: (25 pts)
    Assignment 6: (25 pts).
    Assignment 7: (15 pts)

6. **Pre-lab quizzes (50 points)**

These will be given at the beginning of each lab meeting (at 1:15 p.m.). There will be 10 quizzes (5 points each. If you arrive after the quiz has ended you will have missed the quiz and will receive a score of 0.

7. Lab performance (55 points)

Lab performance is a significant part of your grade. Five points are allocated per lab. Evaluation of it is based on the instructor's perception of your general preparedness, organization, motivation, effort, efficient use of time during the lab sessions, bench work practices, and compliance with lab rules. Here are some of the criteria that the instructor will evaluate you on:

a. Have you read the exercise before class?
b. Are you aware of what you are attempting to accomplish?
c. Do you understand why you are doing each step of the procedure?
d. Can you tell if there's a problem, or if something isn't working as planned? If so, STOP and fix the problem!
e. Are you following instructions correctly? Are you paying attention to the instructor's explanations.

Other reasons for loosing lab performance points are listed below ("Lab point losses").

Lab performance point losses are usually one point per infraction. However, this may be increased if the offense is repeated, dangerous, or excessive.

Lab Performance Point Loss Key:

a. no lab coat
b. improper attire
c. lack of organization/preparation
d. failure to follow instructions
e. failure to supervise or complete experiment
f. sloppy, careless, dangerous behavior
g. arriving late; inefficient use of time
h. use of food/gum/drinks
i. uncooperative or disruptive behavior
j. too much reliance on lab partner to do the work
k. not allowing lab partner to participate
l. poor cleanup after each exercise*

* <u>Cleanup after each lab exercise includes the following:</u>

a. Make sure micropipets are clean and returned to their holders.
b. Replace all your lab drawer items back in the drawer.
c. Remove test tubes from all machines used (e.g. Spectronic 20, spectrophotometer, microcentrifuge).
d. Turn off your Spectronic 20 and cover with dust cover.
e. Proper disposal of waste (glass waste vs. regular waste). Know the difference!
f. Empty used pipet tip container.
g. Wash all re-usable lab materials that need washing. The instructor may give you specific instructions on certain items.
h. DO NOT discard high-speed centrifuge tubes or dialysis clamps. Falcon tubes can be discarded (know the difference).
i. Wipe the bench surface with sponge and disinfectant cleaner.

j. Wash your hands before leaving.

** Each team member is fully responsible for the entire cleanup. Deficiencies in proper cleanup will result in loss of points for both team members*

4. Notebooks (15 points)

Notebooks will be collected for evaluation on the indicated date. You will be evaluated for:

a. general organization (5 points)
b. overall neatness (use a ruler to draw lines for graphs and tables) (5 points)
c. thoroughness of data collection (5 points)

Every exercise should have a date, title, and stated goal(s). Whenever possible, data collection should be prepared as tables and/or graphs. Tables & graphs should be correctly and completely labeled so that someone else (i.e. the instructor) could be able to follow precisely what you did. Use ink for everything. Do not erase bad data or errors. Simply cross a line over it with an explanatory footnote. Do not use the notebook for anything other than for the Biochemistry lab course (e.g. avoid scribbling unrelated information). Organize your math calculations as you are doing them. Give all the related units of measurements wherever applicable. Keep your notebook neat and organized. Do not use it for anything other than for this course. Do not use it to scribble things unrelated to this course.

5. Oral Presentations (15 points)

Oral presentations will be given by each group on the last day of scheduled class. Subjects will be assigned. PowerPoint presentations lasting 10-15 minutes will be prepared by each team of two. Each student will be evaluated on the following criteria:

a. Clarity of presentation (good & useful visual presentations; clarity of speech and information) (5 points)
b. Organization (logical flow of information presented by the team) (5 points)
c. Content (Is the presentation complete and correct? Is the presenter reasonably knowledgeable about the subject?) (5 points)

Grading Scale: The following grading scale will be used to determine your grade.

242-260	A	(93%)
234-241	A-	(90%)
226-233	B+	(87%)
216-225	B	(83%)
208-215	B-	(80%)
200-207	C+	(77%)
190-199	C	(73%)
182-189	C-	(70%)
174-181	D+	(67%)
164-173	D	(63%)
156-163	D-	(60%)
< 156	E	(<60%)

Missing a lab session: Lab exercises cannot be made up. Unexplained or insufficiently explained absences will result in loss of all points allocated to that day's lab exercise. In the event of an unexpected emergency, please

contact the instructor or teaching assistant as soon as possible (before the lab meeting if possible). Generally, a documented excuse will be required. If your lab partner is left to take over the entire lab exercise during or outside lab hours, you should expect to compensate by taking on a heavier responsibility in a future lab exercise.

Protective clothing: You are expected to wear a lab coat during each lab meeting. Gloves and safety glasses will also be provided whenever necessary. Lab coats may be purchased at the Chemistry Store (CAS). Disallowed items of clothing include shorts, skirts, high-heeled shoes and open-toed shoes (sandals, etc.). Jeans, comfortable shoes, and moderately loose clothing are recommended. The idea is to protect as much of your skin as possible.

Lab Policies:

1. If an accident occurs, NOTIFY YOUR INSTRUCTOR IMMEDIATELY.
2. Nothing consumable is allowed in any teaching lab. This includes but is not limited to food, beverages, chewing gum, and cough drops. It is strongly recommended that you have a good lunch before coming to class so that you won't feel overtaken with hunger or thirst during the lab period.
3. Waste materials must be discarded in the proper containers. ASK or READ THE SIGNS.
4. Clean up!! Lab benches must be washed down with disinfectant cleaner at the end of each day's experiment. In addition, WASH YOUR HANDS BEFORE WALKING OUT OF THE LAB, EVEN IF YOU ARE RETURNING.
5. Be considerate of others. Please show general lab courtesy.
6. No music, singing, whistling, or routine loud conversations are permitted. Engaging discussions on a variety of personal subjects (e.g., politics, religion, business propositions, entertainments, etc.) not related to the course content are best reserved for times other than the lab period.

ABIO 367 Lab Schedule

Section 1: Tuesdays 1:15 pm

DATE	Topic	Announcement
Jan 28	**Organizational Meeting**	1. *Read Chapter 2 (pp. 21-23;30-40; **50-61**)*. The pages in bold (**pp. 50-61**) will give you the background needed to answer the questions for your first assignment. 2. **Assignment 1:** Download from Blackboard. **Due to be turned in Feb. 4** ***(10 pts)*** 3. Read Chapter 3 ***(pp. 65-84; 99-103)*** 4. If you are not familiar with the use of Excel for simple graphing purposes, then you should walk yourself through the tutorial (see blackboard) on how to use Excel for graphing. *(Last day to drop without a W is Feb 4)*
Feb 4	**Spectrophotometry Experiments 3-1, 3-2, 3-3, 3-4.** **Quiz 1 (5 pts)** (based on Chapter 3 *pp. 65-84; 99-103*)	**1. Assignment 2** Prepare results and answer questions 3-1 through 3-10 (pp. 100-102). **Due to be turned in Feb 11** ***(15 pts)*** **2. *Read Chapter 4 and handout for Bradford Microassay (in Blackboard).***
Feb 11	**Quantification of Protein Concentration: Experiment 4-1** **Quiz 2 (5 pts)** (based on Chapter 4)	**1. Assignment 3:** Prepare results of Exp. 4-1 **Due to be turned in Feb 18** ***(15 pts)*** **2. Read Chapter 5 pp. 121-142; pp 152-159**
Feb 18	**Chromatography:** **Experiment 5-1 & 5-2** gel Filtration Chromatography affinity Chromatography **Quiz 3 (5 pts)** (based on chapter 5 pp. 121-142)	No results to turn in next lab period. ☺ **Read Chapter 6 pp 161-174; 183-186**
Feb 25	**SDS-PAGE** Experiment 6-1 **Quiz 4 (*5 pts*)** (based on Chapter 6 pp. 161-174; 183-186)	**1. Assignment 4:** Prepare results of Experiments 5-1, 5-2, & 6-1 **Due to be turned in March 3** ***(20 pts)*** **2. Read Chapter 7 (pp. 191-208) and 9 (pp. 229-236; 244-246)**
March 3	**Isolation & Characterization of Alkaline Phosphatase from *E. coli*** Experiment 9-1 (day 1) **Quiz 5 (*5 pts*)** (based on Chapter 7 pp. 191-208)	**Read Chapter 9 pp. 229-239** No results to turn in next lab period. ☺
March 10	**Isolation & Characterization of Alkaline Phosphatase from *E. coli*** Experime (day 2) **Quiz 6 (*5 pts*)** (based on Chapter 9 pp. 229-239)	**Read Ch. 5 (pp. 143-148) & Ch. 9 (pp. 239-247)** No results to turn in next lab period. ☺
March	**Spring Break No Classes**	

17		
March 24	**Isolation & Characterization of Alkaline Phosphatase from *E. coli*** Experime (day 3) **Quiz 7 (*5 pts*)** Based on Ch. 5 (pp. 143-148) & Ch. 9 (pp. 239-247)	**Review Experiments 6-1 & 6-2 (pp. 183-189)** No results to turn in next lab period. ☺
March 31	**SDS-PAGE & Non-denaturing PAGE** Experiment 6-1 & 6-2 Analysis of Alkaline phosphatase by Denaturing and non-denaturing gel electrophoresis **No quiz Today.**	1. **Assignment 5:** Prepare results for Experiments 9-1, 6-1, and 6-2 Answer questions 9-1 & 9-2 pp. 240. **Due to be turned in April 7 *(25 pts)*** **2. Read Chapter 10 (pp. 251-270)** **Instructor will collect notebooks on April 7.**
April 7	**Enzyme Kinetics** Experiments 10-1, 10-2. **Quiz 8 (*5 pts*)** (based on chapter 10 pp. 251-270) **Collect Lab Notebooks (15 pts)**	1. **Assignment 6:** Prepare results for Experiments 10-1 & 10-2 **Due to be turned in April 14 *(25 pts)*** 2. Read Chapter 11 (pp.275-305). Plan how you will design these experiments. Come to class ready to share your ideas with your lab partner.
April 14	**Discuss Ligand Binding Experiment** **Quiz 9 (*5 pts*)** (In lieu of this quiz, You will turn in your experimental design for the Ligand Binding experiment at the end of the class)	Review Chapter 11 (pp.275-305)
April 21	**Ligand Binding** Experiment 11-1 **Quiz 10 (5 pts)** (based on chapter 11 pp. 275-305)	**Assignment 7:** Prepare results from Experiment 11-1 **(15 points)** **Due to be turned in April 28** **Prepare your oral presentation for April 30**
April 28	**Oral Presentations (15 pts)** **LS 1143**	

ABIO 375 Principles of Human Disease Spring 2020 Syllabus

Course number: ABIO 375
Class no:
Credit Hours: 3
Lecture times: Tuesday and Thursday – 10:15-11:35AM
Lecture location: Earth Science Room 242

Instructor: Dr. Elise Gervais, PhD (she, her, hers)
E-mail: egervais@albany.edu
Office: Biology 110
Office phone: 518-442-3455
Office Hours: 9-10 AM Monday thru Thursday and 12-1PM Tuesday and Thursday or by appointment

Contacting Dr. Gervais: Please take advantage of office hours! A short conversation can sometimes answer more questions than you were even aware you had. If you are unsure about something, ask. Feel free to email me any time with questions, comments, or concerns (address above). Please keep in mind that you can expect a response between 8AM and 3PM, but I will typically not respond in the evenings or over the weekend. A single email will suffice, no matter how important, and I will get back to you.

Prerequisites: ABIO 212Y and ABIO 301 or equivalent transfer credits.

Catalog Course Description: This course will cover a wide variety of human diseases from an anatomical, physiological, genetic, pathology, and/or public health perspective. We will investigate the onset or cause, pre-disposition to or contraction of, diagnosis, pathology, symptoms, and treatment of many common and uncommon human diseases. We will explore in depth many types of cancer, genetic diseases and abnormalities, as well as diseases caused by developmental defects, microorganisms, and/or environmental exposure. Human diseases of current public health concern will be emphasized. Scientific research and investigations of diseases, their diagnoses and treatments will be explored throughout this course. Using current literature, students will identify a disease or novel therapy of personal interest for a complete case study for a portion of their grade.

Detailed Course Description: We often hear in the news about scientific advances surrounding a specific disease – new treatments, newly discovered genes associated with a specific condition, or new diseases all together. This course will investigate many of these diseases we so frequently hear about and help students to be critical of the news media's portrayal of 'new' science surrounding scientific advances. We will delve into causes, symptoms and treatments, but most importantly, the pathophysiology of each disease – what is going on at the cellular level to cause the disease state and symptoms.

Learning Objectives: At the end of this course successful students will:

1. Have a broad, in depth knowledge of human body systems at the cellular, tissue, and organ system levels and an understanding of each body systems contribution to overall homeostasis.
2. Be able to extrapolate what a malfunction in a given organ/tissue may do to the overall health of an

individual and be able to describe the pathophysiology of many common diseases.
3. Be familiar with many different mechanisms of disease including bacteria, viruses, fungi, parasites, and disease caused by genetic abnormalities.
4. Be critical of news media portrayal of scientific advances and be able to identify and comprehend source scientific material regarding such advances.
5. Be able to identify and locate appropriate scientific literature or other reputable sources of information regarding a disease, drug or other medical information of interest.
6. Successfully design and present a scientific poster to their peers.

Course Materials:

1. Required: Student iClicker – must be registered via blackboard (if you have an iClicker from a previous class, please ensure that it is registered via Blackboard).
2. Recommended Text: Any Human Physiology text
   - For students that have not had human physiology, you may want to have a human physiology text for review purposes. Several copies of the Human Physiology textbook used for ABIO 410 will be available for you to borrow (3 hour limit) at the Science Library's reserve desk and several more are available for use in the BIO-DOME.
   - I strongly recommend using this freely available pdf/online text. A print copy can be found on amazon for around $50. https://openstax.org/details/anatomy-and-physiology

Course Policies:

The following course policies are in place to guide student learning and help the students to get the most out of this course.

1. **Active learning:** Students in Principles of Human Disease should be prepared to be active learners and in-class participants. In this smaller class, students will be expected to engage in frequent small group and class discussions and activities designed to help students gain a deeper understanding of the material. iClickers will be used throughout each lecture to gauge student understanding of the material. During the last portion of the semester, students will take turns presenting research posters – all students are expected to attend all poster sessions which will be held during normal class meeting times.
2. **Pre-class reading assignments:** Prior to each class, review materials may be assigned from many different sources (short videos, scientific literature, scientific and or lay articles, etc.) in the form of links or posted .pdf documents all found on Blackboard. In order to successfully participate in class discussions, students will need to keep up with these materials.
3. **iClicker Policies:** Every student will be required to have a physical iClicker remote in the classroom every day starting on Tuesday, 1/28. Your iClicker must be appropriately registered on blackboard (using the link on the left hand menu) before its first use in class.
   - It will be the student's responsibility to have their iClicker with them at every class, keep their iClicker in good working order (batteries with a charge, etc.) and have their iClicker on the correct frequency in each lecture.
   - At no time during the semester will it be acceptable to submit a sheet or paper, screen shot, or other 'proof' of your presence in class in place of using your iClicker to answer quiz questions and other iClicker questions.

- Please note: Bringing a classmates iClicker to class to respond for them when they are not in attendance will not be allowed under any circumstances. Any student using multiple iClickers in class will have all iClickers in their possession confiscated. iClickers will be returned only to the student to whom they are registered after a one-on-one meeting has been conducted with the professor. Any dishonesty/ cheating regarding iClickers will result in no participation points for the day in question, loss of all participation make-ups (whether complete or incomplete), and may result in referral to the University for Academic Dishonesty (see statement below) for all students involved. If multiple clickers are discovered during a quiz, all students involved will lose the ability to participate in the quiz recovery day.

4. **Blackboard:** Students in ABIO 375 are responsible for keeping up with any and all materials posted on blackboard. The course syllabus, course schedule, and a grade calculator will be available on the course content page throughout the semester. For each lecture, reading/review materials will be posted at least 48 hours before lecture. Pre-lecture slides will be available at least 24 hours before lecture and post-lecture slides will be posted no more than 24 hours after lecture. Topics lists and quiz questions will be posted in post-lecture slide sets prior to each exam for review purposes. In the Poster project folder, all rubrics, instructions, templates and information regarding posters will be available throughout the semester.
    - Blackboard gradebook: I will post participation and quiz grades within 24 hours of the class in which they were earned. Exam grades and poster grades will also be posted as soon as possible after completion. It is your responsibility to be checking these posted grades frequently. If you find a discrepancy, please bring it to my attention in writing within one week of the grade being posted.

Grade Policy:

Grades will be broken down as follows with a total of 1000 points for the semester:

Item	Total points: 1000
Class Participation 150 Points	Lecture Days: 90 points: 5 points/day for iClicker participation (20 lectures, count 18)
Quizzes 225 points	Daily quizzes will be worth 15 points each. Count top 15
Exams 400 Points	2 exams at 200 points each
Poster Project 225 points	Poster Content: 150 points Poster Presentation: 50 Points Poster Facts sheet: 25 points

1. Class Attendance and Participation (150 points):

a. Lecture Participation: Participation points can be earned each day beginning on Tuesday, January 28 (Please see the iClicker policies above). 5 points can be earned in each lecture by responding to a minimum of 75% of the questions asked within the lecture period (starting promptly at 10:15AM and ending at 11:35AM) with your iClicker. Participation points are earned based on completion, not correct responses – even if you select the wrong answer, you will be earning participation points. You may skip 2 days of lecture without penalty in regard to lecture participation points. Additionally, two lecture participation make-up assignments will be available on blackboard. The maximum number of lecture participation points (in class combined with make-ups) you can earn

will be capped at 95 points (this includes up to 5 bonus points for perfect/near perfect attendance).

i. You may complete lecture participation make-ups after missing lecture at any time, for any reason, without permission from the instructor. Points earned by completing these make-ups will be added to the points earned in lecture and will not replace lecture participation grades.

ii. Accommodations will not be made for missing class beyond the two skip days and two make-up assignments provided except in extreme extenuating circumstances for which you are out more than 2 weeks with appropriate documentation. Skip days and make-ups will be the only accommodations made for missing lecture because of sports/performance events, religious holidays, family or personal emergencies or illness, interview days, job training, etc. Please use these skip days wisely.

b. Poster Audience Points: During each poster session, if you are not presenting, you will be expected to be an actively engaged audience member – listening to presentations, asking good, scientifically relevant questions, and being respectful audience member. You will earn 15 points per poster session for actively participating and submitting carefully constructed reviews of the posters you attended.

2. Quizzes (22.5%, 225 points):

Students will individually complete quizzes (given daily in lecture except during poster sessions and on exam days) throughout the semester and the top 15 quiz grades will be counted for each student. Each quiz will be worth 15 points and will be given at the start of class (or the start of the new lecture material). Quiz format may vary from class to class with multiple choice, and true/false questions answered with your iClicker or written quizzes on provided paper. Points will be earned by correctly answering each of the 5 questions asked within the time allotted (typically 1 minute per question).

a. Quiz Recovery: on the last day of class (5/5), I will give 5 recovery quizzes. The content of the recovery quizzes will be based on the lectures after exam 2 and the poster content presented by your classmates. Facts sheets from each presenter will be available on blackboard for you to study from. These 5 recovery quiz grades will be added to the previous quiz grades and the top 15 scores will count. Missing class on 5/5 for any reason makes you ineligible for the quiz recovery. If you arrive to class late on 5/5 you will only be allowed to submit the remaining recovery quizzes.

b. If you have accommodations through the DRC that include extended time on assessments, please speak to the instructor before the first quiz of the semester regarding extended time on quizzes.

c. Please note: arriving to class late or not having your iClicker in good working order will not be accommodated with additional time on quizzes – you will be permitted to answer any remaining quiz questions upon your arrival. You may not write down the answers to a multiple choice quiz to submit if you do not have your iClicker with you. Please do not tell me that you missed the time allotted for the quiz or have not been given enough time because it's hard to get to class on time.

d. Collaboration on quizzes will not be allowed. Students suspected of collaborating/cheating/sharing answers will receive a zero for that days quiz and have their iClicker confiscated. Dishonesty on quizzes may result in referral to the University for Academic Dishonesty (see statement below) for all students involved.

3. Exams (40%, 400 points):

There will be two written lecture exams given during class time during the semester (see course schedule below for dates). Exams will cover all lecture content since the last exam. Make-up exams will be provided only in the case of extreme extenuating circumstances with a valid legal excuse presented to the instructor via the undergraduate education office within 1 week of the missed exam and will be given written format.

Accommodation requests that extend from the exam date through the make-up period may be further discussed with the professor.

a. Students with accommodations through the DRC are encouraged to contact me as early in the semester as possible to make necessary arrangements for exams.
b. Make-up exams will not be provided for students who knew they were going to miss the exam ahead of time (court date, interview, job training, etc.). Please be in contact with me about this with as much notice as possible so we can arrange for you to take the exam early.

4. Poster Presentation:

a. Poster content (150 points): Poster content will be graded by Dr. Gervais upon submission of your poster. The grading rubric, poster template, and instructions can be found in the Poster Project folder on blackboard.
b. Poster Presentation (50 Points): Student presentations will be graded by their classmates. The grades assigned by your peer judges will be averaged and the score assigned out of 50 points for oral presentations and visual aesthetics /clarity of your poster. Rubrics to be filled out by student judges will be available to presenters at the end of the semester. The poster judging rubric can be found in the poster project folder on blackboard.
c. Poster Facts Sheet (25 points) students will create a facts sheet to accompany their poster presentation. It will contain the most pertinent and interesting details from their poster presentations. These fact sheets will serve as notes for students to study from for the quiz recovery and will be submitted at the same time as the poster document. Hard copies will be provided for presenters to handout to their audience members and facts sheets will be posted to blackboard as well.

Final Grades will be distributed as follows with no curve. Grades will be rounded to the nearest tenth of a point and 0.5 -0.9 points will be rounded up to the next point. 0.1-0.4 will be rounded down to the nearest point. Students are expected to check their posted grades regularly and should not be surprised about their final grade in ABIO 375. Anyone with a question or concern about their grade is encouraged to attend office hours to discuss their concerns with Dr. Gervais early and often throughout the semester. Grades will not be changed after the end of the semester and no additional assignments or bonus will be given on an individualized basis.

Number of Points Earned	Letter Grade	Number of Points Earned	Letter Grade
< 950	A	769-730	C
949-900	A-	729-700	C-
899-870	B+	699-670	D+
869-830	B	601-698	D
829-800	B-	629-600	D-
799-770	C+	<599	E

Poster Presentation logistics: Posters will be presented during class time on several days in April (see course schedule below) on a disease of the students' choice that was not covered in class. Students will sign-up for a presentation date and topic beginning on Tuesday, January 28 at the end of class. Topics and dates will be finalized by Friday 1/31 at 1PM or a time/topic will be assigned to you. Only one student may work on each topic, topics will be first-come, first-served.

1. On Tuesday, March 9 students will be assigned to small groups to discuss each student's poster. Each student will receive feedback from their peers about the content and aesthetics of their poster.
2. All posters must be submitted in PowerPoint format via Blackboard no later than 11:59PM on Monday March 30th. Late submissions will not be accepted and will result in a zero for all points associated with the poster project. You may still judge your peers' posters except for the session when you were scheduled to present. Posters will be converted to PDF format and sent to Rapid copy to be printed at full scale and in color (this is why there is a course fee – you are paying the departments slightly lower cost to print a poster, and the logistics of this process will be handled for you).
3. Posters will be printed for you ahead of time and brought to the classroom ready for you to present on the day you are scheduled to present. Poster Presentations will be 7-9 minutes each followed by 1-2 minutes for peer questions and 2 minutes or so for judges to rotate to see a new presentation. A timer will be set at the start of each presentation and presenters will be cut off at 9 minutes. You will be expected to present several times, each time to a different audience of your classmates. Exact logistics will be discussed in class later in the semester.
4. Judges will be expected to view several different posters during each poster session and will be expected to self- sort and not overcrowd any one poster. These logistics may seem a bit strict/ regimented but it ensures that each poster is judged by the same number of peer judges (fewer judges means a harsh score carries more weight), and that a judge doesn't get stuck at a very long presentation causing them to miss out on seeing enough posters within any one session.

Professors notes on how to succeed in Principles of Human Disease:

- Be prepared to spend a minimum of 9-10 hours per week on this course, outside of lecture time. Some of the reading materials will be complex or require watching a video. You are responsible for all material in the reading assignments regardless of whether it was covered during lecture. If you don't have time to read the assigned reading before lecture, at least skim – review the figures and figure legends so you will at least know what to expect during lecture, then make time after lecture to finish the reading.
- Take good notes in class – scientific research has shown that taking notes by hand instead of typing them significantly increases you recall of the material. I strongly suggest taking notes by hand and transferring them to a notebook or printed copy of the slides after class. This may seem like a waste of time and paper, but in my experience, this is one of the best ways to learn and retain the material.
- Use your iClicker to give the professor honest feedback! iClicker questions are specifically designed to determine how many students are keeping up with a specific concept and will sometimes ask you directly if you are understanding something. If you don't understand something, answer the iClicker question honestly – if many students aren't getting a concept, it will be reviewed again. If there are only a few students getting questions incorrect, the lecture will proceed, and those students will be asked to attend office hours to review the material.
- Attend office hours when you are struggling with the material or having personal issues that are affecting your performance in the class. What you don't tell me, I cannot possibly know. I am always more than happy to review material that you are struggling with or make accommodations for reasonable issues affecting your performance in class.
    - I love science, specifically understanding the human body, and love to teach this topic, so please do not avoid office hours because you feel like you are bothering the professor or that your question isn't important enough. If you are struggling to understand something, please ask for help.

  - On a similar note, if you have something going on in your personal life that is affecting your performance in class, please come talk to me about it during office hours. I understand that life happens and sometimes things come up that affect your ability to concentrate, find time to study or read, or do assignments. If you aren't comfortable telling me about your specific issue, that's fine, but I would encourage you at least let me know that you're having a tough week and ask for help with the material that you're struggling with. Please do not try to discuss personal issues with me in the classroom before or after class for your privacy.
- Extensions, Exceptions, etc. I will not accept laziness, lateness, or lack of effort as an excuse at any time.. Also, please note that I will NOT make any exception, or give an extension or a make-up for one student that I would not be willing to do for any student in that same situation. This means you will not get an individualized assignment (bonus, make-up, etc.) that will not be provided to the whole class without a viable reason.
- Quizzes will be given daily to help you stay on top of the material. Use these questions as a way to study for the exam and get an idea of what topics you are struggling with. I will not post answers for quizzes – please take the time to look them up as an additional study tool.
- Exams will cover any and all material reviewed since the last exam and will be given in written format. There will be several lectures covered on each exam so don't wait to start studying a day or two before the exam. Spend at least a week reviewing material before the exam and ask questions. I will not post previous exams since they are in written format and topics vary by semester.
- Poster Presentations will make up a large portion of your grade. This will be a new experience for many of you and great exposure to how science is presented at scientific meetings. I am very much looking forward to learning about the diseases each of you are studying and am happy to spend time with you to go over the materials you want to use. Please plan to practice presenting your poster out loud many times – in front of the mirror, roommates, stuffed animals, family members, friends or all of the above. This will seem strange the first several times but talking through you presentation many times will make you much more comfortable when it comes time to present it to your peers. Ask your audience to ask questions so you are better prepared and can easily spot holes in your presentation.

Academic Integrity Policy: All students will be held to a high standard of academic integrity and the University's policies will be strictly enforced. Those policies can be found on the University website: http://www.albany.edu/undergraduate_bulletin/regulations.html.

Reasonable accommodation policy: Reasonable accommodations will be provided for students with documented physical, sensory, systemic, medical, cognitive, learning and mental health (psychiatric) disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Disability Resource Center (518- 442-490; drc@albany.edu). Upon verification and after the registration process is complete, the DRC will provide you with a letter that informs the course instructor that you are a student with a disability registered with the DRC and list the recommended reasonable accommodations.

ABIO 375 Spring 2020 Schedule

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	Spring 2020	1/21	1/22 First Day of classes	1/23 Introduction, system and cellular review (1)	1/24
2	1/27	1/28 Immune system and genetics overview (2) iClicker required, Poster sign-ups open after class	1/29	1/30 HIV/AIDS (3) Poster Example presentation	1/31 Poster topic sign-ups close at 1PM
3	2/3	2/4 Vaccines and Polio (4)	2/5	2/6 Tuberculosis (5)	2/7
4	2/10	2/11 Plague (6)	2/12	2/13 Varicella (7)	2/14
5	2/17	2/18 Cholera (8)	2/19	2/20 Exam 1 (Lectures 1-8)	2/21
6	2/24	2/25 Pneumonia and Flu (9)	2/26	2/27 Fever and Hemorrhagic Fever (10)	2/28
7	3/2	3/3 Syphilis (11)	3/4	3/5 Human Papilloma Virus (12)	3/6
8	3/8	3/9 Poster Peer-Review Session (13)	3/10	3/11 Malaria and Zika (14)	3/12
9	3/16 No Classes	3/17 No Classes	3/18 No Classes	3/19 No Classes	3/20 No Classes
10	3/23	3/24 Lyme (15)	3/25 Poster Due via Blackboard by 11:59M	3/26 Rabies (16)	3/27
11	3/30	3/31 Exam 2 (Lectures 9-16)	4/1	4/2 Measles and Mumps (17)	4/3
12	4/6	4/7 Poster Session 1	4/8	4/9 Poster Session 2	4/10
13	4/13	4/14 Poster Session 3	4/15	4/16 Hysteria and Erectile dysfunction (18)	4/17
14	4/20	4/21 Poster Session 4	4/22	4/23 Poster Session 5	4/24
15	4/27	4/28 Poster Session 6	4/29	4/30 Leprosy (19)	5/1

16	5/4	5/5 Quiz Recovery and wrap up (20)	5/6 Reading Day	5/7 Final Exams Begin	5/8
17	5/11	5/12	5/13 Last day of Finals	5/14	5/15

*** Course schedule subject to change. Students will be notified of changes as soon as possible***

ABIO 395 Undergraduate Teaching Experience in Biological Sciences
Spring 2020 Syllabus

Course number: ABIO 395
Class n0:
Credit Hours: 1-2
Lecture/Location times: Tutoring times to be arranged directly with Dr. Gervais, individualized and group meeting time/location TBD – a doodle poll will determine meeting time/place during the first week of classes.

Instructor: Dr. Elise Gervais, PhD (she, her, hers)
E-mail: egervais@albany.edu
Office: Biology 110
Office phone: 518-442-3455
Office Hours: Monday through Thursday 9-10AM and Tuesday Thursday 1-2PM or by appointment.

Contacting Dr. Gervais: Any email to any professor should contain your name, student ID number, the course title and/or number and your specific question or request. Please put the course name or number in the subject line. Keep in mind that you may not get an immediate response to your email - email responses can be expected between 8AM and 3PM on weekdays and should not be expected outside of these hours.

- If there is need to communicate with Dr. Gervais outside of these hours, please use the GroupMe app.
- Emergency contact numbers will also be provided in the IBASS center and in the course manual.

Prerequisites: Students must have received a grade of B+ or better in both ABIO 130 and ABIO 131, submitted an application for a tutoring position and be selected by Dr. Gervais for a position. Maintenance of a minimum overall GPA of 3.0 is required.

Catalog Course Description: ABIO 395 – Undergraduate Teaching Experience in Biological Sciences allows high- achieving, motivated undergraduates to assist in the education of undergraduate students. Participation in undergraduate teaching can provide valuable leadership skills and allow students to gain a deeper understanding of the principles learned in the course they teach. This experiential learning can occur in laboratory courses, lecture classes or in a departmental peer tutoring program. Duties may include working directly with students, laboratory preparation, assistance in grading laboratory reports or quizzes, providing guidance to students for in-class exercises or discussions, etc.

Detailed Course Description: Students enrolled in either 1 or 2 credits of ABIO 395 with Dr. Gervais will be gaining teaching experience through tutoring and mentoring general biology I and II (ABIO 130 and ABIO 131) students in the Introductory Biology Academic Support Service (IBASS) center. First semester tutors will be scheduled for 2 hours of tutoring per week and will meet with Dr. Gervais individually or in small groups and complete assignments for an additional hour per week for training purposes. Returning tutors (students taking this course a second time) will register for either 1 or 2 credits and will be scheduled to tutor in the IBASS center for either 3 or 6 hours per week respectively. For all tutors enrolled in ABIO 395 tutoring/mentoring responsibilities may include but are not limited to: leading/conducting small group review sessions, conducting individualized and small group biology tutoring, helping students to develop study plans, work on time

management and test taking skills, and other academic personal interactions with students. Tutors may also be asked on occasion to perform other administrative duties related to the ABIO 130/131 course including but not limited to proctoring exams, collating exam papers, and other managerial tasks.

Course Goals: At the end of this course, successful students will have:

1. Built a connection with the Department of Biological Sciences and be introduced to department resources and engagement opportunities
2. Developed advanced written and verbal communication skills critical for future professional interactions
3. Demonstrated strong academic success and time management skill sets.
4. Developed a strong knowledge of course content for ABIO 130 and 131.
5. Served as a role model for lower-level students by demonstrating and teaching appropriate and healthy time and stress management techniques.
6. Developed tutoring and mentoring skills.
7. Enhanced their problem solving, conflict resolution and mentoring facilitation skills.
8. Developed strong leadership skills.

Required Course Materials:

- Recommended Text: Biology 2E, Clark, et al. 2018
    - This freely available pdf/online text will be linked on blackboard or you can use the link below to access it on the web. There are also several hard copies of this and other introductory biology textbooks will be available in IBASS as well.
    - Text link: https://openstax.org/details/books/biology-2e
- Required: Blackboard access and ABIO 395 course manual. Course manual will be provided at the first course meeting for students enrolling in AIO 395 for their first semester

Course Policies:

The following course policies are in place to maintain an atmosphere of respect, and foster an atmosphere of learning for ABIO 130 and 131 students in the IBASS center.

1. Communication: More than for any other course, this undergraduate teaching experience will be a test of a student's communication skills. We will work on ways to communicate effectively in a professional way, but I will also expect you to communicate quickly and clearly with me and your fellow tutors any time an issue or concern about a student's health or safety arises. Communication between tutors and between tutors and Dr. Gervais is critical for the success of this program. I will expect that all tutors answer email, blackboard or text requests for information in a timely manner by acknowledging the message, responding within an appropriate time frame and with the appropriate information. See the list of program rules for tutors below regarding when communication with Dr. Gervais is absolutely required.
2. IBASS program/center rules for tutors:
    a. Stay on top of what is being taught in each general biology class so you are prepared to tutor the appropriate topics. Be aware of course expectations, due dates, and exam dates to best help students.

i. The course syllabus for both ABIO 130 and 131 will be made available to you. There is a calendar with course due dates for 130 and 131 as well as other important dates/ IBASS closures listed at the end of this syllabus.

b. Be on time for each assigned tutoring shift and remain present in the center for the entirety of the shift. Be sure to wear your lanyard and name-tag at all times when you are on a shift.
   i. Tutors may leave the center briefly to use the restroom or fill their water bottles or coffee maker, but may not attend meetings, go to the campus center for lunch (or food), go back to their dorm rooms or vehicle, etc. during assigned tutoring times.
   ii. Please see the notes under Time and Attendance for finding coverage for a shift that you cannot work.
   iii. Tutors may have friends/colleagues stop by the center to drop off food or other personal items, but tutors on shift may not use the space/time to socialize or work with a group.
c. Tutors should greet every student entering the center with smile, a personal introduction and friendly demeanor
   i. Ask each student to sign-in with the tablet and ask them what they would like to work on –show them resources that may be helpful.
   ii. Tell the student how you might be able to help and give them some time to settle in. 1. For students you are familiar with, please continue to greet them when they arrive
d. For brand new students, do your best to be inviting and introduce them to any other students present.
e. For all students, tutors should be keeping track of their progress throughout their time in the center.
   i. Students and tutors (off shift) that are present but not working on biology (students frequently use the space to work on chemistry homework or study other topics with colleagues) may be asked to leave if students trying to study biology are in need or the space or are distracted by students not working on biology.
   ii. Students that are load, off topic, having inappropriate interactions, or are in any other way distracting to students working on biology may be asked to leave at any time.
f. Tutors may work on their own academics if there are no students present, or if a small number of students are present and working independently. Tutors may not where headphones when they are on shift at any time.
   i. I will expect that you will stop working on your own homework, etc. as soon as a student enters. A tutor should be checking in with each student/ group at least once every 10-15 minutes.
   ii. If you are not working a shift, you may use one of the back offices to work on your own homework, etc. but should be aware of the needs of the students and tutors on shift. Please leave the center if your presence is distracting or taking up space needed by biology students. Please do not use the IBASS space for group work or socializing when you are off shifty as this is quite distracting.
   iii. Tutors may use the IBASS space to work on their own academics when the center is not open Monday-Friday between the hours of 8AM and 6PM only. Students that are not IBASS tutors may not be present in the space during off hours without express permission.

g. Tutors are expected to conduct themselves in a professional and adult manner throughout their assigned shift and anytime they are in the IBASS center but are not on shift.
    i. Tutors should not (and should not allow students to) speak negatively about other students, tutors or professors (whether they are present or not), speak in a derogatory, hateful or hurtful manner about any specific individual or group of individuals, be excessively negative for any reason or use inappropriate language of any kind.
    ii. Tutors should be appropriately dressed – while professional attire is not required, students should not plan to tutor in pajamas, clothing items that are revealing or that have pictures, decals or lettering that is offensive.
    iii. Tutors should take care not to play favorites – helping one student while ignoring another, etc. While all students will have different needs and may respond differently to different tutors or approaches, tutors should take care not to show favoritism.
    iv. Tutors should not be using alcohol, drugs, or any other illegal substances while in IBASS – Please also limit the discussion of parties, personal relationships and friendships, personal drama, and other social activities that may not be appropriate for IBASS.
h. Tutors should be reporting any troubling behavior or situations to Dr. Gervais immediately.
    i. This includes but is not limited to behaviors that would indicate depression, anxiety, or other mental health concerns, concerns about or talk of suicidal ideations, concerns about or talk of overuse or misuse of alcohol, prescription or illegal drugs, concerns about or talk of sexual assault, abuse or misconduct, concerns about or talk of physical, mental, or emotional abuse by another student, family member or community member, or any other behavior or conversation that makes a tutor uncomfortable or concerned for the student(s) in question.
i. Use the resources available when helping students, but do not take advantage.
    i. Textbooks, computers, handouts, models, and many other resources are available for the students to use while in the IBASS center. Please make use of any or all of these resources while helping students and make students aware of their presence.
    ii. The printer in IBASS is for IBASS materials only and may not be used by tutors or students to print work for other courses.
    iii. The office supplies in IBASS are for students actively studying Biology and IBASS administrative purposes only
    iv. Textbooks and other supplies may NOT leave the center at any time for any reason.

Grade Policy:

For ABIO 395 Levels 1-3 Grades will be broken down as follows

Item	Total points = 1000
Time and Attendance	500 Points ~30 points per week for being on time and present throughout the assigned shift
Peer evaluations	200 points based on performance evaluations done by tutoring peers
Reflection Assignments	300 points - number and point values will vary by tutor group

1. **Time and Attendance** (500 points)
   A specific schedule for tutoring will be agreed upon between the student and Dr. Gervais before the start of the semester. Depending on the student's specific circumstances (number of credits of ABIO 395, academic and extracurricular schedule, needs of the IBASS program, etc.), 2-6 hours of tutoring time will be assigned to each student tutor. Each tutor will be responsible for being in the IBASS center on time for each assigned shift and for being present and accessible to the students throughout the entire shift.
   a. Tutors will be docked time and attendance points for being late or leaving early without making prior arrangements with Dr. Gervais, not being present or accessible during the assigned hours, or behaving in any manner deemed inappropriate for the IBASS center during their shift. Tutors will be graded for time and attendance based on a combination of self-reporting, peer-reporting, and interactions with Dr. Gervais to determine how many points will be earned for each shift. A time and attendance grading rubric that will be used for each shift can be found on blackboard.
   b. Minimum number of tutors hours required:
      i. Level 1: First semester 1 credit: 32 hours tutoring, 16 hours training
      ii. Level 2: Returning semester 1 credit: 48 hours tutoring
      iii. Level 3: Returning semester 2 credits: 96 hours tutoring
   c. Tutors will be expected to make up any hours that are missed due to classes being cancelled, not in session (labor day, fall break and Thanksgiving), or hours missed with permission of the instructor for other viable reasons – please don't ask for time off to study for an exam, complete an assignment, or other academic reasons as this is a display of poor time management. If you have missed classes because of an illness or emergency, please be in touch with Dr. Gervais as soon as possible to make alternative arrangements.
      i. Students may make-up hours by performing managerial tasks, proctoring exams, or being an extra tutor with permission of the instructor.
      ii. Students may switch tutoring hours with another tutor only if the switch is approved at least 24 hours in advance by the instructor. If an emergency arises – illness, etc. please try to find coverage, and make the instructor away that you will be missing yours hours so arrangements may be made. Any missed hours must be made up to meet the minimum number of hours required (listed above)
2. **Peer evaluations:** 100 points can be earned at each evaluation.

At the middle and end of the semester, tutors will evaluate all other tutors that they worked with throughout the semester using the rubric found on blackboard. Formative feedback will be available at midterms so tutors can amend their tutoring style, behaviors, etc. to better match the goals of the program and center if necessary.

3. **Reflection assignments:** (50 points/assignment)
   Reflection assignments will be assigned by level throughout the semester ranging from short reflection paragraphs, to longer more in-depth questionnaires. Each assignment will be worth 50 points and must be submitted by the deadlines found in the course outline below. Slightly different assignments will assigned to each tutor group based on level.
   a. Level 1: New tutors (1 credit):
   b. Level 2: Returning tutors (1 credit)
   c. Level 3: Returning tutors (2 credits)
      i. Reflection assignments for level 1 tutors will be based on specific training topics covered in meetings. For level 2 and 3 tutors, reflections will be discussion and solution based and will ask tutors to reflect on, discuss and provide solutions for specific issues in the IBASS center. Points will be earned for valuable contributions to each of these discussions.

Final Grades will be distributed as follows with no curve. Letter grades will be assigned based on the number of points a student earns throughout the semester – NOT the percentage. For example, 905 points does not round to 91% - an A is assigned only to students earning at least 909.5 points. Students are expected to check their posted grades regularly and should not be surprised about their final grade in ABIO 131. Grades will be rounded to the nearest tenth of a point (earned points, not percentages) and 0.5 -0.9 points will be rounded up to the next point. 0.1-0.4 will be rounded down to the nearest point.

Number of Points Earned	Letter Grade		Number of Points Earned	Letter Grade
< 910	A		759-730	C
909-880	A-		729-700	C-
879-850	B+		699-670	D+
849-820	B		669-640	D
819-790	B-		639-600	D-
789-760	C+		<599	E+

Academic Integrity Policy: All students will be held to a high standard of academic integrity and the University's policies will be strictly enforced. Those policies can be found on the University website: http://www.albany.edu/undergraduate_bulletin/regulations.html.

Reasonable Accommodation Policy: Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center. That office will provide the course instructor with verification of your disability and will recommend appropriate accommodations. Please notify Dr. Gervais if you are registered with the DRC as soon after the start of the semester as possible.

ABIO 413 Stem Cell Biology Fall 2019 Syllabus

Course number: ABIO 413
Class no:
Credit Hours: 3
Lecture times: TBD
Lecture location: TBD

Instructor: Professor Sho-Ya Wang PhD
E-mail: sywang@albany.edu
Office: Biology 110
Office Hours: By appointment via e-mails

Prerequisites: ABIO 301 and ABIO 303, or permission of instructor

Course description: Stem cells are different from other kinds of cells in the body. All stem cells have three general properties: they are capable of dividing and renewing themselves for long periods; they are unspecialized; and they can give rise to a diverse range of specialized cell types. As such they provide the basis for the new field of regenerative medicine and are of considerable interest to the biomedical research community as well as the basic scientific community. This lecture/discussion course focuses on the biological, genetic and functional characteristics of two broad classes of stems cells: **1)** those that originate as embryonic cells; and **2)** those that can be developed via genetic and biochemical "de-differentiation" of adult cells. Lecture material will be drawn from web-based materials as well as contemporary scientific papers.

Learning Objectives: At the end of this course, students will:

- be able to explain the difference between embryonic stem cells versus adult stem cells
- be able to describe how stem cells contribute to the maintenance of different tissues and organs
- be able to describe how stems cells can be harnessed for regenerative and therapeutic potential
- develop verbal and written communication skills though a written review and student presentations.

Grade Policy:

Based on 400 points total, to be determined as follows:

150 points	Three hourly exams 50 pts/exam
50 points	Final Exam
50 points	Attendance
50 points	Class participation
50 points	Paper [see below]
50 points	Student presentation

Each hourly exam and the final exam will be short answer or multiple-choice. All exams will be open book exams. The final exam will be comprehensive with a focus on the last quarter of the course.

Grade Scale:

A	> 93%	C	73 - 76%
A-	90 - 92%	C-	70 - 72%
B+	87 - 89%	D+	67 - 69%
B	83 - 86%	D	63 - 66%
B-	80 - 82%	D-	60 - 62%
C+	77 - 79%	E	< 60%

Course Overview

- You must have an active University e-mail address and it is your responsibility to check your University e-mail, and to ensure that you have sufficient space to receive messages in that account.Course materials will be available in Blackboard or e-mails.
- There is no specific textbook for this course. Original research papers will be available on Blackboard or e-mail attachments.
- You are responsible for reading all lecture material, as well as for any announcements made in class.
- All material covered on tests and exams come directly from lecture material and Blackboard posted materials.
- This is not a required course as such you have elected to enroll in this class and your attendance is mandatory-any absence requires a medical document acceptable to Dr. Wang.

Paper for the class

- An original "topic review paper" of 2-3 pages is required of all students. Paper must include literature citations of a minimum of 2 articles.
- A list of potential topics will be provided, but students are not limited to the topics on that list—feel free to suggest a topic of interest. Subject to approval by Dr. Wang any subject relating to stem cell development or application may be suitable.
- Each proposed topic and proposed reference list must be submitted electronically to Dr. Wang, for approval, on or before November 2.
- A well-written finished paper must be submitted electronically to Dr. Wang on or before Reading day.
- You are also required to discuss (~20-30 minutes) your paper with the class.

Academic Integrity Policy: Any student who cheats, facilitates cheating by other students or otherwise violates the Standards of Academic Integrity as outlined in the Undergraduate Bulletin will receive the grade of E for this course. The case will be referred to the University Judicial System.

ABIO 413 Lecture Schedule

Date	Lecture no.	Tentative topics
8-28-Tu	1	Introduction to Course
8-30-Th	2	Introduction to Cell Culture and technologies
9-4-Tu	3	Introduction to Stem Cell: Stem Cell Basics-1
9-6-Th	4	Introduction to Stem Cell: Stem Cell Basics-2
9-11-Tu	5	Embryonic Stem Cells
9-13-Th	6	Teratocarcinoma Stem Cells
9-18-Tu	**7**	**Exam 1**
9-20-Th	8	F9 teratocarcinoma stem cell differentiation mutants
9-25-Tu	9	Retinoid differentiation mechanisms
9-27-Th	10	Retinoid Signal Pathway 1
10-2--Tu	11	Retinoid Signal Pathway 2
10-4-Th	12	Retinoids induce stem cell differentiation via epigenetic changes
10-9-Tu	13	Cloning of A Pluripotent Substaining Factor
10-11-Th	**14**	**Exam 2**
10-16-Tu	15	Regeneration in the fresh water flatwarm-1 (by Dr. Orokos)
10-18-Th	17	Regeneration in the fresh water flatwarm-2 (by Dr. Orokos)
10-23-Tu	18	Induction of pluripotency in somatic cells
10-25-Th	19	Cellular Reprogramming to Pluripotency Reverses Cell Age
10-30-Tu	20	Chromatin-based mechanism for maintaining pluripotency of ES cells
11-1-Th	21	Cancer and cancer stem cells
11-6-Tu	22	Hematopoietic Stem Cells-Leukemia
11-8-Th	**23**	**Exam 3**
11-13-Tu	24	Diabetes-beta cell therapy
11-15-Th	25	CRISPR and Technologies
11-20-Tu	26	Wnt signaling
11-22-Th	27	Oct 4 and embryogenesis
11-27-Tu	28	Sickle Cell Anemia therapy
11-29-Th	29	Student Presentation or review
12-4-Tu	30	Student Presentation
12-6-Th	31	Student Presentation
Exam Week		**Exam 4**

ABIO 429 / 529 Molecular Virology Spring 2020 Syllabus

Course number: ABIO 429 (Class no. 9642) / ABIO 529 (Class no. 9643)
Credit Hours: 3
Lecture times: Tuesdays and Thursday at 10:15 – 11:35 am
Lecture location: BB 205

Instructor: Dr. Cara Pager, PhD
E-mail: ctpager@albany.edu
Office: Life Sciences 2051
Office Hours: Monday 1:30 – 2:30 pm or Thursday 12:00 – 1:00 pm

Instructor: Dr. Ing-Nang Wang, PhD
E-mail: ingnang@albany.edu
Office: Life Sciences 2082
Office Hours: Monday, Wednesday 1:00 – 2:00 pm

Contacting the instructors: The best way to get help from Drs. Pager and Wang is to ask questions during, before, or after class or to attend office hours. Please send an e-mail that you plan to attend office hours with ABIO 429/529 in the subject line and include a list questions you want to discuss. Questions submitted by email may require an office visit for explanation. Please do not call and leave questions via voicemail.

Pre-requisites: The pre-requisites for undergraduates include Introductory Genetics (ABIO 212Y) and Cell Biology (ABIO 301). Additionally, Biological Chemistry I (ABIO 365) is also a requisite for this course and may be taken as a co-requisite. The pre-requisite for graduate students is Advanced Cell Biology (ABIO 504 or 505) or Advanced Molecular Biology (ABIO 524). If you have not completed these prerequisites, please withdraw from the class or you will be deregistered automatically unless you have made special arrangements with the instructors.

Course Description: This is an introduction to the fundamentals of molecular virology. It is intended for biology majors and others planning a career in the biomedical sciences. The course covers the molecular strategies used by different viruses to enter cells, transcribe and replicate their genetic material, assemble, interact with the host interactions and evolve. These basic principles will provide the foundation to examine the strategies applied to control and prevent viral infections.

Learning Objectives: At the end of this course students should understand and be able to describe: the basic properties of viruses; the techniques and approaches used to study viruses; the replication strategies employed by different viruses; how viruses subvert their host to establish an infection and the consequences of such interactions on pathogenesis. Students are expected to develop an understanding of these fundamental principles such that they are able to think through and make predictions regarding: the control and prevention of viral infections; and the evolution, emergence and extinction of viruses. The application of concepts, critical thinking and data analysis will be further developed through review of current literature.

Course requirements

1. Textbook and Readings:

"Principles of Virology Volume I: Molecular Biology and Volume II: Pathogenesis and Control", 4th edition.
Authors: Jane Flint, Vincent R. Racaniello, Glenn F. Rall, Anna Marie Skalka. Publisher: Wiley.

Principles of Virology, Bundle (Volume I & II)

- Print ISBN 9781555819514
- e-ISBN 9781555819521

Principles of Virology Volume I: Molecular Biology:

- Print ISBN 9781555819330
- e-ISBN 9781555818951

Principles of Virology Volume II: Pathogenesis and Control

- Print ISBN 9781555819347
- e-ISBN 9781555818968

Any additional readings from the original scientific literature will be posted on Blackboard.

2. Lecture materials:

All lecture materials will be available for download from Blackboard Learn 9.1 https://blackboard.albany.edu/ Course materials, including lecture notes, will not be distributed in class. Lecture notes will be available for download prior to the class starting time. It is recommended that you download each lecture and bring it to class either on some form of digital media or as a printed copy. Please review the lecture slides for each lecture and the required reading in the textbook prior to coming to class.

3. Class participation:

Attendance in the class is expected. Please note that class participation accounts for 10% of your grade.

4. Exam format:

There will be two exams given, each worth 100 points. The exams are not cumulative i.e. each exam will only cover the materials covered after the previous exam and before the current exam. Examinations will be essay and short answer format given on the dates listed below. Exams will emphasize topics covered in class**. Please note that you should arrive for the exam on time. Once the first exam has been handed in and you arrive late you will not be allowed to take the exam.**

The only individuals allowed to take a makeup exam are those who missed a normally scheduled exams with legitimate reasons established by the University [For medical excuses see www.albany.edu/health_center/medicalexcuse.shtml]. That means the instructors should receive a memo from the Undergraduate Dean's Office stating that the student has a valid excuse for missing an exam and appropriate accommodation should be provided to him or her. **Any missed exam will be made-up during the scheduled time in Finals week (May 12, 2020, 1:00-3:00 pm).** The make-up exam will be cumulative (i.e. cover material from lectures 1-23).

5. Assignments:

Assignment 1 will consist of an oral presentation: The last 3 lectures are devoted to student presentations. The presentations are intended to expand upon the topics already covered in class. Grades for oral presentations will be based on individual contributions to the presentation. Each student will be individually evaluated on content and knowledge of the topic (15%), and presentation (5%). The grade for Assignment 1 will be scored by both the students (7.5%) and instructors (12.5%). *By participating in this peer-review, students can receive up to 4% credit towards the overall Class Participation score.*

- *Graduate student presentations (students registered for ABIO 529):*
  each student will identify a recent journal article (within the last 3 years) on a virus not covered in class. Each student is given 20 minutes to present an introduction, significance, results and impact of the paper on the field, and 5 minutes allowed for questions and discussion. ***Students must submit the journal article for approval before the first exam on February 27, 2020.*** *If you do not submit a journal article, one will be chosen for you.*

- *Undergraduate student presentations (students registered for ABIO 429):*
  Undergraduate students will give a group presentation of a virus from a virus within one of the virus groups classified by the Baltimore system. Each group will consist of 4-5 students and students will be randomly assigned to a group. Each group will draw the name of a particular virus group and may then choose the virus they wish to give a presentation on. The presentation should include aspects of virus entry, translation/replication, virus assembly, pathogenesis, evolution, and antiviral and/or vaccine strategies. Each group will be given 20 minutes to present and 5 minutes allocated for questions. All members are expected to contribute to the preparation and delivery of the presentation. ***Student groups must submit the virus and the specific sub-section presented by each member of the group before the first exam on February 27, 2020.*** *If you do not submit a virus topic, the instructors will assign a virus for the group.*

Assignment 2 will consist of 5 short written assignments. For Assignment 2, all students are required to listen to at least five "This Week in Virology (TWiV)" podcasts (http://www.microbe.tv/twiv/). The assignment can be any podcast aired between January 1 – April 30, 2020. Students are then required to submit a written report on the TWiV podcast that discusses what the podcast was about, what new knowledge about viruses did you gain, and if you had to submit two questions what would they be? Each assignment will be graded out of 10. Each student therefore can earn up to 4% for each written assignment (for a total of 20% towards your final grade). **The written reports should be a minimum of 200 words, typed with double-spacing. Please submit the assignments to Dr. Pager (ctpager@albany.edu) by no later than 5pm on the due date.** Late assignments will NOT be accepted or graded.

The dues dates for Assignment 2 are:

Assignment 2.1: February 7, 2020

Assignment 2.2: February 21, 2020

Assignment 2.3: March 13, 2020

Assignment 2.4: April 10, 2020

Assignment 2.5: May 1, 2020

Grade policy:

Grades for the semester will be determined as follows:

Midterm exam 1	25%
Midterm exam 2	25%
Assignment 1	20%
Assignment 2	20%
Class participation	10%
Total	100%

Grading:

Grades in this class are not curved. Your grade will be what you earned, regardless of how well or poorly the rest of the class does. Final grades will be awarded using the following division of letter grades:
A 94-100%, A- 85-93%, B+ 80-84%, B 75-79%, B- 70-74%, C 60-69% and D 0-59%

ABIO 429 / 529 Lecture schedule

Date	Day	Lec #	Topic	Lecturer
23-Jan	Thurs	1	Introduction, virus structure and classification	INW
28-Jan	Tues	2	Tools and techniques used to study viruses	INW
30-Jan	Thurs	3	Attachment and entry	CTP
4-Feb	Tues	4	Attachment and entry	CTP
6-Feb	Thurs	5	Attachment and entry	CTP
11-Feb	Tues	6	Synthesis of RNA from RNA templates	CTP
13-Feb	Thurs	7	Synthesis of RNA from RNA templates	CTP
18-Feb	Tues	8	Synthesis of RNA from RNA templates	CTP
20-Feb	Thurs	9	Reverse transcription and integration	CTP
25-Feb	Tues	10	Reverse transcription and integration	CTP
27-Feb	Thurs		**Exam 1 covering lectures 1-10**	
3-Mar	Tues	11	Processing of viral pre-mRNA	CTP
5-Mar	Thurs	12	Translational control	CTP
10-Mar	Tues	13	Intracellular trafficking	CTP
12-Mar	Thurs	14	Replication and Transcription strategies for DNA viruses	INW
17-Mar	Tues	-	*Spring break*	
19-Mar	Thurs	-	*Spring break*	
24-Mar	Tues	15	Replication and Transcription strategies for DNA viruses	INW
26-Mar	Thurs	16	Replication and Transcription strategies for DNA viruses	INW
31-Mar	Tues	17	Virus assembly and maturation	INW
2-Apr	Thurs	18	Virus assembly and maturation	INW
7-Apr	Tues	19	Innate immune response	INW
9-Apr	Thurs	20	Evolution and emerging viruses	INW
14-Apr	Tues	21	Bacteriophages and other weird viruses	INW
16-Apr	Thurs	22	Applications 1 Biotechnology	INW
21-Apr	Tues	23	Applications 2 Medicine	INW/CTP
23-Apr	Thurs		**Exam 2 covering lectures 11-23**	
28-Apr	Tues	24	Student presentations	
30-Apr	Thurs	25	Student presentations	
5-May	Tues	26	Student presentations	
6-May	Thurs		Reading day	
12-May	**Tues**		***Make-up exam 1:00-3:00 pm***	

ABIO 447 / 547 Cellular Aspects of Neurophysiology **Spring 2020 Syllabus**

Course number: ABIO 447 (Class no.) / ABIO 547 (Class no.)
Credit Hours: 3
Lecture times: Tue, Thu 08:45 – 10:05 AM
Lecture location: HU114

Instructor: Dr. Annalisa Scimemi, PhD
E-mail: ascimemi@albany.edu
Office: Biology 329
Phone: 518-442-4367

Office Hours: Tuesday, Thursday 10:30 – 11:30 AM

Pre-requisites: For ABIO 447, the pre-requisite is ABIO 121 General Biology. For ABIO 547, the pre-requisite is ABIO 341 Neurobiology or equivalent

Course description: This is an advanced undergraduate and graduate course. Previous knowledge of the basic principles of neurobiology is highly recommended. The Cellular Aspects of Neurophysiology course focuses on the molecular and cellular mechanisms of neuronal communication. The course covers ion channels in excitable membranes, synaptic transmission and synaptic plasticity. It correlates the properties of ion channels and synaptic transmission with their physiological functions, such as learning and memory and sensory information processing. It discusses the organization principles for the formation of functional neural networks at synapse and cellular levels. The course is organized in four major sections.

Learning objectives: At the end of this course, students are expected to strengthen their problem solving skills and develop a solid mechanistic and quantitative understanding of how the functional properties of neurons enable the execution of complex cognitive and motor functions in living organisms. Knowledge of fundamental mathematical operations, including logarithms multiplications and divisions using base ten, as well as unit conversions are necessary for this course.

Course Requirements:

1. Lecture Schedule:
Section I
1. Overview of neuronal communication
2. Ion movement in excitable cells
3. Electrical properties of the excitable membrane
4. Functional properties of dendrites

Section II
5. Nonlinear properties of excitable membranes

6. Hodgkin and Huxley's analysis of the squid giant axon
7. Functional diversity of voltage-gated ionic conductances

Section III
8. Molecular structure of unitary currents of ion channels
9. Stochastic analysis of single-channel function
10. Formulation of stochastic channel mechanisms
11. Synaptic transmission I: pre-synaptic mechanisms

Section IV
12. Synaptic transmission II: Ca2+ and transmitter release
13. Synaptic transmission III: post-synaptic mechanisms
14. Extracellular field recordings
15. Cellular physiology of learning and memory

Modeling of ion channels, reaction diffusion simulations and lab visits are part of the core program for this course. Students should bring their laptop to each class and notify the instructor of any technical issue, including WiFi connection, within the first two classes of this course.

At the end of each section, there will be a Recap Class in which the graduate student will provide an oral presentation of the topics covered in the previous classes, complemented by summaries of original research papers, selected by the students and approved by the instructor. Two undergraduate students are expected to teamwork with the graduate student to prepare the Recap Class. All undergraduate students are expected to actively participate in the discussion during the recap classes. The dates for the exams and assignments for recap classes will be provided in class.

2. Required Textbook:
"Foundations of Cellular Neurophysiology". Johnston and Wu. MIT Press.

3. Further Readings:
"Ionic Channels of Excitable Membranes" 3rd Ed. Hille. Sinauer Associates.

4. Course material:
All course material is available on Blackboard.

5. Attendance:
Participation in class is required, but each student can miss at most two classes. The final grade for the course will be dropped by a third of a letter for each absence after two classes are missed (for instance, a grade of C+ would drop to a C with 3 absences). Excused absences can be obtained by providing a doctor's note or a note from the Dean's office.

6. Classroom technology:
We will be using the Top Hat (www.tophat.com) classroom response system in class. TopHat will be used to

monitor students' attendance to classes. Students will be able to submit answers to in-class and weekly homework questions using Apple or Android smartphones and tablets, laptops, or through text messages. Visit http://tinyurl.com/THStudentRegistration for the Student Quick Start Guide which outlines how you will register for a TopHat account, as well as providing a brief overview to get you up and running on the system. An email invitation will also be sent to your email account. The course join code is 774278.

Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing. Should you require assistance with TopHat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491.

There are three available subscription options to choose from:

One term	$20 for 4 months of access to the TopHat App
Annual	$30 for one full-year access to the TopHat App
Four Year	$60 for lifetime student access to the TopHat App

Students will be assigned 4-10 TopHat questions for each class and as part of weekly homework.

7. Grade Policy:

Grading for graduate students (ABIO 547): The final grade is based on: (1) the score of the four exams, (2) the final TopHat participation score; (3) contribution to presentation and active discussion during the Recap Classes. Each exam is worth 100 points. The final TopHat participation score is worth 100 points. Active participation in each Recap Class is worth 100 points. The exams average accounts for 80% of the final grade. The TopHat participation score accounts for 10% of the final grade. The active participation in the Recap Classes accounts for 10% of the final grade. The grade cutoffs will be presented in class. If a midterm exam is missed due to illness, please contact the instructor within 24 hr. To take a make-up exam, you must present a doctor's note or a note from the Dean's office. Make-up exams can be taken only within a week from the missed exam date. If special circumstances make this impossible, you must discuss other options with the instructor.

Grading for undergraduate students (ABIO 447): The final grade is based on the score of the four exams and TopHat scores. Each exam is worth 100 points. In each section, participation to TopHat questions is worth 100 points. The exams average accounts for 85% of the final grade. Average participation to TopHat questions and homework accounts for 15% of the final grade. The grade cutoffs will be presented in class. If a midterm exam is missed due to illness, please contact the instructor within 24 hr. To take a make-up exam, you must present a doctor's note or a note from the Dean's office. Make-up exams can be taken only within a week from the missed exam date. If special circumstances make this impossible, you must discuss other options with the instructor.

8. Study resources:

The emphasis of this course is on problem solving. Students that come to class, take good notes, study from the textbook and notes, master the material successfully. Students that tend to focus on getting the correct answer to a problem rather than being sure they understand the material behind it are much less successful. A useful

studying strategy is outlined below:

- Study each class after it is being presented: do not procrastinate your study session to the week of the exam.
- Include the course materials that are posted on Blackboard: Lecture slides, study questions, videos and other online content, etc.
- All course material for each exam will be identified in class. The required readings are testable. The optional readings are available to further your understanding of the material.
- Form a study group with other students in the class and meet regularly with a prepared agenda of topics to be covered.
- Rewrite your lecture notes, integrating the reading material where appropriate. This will help you organize the material and determine where there are gaps in your knowledge. You can then submit your written questions by email or in person to the instructor.
- Don't be shy: ask questions in class, go to office hours or contact directly your instructor if any part of the material is not clear.

9. Instructions for taking examinations:

You will need your SUNY Card ID and your Student Number (not the SUNY Card number), and pencils (pens OK, but cannot be erased). Academic dishonesty will not be tolerated and it will be dealt with according to the College of Arts and Sciences policies, as described here:
http://www.albany.edu/undergraduate_bulletin/regulations.html

10. Exam Dates:

- Thursday February 20, 2020
- Thursday April 2, 2020
- Tuesday May 5, 2020

11. Recap Classes:

Tuesday February 18, 2020	Grad: Bennink, Mitchell
	Junior Undergrad: Doherty
	Senior Undergad: Abreu, Ahmad, Barron
Tuesday March 31, 2020	Grad: Bennink, Mitchell
	Junior Undergrad: Wasserman
	Senior Undergad: Bureau, Eliot, Gaglia
Thursday April 30, 2020	Grad: Bennink, Mitchell
	Junior Undergrad: Whitacre
	Senior Undergad: Pani, Tuttman, Tyndale

ABIO 454 / 554 Introduction to the Biomanufacturing of Pharmaceuticals
Spring 2020 Syllabus

Course number: ABIO 454 (Class no.) / ABIO554 (Class no.)
Credit Hours: 3
Lecture times: Tuesday and Thursday 11:45 am to 1:05 pm
Lecture location: BB151

Instructor: Professor Thomas J. Begley, PhD
E-mail: tbegley@albany.edu
Office: Life Sciences 1003N
Phone: (518) 437 - 4486

Office Hours: Wednesday and Thursday from 4 to 5 pm, or by appointment.

Pre-requisites: ABIO 212Y, or permission of instructor

Course description: The class is structured to introduce students to protein and nucleic acid-based pharmaceuticals and the process of biomanufacturing.

Learning objectives: In this course students will:

- gain in depth knowledge on the parameters of protein and nucleic acids-based pharmaceuticals that affect their efficacy and mechanism of action, as well details on how pharmaceuticals are validated for use in humans
- be introduced to the cell-based production of proteins, purification techniques, and microbiology concerns specific to biomanufacturing
- be introduced to blockbuster pharmaceuticals and late breaking trends in biomanufacturing. Students will learn and apply fundamental concepts in the areas of biology, chemistry, pharmacology, toxicology, and molecular biology to gain a broad understanding of pharmaceutical mechanism of action and the biomanufacturing process
- develop verbal and written communication skills though presentations and homework assignments
- be introduced to team-based science, through group project work and group assessments
- be able to critically evaluate the work of their peers and be required to demonstrate broad knowledge of the biomanufacturing and pharmaceutical fields
- be required to explain how new technologies intersect with biomanufacturing and will theorize future application areas and/or areas of future improvements.

Course Requirements:

1. There is no required textbook. Handouts, review articles and late breaking journal articles provided by the

instructor.

2. Class notes and all other materials will be posted on Blackboard. b. Blackboard folder: Spring2020 - ABIO454/554 - Introduction to Biomanufacturing Pharmaceuticals
3. Absentee policy. Students are required to attend class and participate in group discussions. No make-up tests will be given. Students are advised to adhere to the Universities policies on absences. https://www.albany.edu/health_center/medicalexcuse.shtml
4. Academic integrity. Students work on the honor system and are required to develop and submit their own work. Students are advised to adhere to the University's Standards of Academic Integrity: https://www.albany.edu/undergraduate_bulletin/regulations.html
5. Students taking ABIO 554 are required to develop and deliver a "Special Topics Presentation" lecture specific to the class learning objectives. These lectures are developed and practiced in consultation with Professor Begley and use current literature or work experiences to report new details or late breaking trends in biomanufacturing and pharmaceuticals.

Grading Policy:

Undergraduate (ABIO 454)

Exams (4 exams; each 20%)	80%
Homework/Test 5 Project:	15%
Class Participation:	5%

Graduate (ABIO 554)

Exams (4 exams; each 15%)	60%
Special Topics Presentation:	15%
Homework/Test 5 Project:	15%
Class Participation:	10%

Grading Scale:

A	93-100%
A-	90-92%
B+	87-89%
B	83-88%
B-	80-82%
C+	77-79%
C	73-78%
C-	70-72%
D+	67-69%
D	63-68%
D-	60-62%
E	0-59%

ABIO 454/554 Lecture Schedule

Day	Date	Topic
Thurs	23-Jan-20	Class Overview, Types of Pharmaceuticals and Overview of Development
Tues	28-Jan-20	Biologics Development and Manufacturing, Trends and Pressing Issues - Biology Basics I
Thurs	30-Jan-20	Biology Basics II: Pharmacology
Tues	4-Feb-20	Biology Basics III: Toxicology
Thurs	6-Feb-20	Protein Synthesis and Protein Characteristics (sequence, IP, motifs)
Tues	18-Feb-20	Protein Structure, Stability and Degradation - Intro to group projects
Thurs	**11-Feb-20**	**Exam 1**
Tues	13-Feb-20	Introduction to Biomanufacturing, Proteins, Antibodies and Vaccines I
Thurs	20-Feb-20	Proteins, Antibodies and Vaccines II
Tues	25-Feb-20	Cell Culture Models and Techniques for Biomanufacturing - 2 minute presentations by each group
Thurs	27-Feb-20	Fermentation and Recombinant Organisms used in Biomanufacturing
Tues	3-Mar-20	Bioseperation and Protein Purification Techniques
Thurs	5-Mar-20	Peptide Therapeutics I
Tues	**10-Mar-20**	**Exam 2**
Thurs	12-Mar-20	Peptide Therapeutics II
Tues	17-Mar-20	*No class*
Thurs	19-Mar-20	*No class*
Tues	24-Mar-20	Nucleic Acid Based Pharmaceuticals
Thurs	26-Mar-20	CART's - Immunotherapy
Tues	31-Mar-20	Beyond CART'S - other types of Biomanufactured treatments
Thurs	2-Apr-20	Antivirals - where are they on biologics spectrum?
Tues	7-Apr-20	Late Breaking trends in biomanufacturing *Poster Draft Due*
Thurs	9-Apr-20	Project Presentations: Company_Biologic_Process_1 - presentation
Tues	**14-Apr-20**	**Exam 3**
Thurs	16-Apr-20	Project Presentations: Company_Biologic_Process_2 - presentation
Tues	21-Apr-20	Project Presentations: Company_Biologic_Process_3 - presentation
Thurs	23-Apr-20	Project Presentations: Company_Biologic_Process_4 - presentation
Tues	28-Apr-20	Showcase Day - Attend and assignment
Thurs	30-Apr-20	Biomanufacturing career logistics and progressions (Special Topics Presentation)
Tues	**5-May-20**	**Exam 4**

TBIO 260 / ABIO 460 The Neural Basis of Behavior **Spring Syllabus**

Course number: TBIO 260 (Class no.) / ABIO 460 (Class no.)
Credit Hours: 3
Class times: TBD
Class location: TBD

Lecturer: Dr. Gregory Lnenicka Ph.D.
E-mail: gregl@albany.edu
Office: Life Sciences Research Building 1038
Phone: 518-591-8812

Office Hours: By appointment

Prerequisites: ABIO 130 or ABIO 121, ABIO 131 or ABIO 120

Course Description from the Undergraduate Bulletin: An analysis of the neural basis of innate and learned behaviors, as well as the neurological deficits accompanying lesions of different parts of the brain. Emphasis will be placed on sensory processing, reflexive behavior, feature extraction and behavioral triggers, using simple learned behaviors amenable to analysis at the neuronal level, including analysis of membrane electrical activity, chemical synaptic activity and neuromodulation. Feature extraction will be considered as the basis of visual localization and prey (insect) capture in toads and in echo localization and insect capture in bats. Analysis of brain lesions will include both behavior and simultaneous brain imaging to connect the deficits with specific brain regions, and will cover semantic/episodic learning and amnesia, as well as speech/language comprehension. We will also discuss prospects for transplanting brain stem cells to cure diseases caused by cell death of specific neurons. *TBIO 260 is the Honors College version of ABIO 460.* Only one can be taken for credit. Neuroscience minors can take only one of TBIO 260 and TPSY 214 for credit toward the minor requirements. TBIO 260 is only open to Honors College students only.

Course Objectives: At the end of this course, students should understand and be able to describe:

- the structure and function of neurons
- membrane potential and action potential and how these contribute to neuron function.
- the neural basis of innate and learned behaviors
- sensory processing, reflexive behavior, feature extraction and behavioral triggers
- how simple learned behaviors and membrane electrical activity, chemical synaptic activity and neuromodulation are amenable to analysis at the neuronal level
- feature extraction and localization cues facilitate animal behavior
- the outcomes of neural disease on behavior

Course Requirements:

Textbook: Simmons and Young: Nerve Cells and Animal Behavior, 3rd Ed (2001)

Readings: The course will include the basics of neural signaling, followed by extensive readings from Scientific American and books as well as selected papers from the primary literature. After reviewing the initial basics of neural function, the course will feature *discussions* (dates marker ***D*** below) centered around the readings on the variety of topics listed above.

Blackboard: Readings and powerpoint slides will be posted on Blackboard

Assessment: Grades will be based upon one midterm and one final exam, class participation, and class presentations. Class participation and class presentations will be graded by fellow students and the instructor.

1. **Exams** will be written answer essays, and sample exam questions will be given ahead of time for practice.
2. **Class presentations** (in last 2 weeks of class) by pairs of students will be 25-30 minutes and cover research papers (not reviews) from the literature. Suggested topics will be listed on the website with possible references, and further readings on topics from the textbook. Topics and partners must be submitted for approval by midsemester.
3. **Attendance** is required. Non-attendance will be noted as lack of participation and affect your grade.

Grading Policy:

The following provides the percentage breakdown of the final grade:

Assessment	Percentage
Midterm Exam	25%
Final Exam	25%
Class presentation	20%
Class participation	30%

TBIO 260 / ABIO460 Class Schedule:

Lecture no.	Topic	Readings
1	Introduction and History of Neuroscience	• Albright et al. (2000) History of Neuroscience in Review, Neuron 44
2	Neurons as building blocks, basics of the membrane potential and action potential	• Simmons & Young, Ch 1 • Edwards, Permeant Ions Impermeant Ions… Nichols et al (2001) From Neuron to Brain, 4th Ed. Ch 6
3	Synaptic transmission and simple synaptic circuits for innate reflexes	• Simmons & Young, Ch 2. • Nichols et al (2001) From Neuron to Brain, 4th Ed. Ch 9
4 [D]	Command Neurons: prey capture in toad and escape responses in cockroach	• Simmons & Young, Ch 3
5 [D]	Command Neurons and escape responses in crayfish and vertebrate fish	• Simmons & Young, Ch 4
6 [D]	Insect Vision: Sensory filtering and course control	• Simmons & Young, Ch 5
7 [D]	Vision: processing in the retina, the retinotectal maps and visual localization.	• Johnston & Lagnado (2012) What the fish's eye tells the fish's brain. Neuron 76: 257-259. • Semmelhack et al. (2014), A dedicated visual pathway for prey detection in larval zebrafish. eLife 3:e04878
8 [D]	Papers on prey capture in the toad, fish	• Gahtan et al (2005), Visual prey capture in larval zebrafish is controled by identified reticulospinal neurons downstream of the tectum. J Neuroscience 25: 9294-9303. • Del Bene et al. 2010, Filtering of visual information in the tectum by an identified neural circuit. Science 330: 669-673.
9 [D]	Retinotectal plasticity and prey capture	• Schmidt JT 1982 The formation of retinotectal projections. Trends in Neuroscience 5: 111-116. • Northmore DPM 1981 Visual localization after rearrangement of retinotectal maps in fish. Nature 293: 142-43. • Schmidt JT & Buzzard M 1993 Activity-driven sharpening of the retinotectal projection in goldfish: Development under stroboscopic illumination prevents sharpening. J Neurobiology 24: 384-99.
10 [D]	Hunting and localization by bats	• Simmons & Young Ch. 6. (Bat section)
11 [D]	Localization via auditory map in owl tectum	• Simmons & Young Ch. 6. (Owl section)
12 [D]	Localization via auditory map in owl tectum & plasticity	• Knudsen, EI (2002) Instructed learning in the auditory localization pathway of the barn owl. Nature 417: 322-328. • Knudsen, EI and Knudsen PF (1990) Sensitive and critical periods for visual calibration of sound localization by barn owls. J Neuroscience 10: 222-232.
Pass out Take Home exam questions for Midterm exam – complete in 1-week.		

13 [D]	Developmental plasticity during critical periods, learning and the Hebb Mechanism	• Lisman 1989 A mechanism for the Hebb and anti-Hebb processes underlying learning and memory. PNAS 86: 9574-9578. • Lisman et al 2002. The molecular basis of CamKII function in synaptic and behavioral memory. Nature Reviews Neuroscience 3: 175-190.
-	*No class—time off to work on midterm exam*	
-	*Spring break*	
14 [D]	Localization and plasticity of Brain maps of sensory input (homunculus in somatosensory and motor cortices, enlarged nose representation in star mole, barrel fields for analysis of whisker inputs in rodents. Discussion of papers on plasticity of cortical maps in systems above. ***Midterm due at end of lecture***	• Merzenich M 1998. Long term Change of Mind. Science 282: 1062-64. (Short commentary) • Merzenich M & Jenkins WM 1993. Reorganization of cortical representations of hand following alterations of skin inputs induced by nerve injury, skin island transfers, and experience. J Hand Therapy p89-104.
15 [D]	Mammalian visual cortex: Eye-specific & orientation selective columns in Cortex and their plasticity during development	• Hubel & Wiesel 1963 The Visual Cortex of the Brain Sci. Am. • Tropea, van Wart & Sur 2009 Molecular Mechanisms of experience-dependent plasticity in Visual Cortex. Phil. Trans Royal
16 [D]	Human recording of the fusiform face area—recognition of faces, analysis of objects.	• Quiroga RQ et al. 2005. Invariant visual representation by single neurons in the human Brain. Nature 435; 1102-1107. • Quiroga RQ et al. 2009. Explicit encoding of multimodal percepts by single neurons in humans. CurrBiol 19: 1308-1313. • Gross C. 2010 Making sense of printed symbols. Science 327: 524-525. (a brief commentary)
17 [D]	Drosophila mating behavior and effects of dark rearing and visual deprivation	• Hirsch 1994 The Flexible Fly J Exp Biol 195: 1-18.
18 [D]	Speech and Language Comprehension in brain—Wernicke and Broca's areas & Split Brain in man—two consciousnesses in one person after section of the corpus callosum	• Geschwind, N "Specializations of the Human Brain" Scientific American • Gazzaniga, MS "The Split Brain in Man" Scientific American
19 [D]	The strange story of Henry Molaison and his total amnesia after surgical removal of his hippocampus. Types of memory.	• Mishkin, M and Appenzeller, T "The Anatomy of Memory" Scientific American • Squire, LR Memory and Brain. Ch • Blakemore C Mechanics of the mind, Ch 4 A Child of the Moment
20 [D]	Sleep and memory consolidation; manipulation of memory consolidation	Oudiette and Paller (2013) Upgrading the sleeping brain with targeted memory reactivation Trends in Cogn. Sci 17:142-149.
21 [D]	The Social Brain	• Frith & Frith (2010) The Social Brain: allowing man to go … Phil Trans Royal Soc • Hillis (2014) Inability to empathize: brain lesions that disrupt sharing and understanding another's emotions. Brain 137: 981-7.
22 [D]	Mirror Neurons and Mirror test for consciousness –	• Buccino et al. 2004 The Mirror Neuron

	what makes us different from the great apes?	System and action recognition. Brain & Language 89: 370-376. • Mukamel et al. 2010 Single neuron responses in humans during execution and observation of actions. Current biology 20:750-756.
23	Synthetic heroin drug toxicity causing Parkinsons Disease in young users and the research spurred by this unfortunate human experiment.	Video - Nova program/PBS
24	Class presentations of pairs of students.	
25	Class presentations of pairs of students.	
26	Class presentations of pairs of students.	

ABIO 475 / 575 Forensic Biology I — Fall Syllabus

Course number: ABIO 475 (Class no.) / ABIO 575 (Class no.)
Credit Hours: 3
Lecture times: Friday 8am – 12pm
Lecture location: TBD

Instructor: Dr. Arati Iyengar PhD
E-mail: aiyengar@albany.edu
Office: Biology 225

Office Hours: Tuesday 1-2pm, Thursday 4-5pm or email for appointment.

Pre-requisites: For ABIO 475, the pre-requisite is ABIO 425 Molecular Biology (or equivalent) or with permission of the instructor. For ABIO 575 the student must be of Graduate Standing or with permission of the instructor.

Course Description: In this 3-credit lecture (1 credit) and laboratory (2 credits) course, students will learn about many of the techniques routinely carried out in forensic biology laboratories. They will begin with search and recovery of mock biological evidence, move on to serological testing of body fluids, and then spend several weeks focusing on DNA techniques. Students will extract and quantify DNA using three different methods and generate a DNA profile using state of the art methodology. They will also learn about the use of Single Nucleotide Polymorphisms (SNPs) in forensic science. An additional lab fee will be required for this course.

Learning Objectives: In this course, students will:

- gain a critical understanding of a number of key applications of forensic biology techniques.
- develop a number of fundamental forensic biology laboratory skills.
- learn proper record keeping, laboratory Quality Assurance/Quality Control requirements and performing routine laboratory calculations.

Course Policy:

1. **Attendance:**
   Attendance is mandatory for all sessions and for the entire duration. Please click on the following link for additional information on Absence Policy, including, the University's Medical Excuse Policy: http://www.albany.edu/health_center/medicalexcuse.shtml.

2. **Grade Policy:**

	ABIO 475	ABIO 575
In-class quizzes (X5)	50 points	50 points
Serology report	20 points	15 points
Laboratory notebook	30 points	15 points
Examination	n/a	20 points

a. In-class quizzes
Five quizzes worth 10 points each will be held in class throughout the course.

b. Serology report (10 %)
You will write a report on your results from a serological test.

c. Laboratory notebook (35 % for ABIO475, 15 % for ABIO575)
You will submit your laboratory notebook from the laboratory sessions on DNA extraction and DNA quantitation. Notes must be hand-written and submitted as a hard copy before the deadline for submission.

d. Examination (ABIO575 only, 20 %)
Exam questions will be placed on Blackboard 2 weeks before due date. Questions will be based around topics covered in lectures and labs but student will be required to carry out additional independent research using peer reviewed journal articles. For example, a broad topic such as 'Challenging forensic samples' may be covered in lectures with directed reading, but the exam question may be as follows: *Discuss recent advances in DNA typing of challenging forensic samples.*
This will require students to not only revise material covered in lectures/labs but also carry out some research by finding relevant recent journal articles on the subject and prepare answers.
Answers must be submitted through Blackboard before the deadline for submission.
Assignments handed in late will result in 10% taken off for every day late and assignments that are 7 days late will not be graded.

Grade scale:
ABIO 475/575 will be letter-graded (A-E). Each student's final letter grade for this course will be based on the total number of points earned (see below).

A = 95 points or more
A- = 90 to 94 points
B+ = 87 to 89 points
B = 83-86 points
B- = 80-82 points
C+ = 77-79 points
C = 73-76 points
C- = 70-72 points
D+ = 67-69 points
D = 63 to 66 points
D- = 60-62 points
E = 59 points or less (also given for plagiarism)

3. Academic integrity:
Every student has the responsibility to become familiar with the standards of academic integrity at the University. "Claims of ignorance, unintentional error, or personal or academic pressures cannot be excuses for violation of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly." (http://www.albany.edu/undergraduate_bulletin/regulations.html.) or (https://www.albany.edu/graduatebulletin/requirements_degree.htm).

4. Accommodation Policy:

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 137, 442-5490). That office will provide the course instructor with verification of your disability and will recommend appropriate accommodations.

5. Laboratory Attire:

All students in this course must wear gloves, a lab coat, and appropriate eye protection when working in the lab. Eating, drinking shorts and open-toed shoes are prohibited in the lab.

6. Textbooks and Journals:

The following textbooks are required for this course but in order to pass the course, you will also be required to read peer-reviewed journal articles.

Forensic Science. From the crime scene to the crime lab. Second edition.
Saferstein R
2012
Pearson
ISBN: 9780131391871

Forensic Biology. Second edition.
Li R
2015
CRC Press
ISBN: 978143988972

Fundamentals of Forensic DNA Typing
JM Butler
2010
Academic Press
ISBN: 9780123749994

A few journals where you may find relevant articles are listed below:
Forensic Science International
Forensic Science International: Genetics
Journal of Forensic Sciences
PeerJ
Science and Justice
International Journal of Legal Medicine

ABIO 475 / 575 Tentative Lecture/Lab Schedule

Date	Topic
	Introduction Lab: Correct use of a micropipette Lambda DNA dilutions and agarose gel electrophoresis
	Lecture: Biosafety (Michelle McConville, Biosafety Officer, UAlbany) Lecture: Search and Recovery of Biological Evidence Lab: Collection of biological evidence and Alternate Light Source (ALS)
	Lecture: Body fluids and serology I Lab: Presumptive and confirmatory testing of body fluids I
	Quiz Lecture: Body fluids and serology II Lab: Presumptive and confirmatory testing of body fluids II
	Lecture: DNA extraction and real-time PCR Lab: DNA extraction
	Quiz Lecture: The Forensic DNA laboratory Lab: DNA quantitation using QuantifilerTM Duo
	Serology Report due Lecture: Accreditation – Understanding what it takes to operate a Forensic Laboratory in New York State (Dr. Lori Ana Valentin, NYSP) Lab: Analyze quantitation results
	Quiz Lecture: STRs I Lab: Set up Identifiler® PCR
	Lab notebook due Lecture: STRs II Lab: Capillary Electrophoresis
	Quiz Lecture: STRs III Lab: Genemapper 5 for analysis of Identifiler® profiles
	Lecture: STRs IV Lab: Set up IrisPlex SNP PCRs
	Quiz Lecture: SNPs I Lab: Analysis of PCR products and RFLP setup
	Lecture: SNPs II Lab: RFLP analysis
	Exam due

ABIO 477 / 577 Forensic Science Fall 2020 Syllabus

Course number: ABIO 477 (Class no.) / ABIO 577 (Class no.)
Credit Hours: 3
Lecture times/location: ABIO 477 - online. ABIO 577 - 12:00-5:00 PM in Biology Rm 245

Instructor: Dr. Ryan Thurman, PhD
E-mail: RThurman@albany.edu
Office: Biology 222B
Phone: 518-442-4379
Office Hours: Monday, Wednesday, and Friday 10:30 AM – 12:30 PM

Pre-requisites: ACHM 121 General Chemistry II and ABIO 175 Forensic Science Investigation

Course Description: Forensic Science (ABIO 477/577) will introduce students to commonly used forensic science techniques and instrumentation. Topics covered in this laboratory course will include pattern evidence, microscopy, ballistics, forensic chemistry, forensic biology, toxicology, crime scene collection, laboratory safety and quality assurance. Students will follow standard operating procedures with regard to documentation, sample preparation, data collection and analysis and reporting. The laboratory will conclude with students working a sample case, reporting their findings in a written report and oral presentation.

Learning Objectives: In this course, students will:

- learn the responsibilities and methods to ensure laboratory safety, sample reporting, and data presentation.
- be able to describe and apply the methodology and theory that are important to trace evidence, microscopy, materials analysis, ballistics, forensic biology, and pattern evidence.
- gain the knowledge of chemical and instrumental principles and techniques commonly used in forensic chemistry and toxicology.
- Able to perform an independent investigation on a sample case (mock evidence), make conclusions on the samples provided in the case, and report and present their findings in a written report and oral presentation.
- discuss the ethical challenges in forensic science.
- discuss proper crime-scene investigation standards on collection, evidence, preservation, and chain-of-custody.

Course Overview:

1. This course is only offered online for those *signed up for ABIO 477*. As a result, the following changes will be implemented:
   a. **Lecture:** At the start of class, you must attend lecture that will be live streamed on ZOOM. The

powerpoint slides and additional material will be available to you on Blackboard.

b. **Laboratory:** I will be posting all of the data that you will need to complete the laboratory work this semester. After you review your cases you will be required to write-up the cases and submit them the following week. I will be available to answer any of your questions during office hours, laboratory hours, or anytime by email.

2. Required Reading List:
   a. Articles: National Research Council. 2009. Strengthening Forensic Science in the United States: A Path Forward. Washington, DC: National Academy of Sciences. DOI: 10.17226/12589
   b. Textbook: Suzanne Belle. Forensic Chemistry. 2006 ISBN-13: 978-0131478350
   c. Journals:
   Journal of the American Chemical Society
   Journal of Organic Chemistry Journal of Analytical Chemistry Journal of Forensic Science
   Journal of the Canadian Society of Forensic Science
   Nature Methods
   Toxicology
   Archives of Toxicology
   Toxicological Sciences

3. Grade Policy for ABIO 477/577:

ABIO 477/577 will be letter-graded (A-E). Each student's final letter grade for this course will be based on the total number of points earned (see above). This course will also include (+/-) in the final letter grading scheme.

Assessment	**ABIO 477**	**ABIO 577**
Exam 1	30%	30%
Exam 2	30%	30%
Criminal case	5%	5%
Process and analyze evidence collected from a mock crime scene	Analyze a mock case. This will include writing a report. 20%	Analyze a mock case. This will include writing a report.
Written report with analysis and interpretation of mock evidence	Mock trial. 477 student will participate as the forensic scientist on the stand. 5%	Mock trial. 577 student will participate as the forensic scientist on the stand. 20%
Laboratory Reports	15%	15%

Grading Scale:

A	100-94%	C	76-74%
A-	93-90%	C-	73-70%
B+	89-87%	D	69-60%
B	86–84%	E	59% or lower
B-	83-80%		
C+	79-77%		

a. Criminal Case:
You must attend a criminal case at a local courthouse. This case may be a murder, theft, stabbing or drug related offense. You need to provide me with the case number, defendant's name, evidence discussed, and the name/position of the expert witness.

b. Exams:
All exams will be essay and/or problems. The exams will be take-home exams. Use of notes and literature are allowed. You may not work or collaborate with any other students during the week of the exam.
Missed Exams or late exams: Make-up exams will only be offered to students who missed an exam due to incidents such as illness, emergencies, and tragedy. If you are going to miss an exam or the return deadline then you need to contact me before the exam so you can take the exam at a later time.

c. Laboratory Notebook:
Each student will need a laboratory notebook to record and write-up each of the labs performed in the course. A lab report must be complete for every lab unless otherwise stated. Lab notebooks will be periodically reviewed for completeness, accuracy, repeatability and results.

d. Report and testimony (ABIO 477/577):
ABIO 577 students will be required to process, sample and analyze samples that have originated from a mock crime scene. The analysis will contain a complete report that includes the sample description, packaging, sampling amount, and comprehensive testing to identify or compare evidence from the mock crime scene. The written report must contain the sample physical, chemical or comparative identity. The next week you will be required to defend your sample testing in a mock trial.

e. Criminal Case:
Attend any criminal case and write summary of a witnesses, expert or officer's statement on the stand.

4. Accommodation Policy:
Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 137, 442-5490). That office will provide the course instructor with verification of your disability and will recommend appropriate accommodations.

5. Attendance:
Mandatory. If you cannot get to class, contact Dr. Thurman in advance. Furthermore, you must bring a written excuse (i.e., Doctor's excuse) to Dr. Thurman (Biology 228) for approval for missing the lab. Undefined absences on your part will result in a failing grade for all assignments that week. All students are also expected to stay until the laboratory period is complete. Do not schedule doctor appointments, work, etc. for a time that will interfere with lab. Please click on the following link for additional information on Absence Policy, including, the University's Medical Excuse Policy:

http://www.albany.edu/health_center/medicalexcuse.shtml. A class withdrawal is strongly recommended for students who have missed two or more laboratory periods.

6. **Participation:**
   When a guest lecturer is presenting to the class you are expected to attend and participate. Your participation will be a portion of your overall lab grade.

7. **Academic Integrity:**
   See Undergraduate Bulletin for details. Deviations will be treated according to university regulations. "Claims of ignorance, unintentional error, or personal or academic pressures are not sufficient reasons for violations of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly." (University's Standards of Academic Integrity Policy: http://www.albany.edu/undergraduate_bulletin/regulations.html).

8. **Safety Policy:**
   All ABIO 477/577 students must wear gloves, a lab coat or lab apron, and appropriate eye protection when working in Biology 244. The lab coat and eye protection can be purchased at the Chemistry Store (B-44), whereas gloves will be made available by the ABIO 477/577 supervisor. Eating and drinking are prohibited in Biology 244.

ABIO 477 / 577 Laboratory Schedule:

Date	ABIO 477	ABIO 577	Written report
25-Aug	Crime scene investigation	Crime scene investigation	
1-Sep	Crime scene investigation (Brian Kenney)	Crime scene investigation (Brian Kenney)	Report
8-Sep	Microscopy	Microscopy	
15-Sep	Hair/Fiber	Hair/Fiber	Report
22-Sep	Gas Chromatography – Intro	Gas Chromatography - Intro	
29-Sep	GC/TLC of a mixture	GC/TLC of a mixture	Report
6-Oct	**Exam 1**	**Exam 1**	
13-Oct	Fall Break – No class	Fall Break – No class	
20-Oct	GC-MS of residues	GC-MS of residues	Report
27-Oct	Forensic Toxicology	Forensic Toxicology	Report
3-Nov	Nitrocellulose testing	Nitrocellulose testing	Report
10-Nov	**Exam 2**	**Exam 2**	
17-Nov	Sample case	Sample case	Report
24-Nov	Mock Trial	Mock Trial	Mock Trial

Before Lab you should:

1. Read through the entire lab, review the methods and reporting.
2. Read the literature that is listed under "Required reading."

During lab:

1. Keep a meticulous record of your tests, sample, methods and results.
2. Record any spectral or instrumental information that you will need in your report.

After Lab:

Using the criteria at the end of the lab and the data you collected you should complete a report. There are sample reports at the end of the chapter. The sample reports at the end of the chapter does not contain raw data. Your report and all forensic reports should include the raw data. Place the raw data in order of the sample numbers references in the report.

This syllabus is subject to change at the discretion of Dr. Thurman.

ABIO 478 / 578 Instrumental and Biochemical Analysis Fall 2020 Syllabus

Course number: ABIO 478 (Class no.) / ABIO 578 (Class no.)
Credit Hours: 2
Lecture times/location: Biology Room 209/211 8:00 AM – 12:00 PM Thursday

Instructor: Dr. Ryan Thurman PhD
E-mail: RThurman@albany.edu
Office: Biology 222B
Phone: 518-442-4379
Office Hours: Monday, Wednesday, and Friday 10:30 AM – 12:30 PM

Pre-requisites: ACHM 121 General Chemistry II and ABIO 175 Forensic Science Investigation

Course Description: Instrumental and Biochemical Analysis (ABIO 478/578) will introduce students to commonly used forensic science techniques and instrumentation. Topics covered in this laboratory course will include common instrumentation and techniques used in forensic investigations. Students will follow standard operating procedures with regard to documentation, sample preparation, data collection and analysis and reporting. The laboratory will conclude with students working a sample case, reporting their findings in a written report and an oral presentation.

Learning Objectives: In this course, students will:

- learn the responsibilities and methods to ensure laboratory safety, sample reporting, and data presentation.
- be able to describe and apply the methodology and theory that are important to trace evidence, microscopy, materials analysis, ballistics, forensic biology, and pattern evidence.
- gain the knowledge of chemical and instrumental principles and techniques commonly used in forensic chemistry and toxicology.
- Able to perform an independent investigation on a sample case (mock evidence), make conclusions on the samples provided in the case, and report and present their findings in a written report and oral presentation.
- discuss the ethical challenges in forensic science.
- discuss proper crime-scene investigation standards on collection, evidence, preservation, and chain-of-custody.

Course Overview:

1. This course is only offered online for those *signed up for ABIO 478*. As a result, the following changes will be implemented:
   a. **Lecture:** At the start of class, you must attend lecture that will be live streamed on ZOOM. The

powerpoint slides and additional material will be available to you on Blackboard.

b. **Laboratory:** I will be posting all of the data that you will need to complete the laboratory work this semester. After you review your cases you will be required to write-up the cases and submit them the following week. I will be available to answer any of your questions during office hours, laboratory hours, or anytime by email.

2. Required Reading List:
   a. Articles: National Research Council. 2009. Strengthening Forensic Science in the United States: A Path Forward. Washington, DC: National Academy of Sciences. DOI: 10.17226/12589
   b. Textbook: Suzanne Belle. Forensic Chemistry. 2006 ISBN-13: 978-0131478350
   c. Journals:
      Journal of the American Chemical Society
      Journal of Organic Chemistry Journal of Analytical Chemistry Journal of Forensic Science
      Journal of the Canadian Society of Forensic Science
      Nature Methods
      Toxicology
      Archives of Toxicology
      Toxicological Sciences

3. Grade Policy for ABIO 478/578:

ABIO 478/578 will be letter-graded (A-E). Each student's final letter grade for this course will be based on the total number of points earned (see above). This course will also include (+/-) in the final letter grading scheme.

Assessment	**ABIO 478**	**ABIO 578**
Exam 1	30%	30%
Exam 2	40%	40%
Presentation	10-minute presentation on a topic in forensic science. 15%	20-minute presentation on a topic in forensic science. 15%
Laboratory Reports	15%	15%

Grading Scale:

A	100-94%	C	76-74%
A-	93-90%	C-	73-70%
B+	89-87%	D	69-60%
B	86–84%	E	59% or lower
B-	83-80%		
C+	79-77%		

a. Exams:

All exams will be essay and/or problems. The exams will be take-home exams. Use of notes and literature are allowed. You may not work or collaborate with any other students during the week of the

exam.

Missed Exams or late exams:

Make-up exams will only be offered to students who missed an exam due to incidents such as illness, emergencies, and tragedy. If you are going to miss an exam or the return deadline then you need to contact me before the exam so you can take the exam at a later time.

b. Presentations:

Undergraduate (ABIO 478) students will be required to give a 10-minute presentation with 5 minutes of questions. The presentation for ABIO 578 graduate students will be a 20-minute presentation with 5 minutes of questions. The presentation should discuss modern topics in forensic science. You must receive approval on your topic. You need to cite current literature (since 2000) during your presentation. The presentation can be a review of a modern topic or discuss a single publication in depth.

c. Laboratory Notebook:

Each student will need a laboratory notebook to record and write-up each of the labs performed in the course. A lab report must be complete for every lab unless otherwise stated. Lab notebooks will be periodically reviewed for completeness, accuracy, repeatability and results.

4. Accommodation Policy:

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 137, 442-5490). That office will provide the course instructor with verification of your disability and will recommend appropriate accommodations.

5. Attendance:

Mandatory. If you cannot get to class, contact Dr. Thurman in advance. Furthermore, you must bring a written excuse (i.e., Doctor's excuse) to Dr. Thurman (Biology 228) for approval for missing the lab. Undefined absences on your part will result in a failing grade for all assignments that week. All students are also expected to stay until the laboratory period is complete. Do not schedule doctor appointments, work, etc. for a time that will interfere with lab. Please click on the following link for additional information on Absence Policy, including, the University's Medical Excuse Policy: http://www.albany.edu/health_center/medicalexcuse.shtml. A class withdrawal is strongly recommended for students who have missed two or more laboratory periods.

6. Participation:

When a guest lecturer is presenting to the class you are expected to attend and participate. Your participation will be a portion of your overall lab grade.

7. Academic Integrity:

See Undergraduate Bulletin for details. Deviations will be treated according to university regulations. "Claims of ignorance, unintentional error, or personal or academic pressures are not sufficient reasons for violations of academic integrity. Students are responsible for familiarizing themselves with the standards

and behaving accordingly." (University's Standards of Academic Integrity Policy: http://www.albany.edu/undergraduate_bulletin/regulations.html).

8. **Safety Policy:**
   All ABIO 478/578 students must wear gloves, a lab coat or lab apron, and appropriate eye protection when working in Biology 244. The lab coat and eye protection can be purchased at the Chemistry Store (B-44), whereas gloves will be made available by the ABIO 478/578 supervisor. Eating and drinking are prohibited in Biology 244.

ABIO 478 / 578 Laboratory Schedule:

Date	ABIO 478	ABIO 578	Written report
27-Aug	Intro/UV spectroscopy	Intro/UV spectroscopy	
3-Sep	UV Spectroscopy – CO poisoning	UV Spectroscopy – CO poisoning	Yes
10-Sep	IR spectroscopy	IR spectroscopy	
17-Sep	IR spectroscopy	IR spectroscopy	Yes
24-Sep	Gas Chromatography	Gas Chromatography	
1-Oct	Gas Chromatography	Gas Chromatography	Yes
8-Oct	**Exam #1**	**Exam #1**	
15-Oct	GC-MS	GC-MS	
22-Oct	GC-MS	GC-MS	Yes
29-Oct	Headspace GC	Headspace GC	
5-Nov	Headspace GC	Headspace GC	Yes
12-Nov	**Exam #2**	**Exam #2**	
19-Nov	Presentations	Presentations	

Before Lab you should:

1. Read through the entire lab, review the methods and reporting.
2. Read the literature that is listed under "Required reading."

During lab:

1. Keep a meticulous record of your tests, sample, methods and results.
2. Record any spectral or instrumental information that you will need in your report.

After Lab:

Using the criteria at the end of the lab and the data you collected you should complete a report. There are sample reports at the end of the chapter. The sample reports at the end of the chapter does not contain raw data. Your report and all forensic reports should include the raw data. Place the raw data in order of the sample numbers references in the report.

ABIO 480 / 580 Forensic Chemistry and Toxicology Syllabus

Course number: ABIO 480 (Class no.) / ABIO 580 (Class no.)
Credit Hours: 3
Lecture times/location: TBD

Instructor: Dr. Ryan Thurman PhD
E-mail: RThurman@albany.edu
Office: Biology 222B
Phone: 518-442-4379
Office Hours: Monday, Wednesday, and Friday 10:30 AM – 12:30 PM

Pre-requisites: Instrumental and/or analytical chemistry (ABIO 478/578 or equivalent) or permission of the instructor

Course Description: Forensic Chemistry and Toxicology (1 credit lecture and 2 credits laboratory) is an advanced course that utilizes methodology and instrumentation commonly used in today's accredited forensic chemistry and toxicology laboratories. For example, gas chromatography, mass spectrometry, headspace chromatography, TLC, immunoassay, liquid and solid phase extraction, etc. will be used to forensically analyze and interpret drug chemistry, and biochemical and toxicological substances. Other topics will include casework, documentation, sample preparation, chemical and instrumental analysis, data processing, reporting, uncertainty measurement, and statistical analyses. Laboratory safety and quality assurance will also be included in ABIO 480/580. Students will process evidence from a mock crime scene and collect samples for Forensic Chemistry and Toxicology testing. The laboratory will conclude with students working a sample case, reporting their findings in a 1-2 page summary and an oral presentation. An additional lab fee will be required for this course.

Learning Objectives: In this course students will:

- understand the responsibilities and methods to ensure laboratory safety, sample reporting, and data presentation.
- learn the methods and theory that are important to the fields of forensic chemistry and toxicology.
- learn the chemical and instrumental principles that allow the identification of chemicals in the fields of forensic chemistry and toxicology.
- learn and demonstrate the methods common for chemical identification in forensic chemistry and toxicology. We will also cover the challenges that are presented with designer drugs that are gaining in popularity.
- perform an independent investigation on a sample case, make conclusions on the samples provided in the case, report and present their findings.
- discuss the ethical challenges in forensic casework and reporting.
- discuss proper crime scene evidence collection, preservation and submission.
- process a mock illicit laboratory, collect and test samples.

Course Overview:

1. **Required Reading List:**
   - **Textbooks:**
     a. Forensic Chemistry: Pearson New International Edition. Suzanne Belle. ISBN 1292033754
     b. Forensic Toxicology. Edited by Max Houck. ISBN: 9780128007464
     c. National Research Council. 2009. Strengthening Forensic Science in the United States: A Path Forward. Washington, DC: National Academy of Sciences. DOI: 10.17226/12589.
   - **Journals: Additional sources for possible assigned readings**
     Journal of the American Chemical Society
     Journal of Organic Chemistry
     Journal of Analytical Chemistry
     Journal of Forensic Science
     Journal of the International Forensic Science
     Nature Methods
     Toxicology
     Archives of Toxicology
     Toxicological Sciences
     Legal Medicine
     Forensic Chemistry
     Forensic Science International
     Journal of Forensic Science
     Forensic Science Review

2. **Grade Policy**

ABIO 480/580 will be letter-graded (A-E). Each student's final letter grade for this course will be based on the total number of points earned (see above). This course will also include (+/-) in the final letter grading scheme.

Assessment	ABIO 480	ABIO 580
Exam 1	30%	25%
Exam 2	35%	25%
Laboratory Notebook	10%	10%
Literature Review	N/A	20%
Crime Scene Lab Summary	10%	10%
Presentation	15%	10%

Grading Scale:

A	100-94%	C	76-74%
A-	93-90%	C-	73-70%
B+	89-87%	D	69-60%
B	86–84%	E	59% or lower
B-	83-80%		
C+	79-77%		

a. **Exams:** All exams will be essay and/or problems.
Missed Exams: Make-up exams will only be offered to students who missed an exam due to illness, emergencies, and tragedy. Exams are scheduled during regular class time, so you are expected to attend. If you are going to miss an exam, then you need to contact me before the exam so that you can take the exam at a later date.

b. **Laboratory Notebook (ABIO 480/580):**
Each student will need a laboratory notebook to record and write-up each of the labs performed in the course. Lab notebooks will be periodically reviewed for completeness, accuracy, repeatability and results. See Appendix 1 for additional information on Notebook.

c. **Literature Review (ABIO 580)**
Students enrolled in ABIO 580 must submit a 5-page minimum literature review. The literature review will contain pertinent background information on a potential internship project selected by the student and instructor. A minimum of five references from peer-reviewed scientific papers will be used to support the 5-page minimum literature review requirement. The 5-page minimum only includes the text of the document—if necessary, additional pages will be used for tables, figures, and references. See Appendix 3 for additional information on Literature Review and Rubric.

d. **Crime Scene Laboratory Summary (ABIO 480/580):**
ABIO 480/580 students will be required to process, analyze and interpret samples from mock evidence. A final comprehensive summary will include the analysis and interpretation of samples plus the sample description, packaging and sampling concentration. Each summary must have a thorough explanation of their experimental with the samples physical, chemical and comparative identity. The sample cases will end in a mock trial where students are expected to present their evidence in a clear and concise manner to their peers. See Appendix 2 for additional information on Crime Scene Laboratory Summary.

e. **Presentation (ABIO 480/580):**
Students enrolled in ABIO 480/580 will be required to make a presentation for 10 minutes (with 5 minutes for questions) on results utilizing instrumentation and methodology acquired during ABIO 480/580.

3. **Accommodation Policy:**
Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 137, 442-5490). That office will provide the course instructor with verification of your disability and will recommend appropriate accommodations.

4. **Attendance**
Mandatory. If you cannot get to class, contact Dr. Thurman in advance. Furthermore, you must bring a written excuse (i.e. Doctor's excuse) to Dr. Thurman (Biology 228) for approval for missing the lab. Undefined absences on your part will result in a failing grade for all assignments that week. All students are

also expected to stay until the laboratory period is complete. Do not schedule doctor appointments, work, etc. for a time that will interfere with lab. Please click on the following link for additional information on Absence Policy, including, the University's Medical Excuse Policy: http://www.albany.edu/health_center/medicalexcuse.shtml. A class withdrawal is strongly recommended for students who have missed two or more laboratory periods.

5. **Academic Integrity:**
   See Undergraduate Bulletin for details. Deviations will be treated according to university regulations. "Claims of ignorance, unintentional error, or personal or academic pressures are not sufficient reasons for violations of academic integrity. Students are responsible for familiarizing themselves with the standards and behaving accordingly." (University's *Standards of Academic Integrity Policy:* http://www.albany.edu/undergraduate_bulletin/regulations.html and https://www.albany.edu/graduate/graduate-studies-student-resources.php

6. **Safety Policy:**
   All ABIO 480/580 students must wear gloves, a lab coat or lab apron, and appropriate eye protection when working in Biology 244. The lab coat and eye protection can be purchased at the CAS Store (B-44), whereas gloves will be made available by the ABIO 480/580 supervisor. Eating and drinking are prohibited in Biology 244. No open toed shoes will be allowed in lab.

ABIO 480 / 580 Laboratory Schedule:

Week	Forensic Science Discipline	Instrumentation/Procedure	Laboratory Exercise /Objective
1	Forensic Science	Crime Scene Investigations	
2	Forensic Chemistry	Microscopic and Thin-layer Chromatography	Identify specific features consistent with a controlled substance
3	Forensic Chemistry	Chemical Tests	Conduct common chemical tests using a sample of controlled substances to identify an unknown.
4	Forensic Chemistry	Fourier Transform Infrared Spectroscopy	Identify the common differences between two common isomers
5	Forensic Chemistry	Gas Chromatography	Use gas chromatography to separate pseudoephedrine from acetaminophen
6	Forensic Chemistry	Gas Chromatography / Mass Spectrometry	Identify an unknown drug and its cutting agent using GC/MS
7	Forensic Chemistry	Gas Chromatography	Determine the concentration of a drug
8	Forensic Chemistry	Chemical Extractions, Gas Chromatography/ Mass Spectrometry	Process a mock illicit laboratory, collect samples, employ various tests
9	Forensic Toxicology	Chemical Extractions, Gas Chromatography / Mass Spectrometry and Chemical Testing	Determine the composition of precursors, metals and products of a mock illicit lab.
10	Forensic Toxicology	ELISA	Determine the presence of THC/Analog
11	Forensic Toxicology	Chemical Extractions of Biological Samples	Acid/Base and solid phase extractions
12	Forensic Toxicology	Gas Chromatography / Mass Spectrometry	Extract/identify (from biological material) chemical (cannabinoid) analog using Gas Chromatography and Mass Spectrometry
13	Forensic Toxicology	Headspace Gas Chromatography	Headspace GC – Determine the blood alcohol concentration
14	Forensic Chemistry Forensic Toxicology	Testing an unknown	Identify an unknown provided in a sample case
15	Forensic Chemistry Forensic Toxicology	Presenting lab findings	Communicate your findings to faculty, staff and peers

ABIO / APSY 490 Topics in Neuroscience Spring 2020 Syllabus

Course number: ABIO / APSY 490
Class no:
Credit Hours: 3
Lecture times: Wednesday, 5:45-8:35PM
Lecture location: Catskill 130

Instructor: Dr. Christine Wagner, PhD
E-mail: cwagner@albany.edu
Office: Life Science Research Building 1037
Office Hours: Wednesday 10:00-11:00am and Thursday 9:00-10:00am

Instructor: Dr. Greg Lnenicka, PhD
E-mail: gregl@albany.edu
Office: Biology 310
Office Hours: Tuesday 9:00-10:00am and Wednesday 9:00-10:00am

Pre-requisites: Neuroscience minor, Senior status, A PSY 214, and A BIO 341.

Course Description: This course is designed as the capstone course for the interdisciplinary Neuroscience Minor. It is expected that Minors will take this course in the fall of their senior year. This course will be team taught by Neuroscience faculty from Biology and Psychology and will cover current topics in neuroscience research, engaging students in the original research literature and providing information about graduate education and careers in neuroscience.

Learning Objectives: The goals of this course are several-fold:

- To provide an advanced level understanding of ten major research areas in Neuroscience ranging from molecular to cellular to behavioral
- To provide an opportunity to critically evaluate original research articles in Neuroscience
- To provide information about graduate education and career opportunities in Neuroscience

These will be accomplished through:

- Lectures by 10 Neuroscience faculty Biology and Psychology at UAlbany
- critical reading of assigned original research articles
- group discussions that assist students in critically reading research articles and understanding the process of hypothesis testing, research, and discovery
- written assignments based on lectures and research articles
- leading group discussions and reporting to class
- a final 5-page term paper on a research article

Course Overview:

Neuroscientist Researchers: Ten UAlbany Neuroscience faculty will visit the class and present their research. Students will be expected to listen, take notes, and ask questions. Students will then complete a short-answer Writing Assignment (WA) about the Neuroscientist's presentation. Questions will be posted on Blackboard immediately following class. The Writing Assignment will be due by 5:30pm on the next class day. 10% of the grade will be deducted for each day late.

Group Discussion Research Papers: Dr. Lnenicka and Dr. Wagner will assign a research article related to the topic of the day. This article will be posted on Blackboard one week prior to each class. Students should come to class prepared to "dissect" and discuss this paper in student groups during the second half of the class period. A Dissection Report (DR), based on the article and the group discussion guide, will be due on Blackboard by 5:30pm on the next class day. 10% of the grade will be deducted for each day late.

Group Leaders: All students will be randomly assigned to lead one of the group discussions. At the end of each section of the course (i.e., 3/4 & 4/29) Group Leaders will lead a class activity based on the research papers. More information will be provided in class and on Blackboard.

Course Policies

Attendance: Attendance in class is required. Participation is a key component to the course and to the final grade. You cannot participate if you are not there. Attendance will be taken at the beginning and end of class. If you are late or leave early you will only get ½ credit for attendance for that class. In short… arrive on time, stay until the faculty member dismisses class. Exceptions will ONLY be made for documented illness or other extreme hardship. You may visit the Office of the Undergraduate Education for confidential matters.

Assignments: All assignments must be completed and submitted on time via Blackboard, even if you miss class (exception for documented absences). 10% will be deducted from the assignment grade for each day late.

Assignment Due Dates:

Date	Writing Assignment (WA) Due	Dissection Report (DR) Due
1/22	-----	-----
1/29	-----	-----
2/5	-----	-----
2/12	Lnenicka WA	DR1
2/19	Scimemi WA	DR2
2/26	Forni WA	DR3
3/4	Szaro WA	DR4
3/11	-----	-----
3/18	-----	-----
3/25	McNay WA	DR5
4/1	Wagner WA	DR6
4/8	Poulos WA	DR7
4/15	Workman WA	DR8
4/22	Zuloaga WA	DR9

4/29	Svare WA	-----
???		

Final Term Paper: The Final Term Paper will be due on Blackboard on 5/8 by 11:59pm. If the term paper is not submitted on Blackboard by 11:59pm, 10% will be deducted from the grade for each day late. No papers will be accepted on 5/15/20 or later.

Cheating and Plagiarism: In this course, you will learn through your own independent work, in class presentations by faculty, group discussions, and presentations. It is okay to work together to read and understand research papers. However, any indication of cheating in the course, particularly on writing assignments, will NOT be tolerated and evidence of cheating will result in a failing grade for the course and/or be reported promptly to the Office of Community Standards. Similarly, your final paper MUST reflect your own individual work and your own original words. Assignments from different students that resemble each other too closely or use the same wording will receive a zero and may be reported as cheating to the Office of Community Standards. Similarly, any suspicion of plagiarism will be reported. The University at Albany's policy on what constitutes plagiarism is included below.

Plagiarism: Presenting as one's own work the work of another person (for example, the words, ideas, information, data, evidence, organizing principles, or style of presentation of someone else). Plagiarism includes paraphrasing or summarizing without acknowledgment, submission of another student's work as one's own, the purchase of prepared research or completed papers or projects, and the unacknowledged use of research sources gathered by someone else. Failure to indicate accurately the extent and precise nature of one's reliance on other sources is also a form of plagiarism. The student is responsible for understanding the legitimate use of sources, the appropriate ways of acknowledging academic, scholarly, or creative indebtedness, and the consequences for violating University regulations.

Examples of plagiarism include: failure to acknowledge the source(s) of even a few phrases, sentences, or paragraphs; failure to acknowledge a quotation or paraphrase of paragraph-length sections of a paper; failure to acknowledge the source(s) of a major idea or the source(s) for an ordering principle central to the paper's or project's structure; failure to acknowledge the source (quoted, paraphrased, or summarize d) of major sections or passages in the paper or project; the unacknowledged use of several major ideas or extensive reliance on another person's data, evidence, or critical method; submitting as one's own work, work borrowed, stolen, or purchased from someone else.

Grade Policy:

The following activities will contribute to the final grade:

Assignment/Activity	% of final grade
Attendance	25
Dissection Reports	15
Writing Assignments	25
Group Leader Activity	10

Final Term Paper	25
Total	**100**

Grade Scale:

Final Grade (out of 100%)	Final Letter Grade
93+	A
90-92	A-
85-89	B+
80-84	B
75-79	C+
70-74	C
65-69	D+
60-64	D
<60	E

ABIO / APSY 490 Lecture Schedule:

Date	Topic			Presenter
1/22	Course Introduction			Wagner/Lnenicka
1/29	Practice Papers			
	5:45-7:00 Faculty Lecture	break	7:15-8:35 Group discussions	
Cellular and Molecular Neuroscience				
2/5	Synaptic Plasticity			Dr. Lnenicka
2/12	Neuronal activity regulation of brain order and disorder			Dr. Scimemi
2/19	Craniofacial development and neurogenesis in the nasal area: crucial steps for sexual development of vertebrates			Dr. Forni
2/26	Axon and Tissue Regeneration in the Central Nervous System (what the frog and other slimy creatures can teach us about recovering from traumatic brain injury)			Dr. Szaro
3/4	Group Reports by Discussion Leaders			-----
Behavioral Neuroscience				
3/11	Metabolism and cognition: links between Alzheimer's disease and diabetes			Dr. McNay
3/18	No class – Spring Break			-----
3/25	Role for progestins in neural development			Dr. Wagner
4/1	Neuroscience of Fear Learning and Memory			Dr. Poulos
4/8	Parenting and brain plasticity			Dr. Workman
4/15	Stress, brain, and behavior			Dr. Zuloaga
4/22	Causes and consequences of anabolic steroid abuse			Dr. Svare
4/29	Group Reports by Discussion Leaders			-----
5/8	Final Paper Due			-----

ABIO 496 Internship in Biological Sciences Syllabus

Course number: ABIO 496
Class no:
Credit Hours: 1-3
Lecture times/location: TBD

Professor: Richard Cunningham PhD
E-mail: rcunningham@albany.edu
Office: Biology 131
Office Hours: By appointment.

Pre-requisites: ABIO 212Y, junior or senior standing and minimum overall GPA of 2.50

Course Description and Objectives: An Internship in Biological Sciences (ABIO 496) allows Biology majors to obtain course credit for their experiential learning in an off-campus internship. The internship provides the students with work experience or professional training in the Biological Sciences and provides an opportunity for the student to relate this real-world experience to their academic course work. Students are responsible for identifying and arranging their internship experiences. They can take place in a variety of settings including private companies, government agencies and nonprofit organizations without geographical restriction. In order to receive ABIO 496 credit, the internship must be approved Biological Sciences Internship Coordinator prior to beginning the work. Students cannot receive credit for both ABIO 496 and ABIO 395 Undergraduate Teaching Experience in Biological Sciences.

Course Overview:

1. Application Instructions:

Once the student identifies the internship, they should complete the Internship Application Form with their internship supervisor. The form is returned to the Biological Sciences Internship Coordinator for approval. Please allow 2-3 business days for the internship to be verified and approved. Once the internship is approved, the student will be given a permission number for registration. It is highly recommended that students make these arrangements the semester prior to beginning the internship as permission numbers will not be given out after the late registration period ends.
Please note: students cannot receive credit for work they have performed in the past.

2. Course Credit

ABIO 496 is a variable credit course (1-3 credits). Each credit hour is equivalent to 3 hours of work per week at the internship during the academic year. Students can repeat the course once for credit. A maximum of 3 credits of ABIO 496 can be applied toward the major.

3. Grade Policy

BIO 496 is S/U graded. A satisfactory grade of the course requires successful completion of the assignments (below) and evaluation by the internship supervisor.

4. Course Assessment/Activities

a. *Students are required to keep an electronic journal detailing their experiences.* Each entry should be a detailed account of the internship experience for that day. Things to include: date, new techniques learned, tasks completed, results, observations, etc. This journal will be sent to the Internship Coordinator at the midterm point and again on the last day of classes.

b. *The students are also required to submit a final report for the internship.* This should describe what you worked on, what you learned and how the internship connects the academic coursework you have taken with your work experience. The report should be sent as a Word .doc or .pdf file via email to the Internship Coordinator. It is due on the last day of classes for the semester.

The *final report* should be formatted as follows:

- Project title and student name on front page
- Minimum five pages (excluding the title page), double spaced
- Calibri or Times New Roman up to 12 pt font
- Must include introduction, methods, results, discussion and references (if appropriate)
- Figures or tables are encouraged

c. Internship supervisor evaluation

Evaluation Criteria	Exceeds Expectations	Meets Expectations	Approaches Expectations	Does Not Approach Expectations
Time Devoted				
Motivation				
Data Collection				
Final report				

5. Required Readings

There is not a required textbook for this course. Reading material will be internship specific and will be assigned, if necessary, by your internship supervisor.

6. Attendance

The dates and times of the internship activities will be determined by the internship supervisor in consultation with the student. The student should make every effort to honor this commitment, consistent with the obligation to attend conventionally scheduled classes.

7. Academic Integrity Policy

All students will be held to a high standard of academic integrity and the University's policies will be strictly enforced. It is every student's responsibility to become familiar with the standards of academic integrity at the University. Claims of ignorance, of unintentional error, or of academic or personal pressures are not sufficient reasons for violations of academic integrity. The University's policies can be found at http://www.albany.edu/undergraduate_bulletin/regulations.html.

ABIO 504 Cell Biology I Fall 2020 Syllabus

Course number: ABIO 504
Class no: 1367
Credit Hours: 3
Lecture times: Online asynchronous class with some class meetings being held live on Tuesday and Thursday at 10:30 am - 11:50 am. These classes will be recorded and made available on Bb within 24 hours. Attendance during live sessions is not required.
Lecture location: Online through Blackboard

Instructor: Dr. Melinda (Mindy) Larsen, PhD
E-mail: mlarsen@albany.edu
Office: Life Sciences 1086
Office Hours: Tuesday 1:30-2:30 pm and Thursday 2:30 – 3:30 pm or email for appointment

Instructor: Dr. Prashanth (Prash) Rangan, PhD
E-mail: prangan@albany.edu
Office: Life Sciences 2033D
Office Hours: Tuesday/Thursday 3:00 – 4:00 pm or email for appointment

Pre-requisites: ABIO 365 or a equivalent Biochemistry course

Course Description: This is a core course in the graduate curriculum of the Molecular, Cellular, Developmental, and Neural Biology (MCDN) Program that introduces students to the discipline of cell biology at the graduate level. The course is open to graduate students (both M.S. and Ph.D. level), to senior undergraduates that have excelled in their undergraduate biology courses and plan to continue with advanced studies, non-degree students, and graduate students pursuing degrees in education or related fields.

Learning objectives: Students will develop an understanding of the structure-function relationships that drive molecular events in the cell and the interactions of cells with their environment. Students will learn about different model organisms and modern cell biology techniques. Examples of relevant human disorders will be discussed to examine what happens when cellular processes fail. Students will develop proficiency in scientific reading and develop the skills needed to understand, interpret, and critique the scientific literature. By the end of the course, students will understand how to design an experiment with appropriate controls to test a hypothesis that will enable them to contribute to the development of new knowledge in the field. The class will also help students build skills in basic professional communication. The course will focus on development of basic presentation skills with a focus on distilling complex scientific information into clear conclusions. Students will develop proficiency in scientific writing with short writing assignments. Students will have the opportunity to work in groups to develop skills in interpersonal communication, negotiation, and working in teams.

Course Requirements:

All additional course materials will be available online on Blackboard. Lectures will be posted at least 24 hours prior to the class time.

1. Text:

Molecular Biology of The Cell, Alberts, et al., 6th Edition (2014). ISBN: 9780815344322
MBOC is available from the UAlbany bookstore or online as an ebook for sale or for rent. An older version of the textbook is acceptable but will have slightly different content. Neither the DVD nor online content provided by the textbook are required.

2. Other Readings:

Each instructor will include reading assignments in MBOC V6 and/or reading of outside literature on the first page of every lecture and/or provide a detailed syllabus including the reading assignments.

3. Assignments:

Due dates for written assignments will be announced in class and posted on Blackboard. Written assignments are due at the date/time posted in the assignment and will lose 10% of their total value for every hour that they are late. Oral presentations are group assignments. All members of the group are expected to contribute to the preparation and/or delivery of group assignments. Grades for oral presentations will be based on individual contributions to the presentation.

4. Exams:

There will be three midterm exams. The exam format will be multiple part questions that require written answers in a short answer or paragraph format. The exams will ask you to synthesize knowledge and may require application of the scientific method, knowledge of experimental design, and/or interpretation of data. All exams will delivered online and will be open book but are to be the work of the individual student.

Grading Policy:

Exams will count for ~65% and assignments for ~35% of your grade.

Grading Scale: A 94-100%, A- 90-93%, B+ 87-89%, B 84-86%, B- 80-83%, C+ 77-79%, C 74-76%, C- 70-73%, D+ 67-69, D 63-66, D- 60-62 E <60%

At the end of the semester, a curve is often applied to the grades. As described in the graduate bulletin, a S (satisfactory) is equivalent to a B or better and a U is equivalent of a B- or lower.

Incomplete Grades: An incomplete grade is given only when the student has nearly completed the course but due to circumstances beyond the student's control the work is not completed on schedule. The date for the completion of the work is specified by the instructor but will not be later than one month before the end of the subsequent semester. The grade I is automatically changed to E or U is the work is not completed by this date.

Attendance Policy: Students are expected to review all course material posted on Bb in a timely fashion and on or before posted deadlines. Students are expected to attend scheduled synchronous class meetings.

Absences: In the case of illness, you should let an instructor know that you cannot attend at least 1 hr before but must contact the instructor less than 24 hours after the absence. All missed work must be arranged with the instructor(s) and made up within one week of the absence unless otherwise stated by the instructor. We follow the University's medical excuse policy: https://www.albany.edu/health_center/medicalexcuse.shtml).

Absence Due to Religious Observance: We follow New York State Education Law (Section 224-a) and excuse students, without penalty, for absence due to religious beliefs. Students should notify the instructor(s) of their intent to miss class due to a religious observance at least 1 week prior to the absence.

Disabilities: Students' disabilities will be accommodated after consultation with the instructor(s). Students who are registered with the Disability Resource Center (DRC) are allowed to take exams in the DRC during the scheduled time for the exam. Arrangements must be made with the instructor 48 hours before each exam. See https://www.albany.edu/disability/index.shtml for information on registering with the DRC.

Standards of Academic Integrity: As noted in the graduate bulletin: "As a community of scholars, the University at Albany has a special responsibility to integrity and truth. By testing, analyzing, and scrutinizing ideas and assumptions, scholarly inquiry produces the timely and valuable knowledge that guide and inform important and significant decisions, policies, and choices. Our duty to be honest, methodical and careful in the attribution of data and ideas to their sources establishes the foundations of our work. Misrepresenting or falsifying scholarship undermines the essential trust on which our community depends. Every member of the community, including both faculty and students, shares an interest in maintaining the highest standards of academic integrity." For examples of academic dishonesty and for more information regarding the consequences of academic dishonesty, please see the graduate bulletin.

Procedures for Resolving Academic Grievances: Students who seek to challenge an academic grade or evaluation of their work in a course or seminar, or in research or another educational activity may request a review of the evaluation by filing an academic grievance with The Graduate Academic Council (GAC), as described in the Graduate Bulletin.

The Graduate Bulletin: For more information on grading, absences, academic integrity, and other regulations for this and other graduate courses, please see the graduate bulletin for more information: http://www.albany.edu/graduatebulletin/requirements_degree.htm#graduate_grades

Campus and Workplace Violence Prevention: The University at Albany is committed to providing a safe learning and work environment for the University's community. The University will respond promptly to threats, acts of violence and acts of aggression by employees, students and/or members of the public against employees and members of the campus community. See the following document for more information: https://www.albany.edu/hr/assets/Campus_Violence_Prevention.pdf

Allegations of Unlawful Discrimination and Sexual Harassment Policy & Procedures for Complaints: Students, may not be subjected to harassment that is prohibited by law, or treated adversely or retaliated against based upon a protected characteristic. Please see the full policy here: https://www.albany.edu/general-counsel/assets/Sexual_Harassment_Policy_and_Procedures_Revised_6- 20014.pdf

ABIO 504 Lecture Schedule

Day of wk	Date	Lec#	Topic	Lecturer
T	8/25	1	Methods in Cell Biology I	Larsen
Th	8/27	2	Methods in Cell Biology II	Larsen
T	9/1	3	Methods in Cell Biology III	Rangan
Th	9/3	4	Scientific Writing	Larsen
T	9/8	5	Scientific Presentations	Rangan
Th	9/10	6	Drosophila as a Model System	Rangan
T	9/15	7	The Mouse as a Model System	Gerdes
Th	9/17	8	Membrane Structure and Function	Gerdes
T	9/22	9	Student Presentations	Larsen/Rangan
Th	9/24		MIDTERM EXAM I (covering lectures 1-9)	
T	9/29	10	Intracelluar Compartments and Information Flow I	Larsen
Th	10/1	11	Intracelluar Compartments and Information Flow II	Larsen
T	10/6	12	Cell Cycle I	Rangan
Th	10/8	13	Cell Communication I	Rangan
T	10/13	14	Cell Communication II	Rangan
Th	10/15	15	Student Presentations	Larsen/Rangan
T	10/20	16	Cytoskeleton I	Larsen
Th	10/22	17	Cytoskeleton II	Larsen
T	10/27		MIDTERM EXAM II (covering lectures 10-17)	
Th	10/29	18	Programmed Cell Death	Rangan
T	11/3	19	Cell Communication III: Cell-Cell Adhesions	Larsen
Th	11/5	20	Cell Communication IV:ECM and Basement Membrane	Larsen
T	11/10	21	Germ Cells and Stem Cells I	Larsen/Rangan
Th	11/12	22	Germ Cells and Stem Cells II	Rangan
T	11/17	23	Germ Cells and Stem Cells III	Rangan
Th	11/19	24	Student Presentations	Rangan
T	11/24		No class	
?	?		MIDTERM EXAM III (covering lectures 18-24)	Larsen

ABIO 505 Cell Biology II Spring 2020 Syllabus

Course number: ABIO 505
Class no:
Credit Hours: 3
Lecture times: Tuesday-Thursday at 11.45 am - 1:05 pm
Lecture location: AS015

Instructor: Dr. Paolo E. Forni, PhD
E-mail: pforni@albany.edu
Office: Life Sciences 1038
Office Hours: Tuesday and Thursday 2:00- 3:00 PM

Instructor: Dr. Haijun Chen, PhD
E-mail: hchen01@albany.edu
Office: Life Sciences 1039
Office Hours: Monday 1:00 – 4:00 pm

Pre-requisites: ABIO 365 or an equivalent Biochemistry course

Course Description: This graduate level course aims at providing a broad overview of the major principles of cellular and molecular neurobiology. Subject matter is intended to range from molecular mechanism underlying neurogenesis, cell fate determination, circuit formation, neuronal signaling, neuronal function and plasticity.

Learning Objectives: The course will consist of a series of overview lectures complemented by recitation and discussion of research papers. Students who successfully complete this course will acquire a broad understanding of different areas of neuronal cell biology. Students will also gain experience in reading and presenting research papers and a better understanding of how to design experiments to test a hypothesis that will enable them to contribute to the development of the field.

Dr. Forni's section of the course:

Course Requirements:
The requirement for this course consists of coming to class having done all of the reading assigned for that day's topic, being prepared to participate in the discussion. Course materials will be available online on Blackboard. Lectures will be posted the day before the class.

Reading:
A list of lectures will be provided by the instructor that will include reading assignments in MBOC and/or reading of outside literature. MBOC is available from the UAlbany bookstore, Mary Jane Books, or online. A used version of the textbook is acceptable as is an online version. The DVD is not required.

Grade Policy:

Class Participation	10%	Dr. Forni will track the response of the students during discussion sessions after lecture or article presentation sessions.
Exam 1	25%	Class exam with multiple choice and open-ended, essay questions.
Exam 2	25%	Class exam with multiple choice and open-ended, essay questions.
Writing Assignment	15%	
Student Presentation	25%	Each student will present a research paper chosen by or together with the instructor.

1. **Exams:**
   Exams will cover the material in the assigned textbook chapters, the lectures and the discussed research papers.

2. **Writing assignment:**

- Report on a primary scientific neuroscience paper, chosen from a major recent neuroscience journal.
- The paper should be a maximum length of 500 words (about two pages in 12-point font, spaced 1.5 lines). Pdf or MS Word document.
- The paper should have catchy headline that indicates why this is of general interest.
- The paper should be written in a clear form, and include discussion of the following elements of the research study:
  - Stated hypothesis or intention of the study
  - Major methods used
  - Results and major conclusions
  - Caveats of the study and future directions

3. **Journal Article Presentation:**
   - The presentation will provide a detailed review and critique of a "high impact" article (including background, methods, results and discussion). Students should also include 3-4 questions at the end of the presentation which will be used to stimulate discussion.
   - PowerPoint draft of the presentation should be emailed to me (pforni@albany.edu) 3 days before the presentation, in order to give you feedback.

Grading Scale:

A (93%)	A- (90%)
B+ (87%)	B (83%)
B- (80%)	C+ (77%)
C (73%)	C- (70%)
D+ (67%)	D (63%)
D- (60%)	E (<60%)

Tentative Lecture Schedule for section with Dr. Forni

Week1
Class 1: Syllabus outline; introduction to course topics.

Week2
Class 2: Stem cells, progenitors and neurogenesis.
(Anthony and Heintz, 2008; Higginbotham et al., 2013; Paridaen and Huttner, 2014; Pilaz et al., 2016; Taroc et al., 2020; Wang et al., 2009)

Class 3: Neuronal identity, genes, structure and function.
(Casarosa et al., 1999; Flames and Hobert, 2009; Imayoshi and Kageyama, 2014; Kohwi and Doe, 2013; Lin et al., 2018; Nieto et al., 2001; Sun et al., 2001; Wenick and Hobert, 2004; Wright et al., 2010) 1 Student presentation.

Week 3
Class 4: Molecular mechanism at the base of neuronal polarity.
(Jiang et al., 2005; Kishi et al., 2005; Pongrakhananon et al., 2018; Shi et al., 2003; Witte et al., 2008)
1 Student presentation.

Class 5 Axon guidance
(Chen et al., 2008; Cho et al., 2012; Cloutier et al., 2002; Cutforth et al., 2003; Hall and Lalli, 2010; Keleman et al., 2002; Klein, 2012; Prince et al., 2013; Prince et al., 2009; Sabatier et al., 2004; Serafini et al., 1996; Suetterlin and Drescher, 2014)
1 Student presentation

Week 4
Class 6: EXAM1

Class 9: Axonal transport
(Deinhardt et al., 2006; Feng and Arnold, 2016; Hirokawa et al., 2010; Jung et al., 2012; Kondo et al., 2012; Sheng and Cai, 2012; Weiss, 1967)
1 Student presentation

Week 5
Class 10: 2 Student presentations. Writing assignment due.
Class 11: Guest lecture: Dr. Damian Zuloaga (PSY): “Brain sexual dimorphism”

Week 7
Class 12: 2 Student presentations
Class 13: 2 Student presentations

Week 8
Class 14: Guest lecture Dr. Gerg Lnenicka: Synapses
Class 15: 2 Student presentation
Class 16: EXAM2

Dr. Chen's section of the course:

Molecular and cellular physiology: signaling through the cell membrane

Course Requirements:

Reference book: *Molecular Biology of the Cell*

Grade Policy:

1. **Quizzes (15 or 30 pts each)**
   At the beginning of each session (at 11:45 am) a quiz will be given. This quiz will be on the subject of that day's lecture and is intended to test your knowledge and preparation. The quiz questions are based on the material presented in lecturer's Eres. The lowest-scoring quiz will be dropped.

2. **Written presentation/assignment (15 pts each)**
   You are required to write three scientific abstracts on the topics or articles, which have been learned and presented in the classroom.

3. **Oral presentation (15 pts)**
   An oral presentation will be given by each student in the last two sessions. Each student has about 15 minutes to present one suitable research article including answering questions.

4. **Final exam: write mini-review (45 pts)**

   Written and Oral presentations and final exam weight the first 50% of student's grade and quizzes weight the other 50% of student's grade.

Grade Scale:

The following grading scale will be used to determine student's grade.

A	(93%)	A-	(90%)
B+	(87%)	B	(83%)
B-	(80%)	C+	(77%)
C	(73%)	C-	(70%)
D+	(67%)	D	(63%)
D-	(60%)	E	(<60%)

Tentative Lecture Schedule for section with Dr. Chen

Final exam:
Write a mini-Review (4-5 pages in scientific journals; 2-3 figures) on a topic.
Topic: research fields of rotation lab or a topic that you are interested in, in context of cell biology
Due date: Midterm point in teaching section

Session 1:
Introduction to ABIO 505 Part II
How to write Summary/Abstract in research articles (sample in Nature)

Assignment 1: *summary four major discoveries (each 400 words)*

Session 2:
Discovery, development, and application of the green fluorescent protein, GFP, and GFP-like proteins
1. 2008 Nobel lectures
2. Reading enrichment: Four Clontech manuals

Session 3:
Discovery and application of RNA interference: gene silencing by double-stranded RNA
1. Fire A., et al. (1998) *Nature* 391: 806-811
2. Reading enrichment: 2011 Review
3. Reading enrichment: 2006 Nobel lectures

Session 4:
iPSC-derived Stem cells
1. Takahashi K. et al. (2006) *Cell* 126: 663-676
2. Reading enrichment: 2012 Nobel lectures in Medicine
3. Reading enrichment: iPSCs as research tools.

Assignment 2: *summary the topic on TRP channels (each 400 words)*

Session 5:
Signaling in sensing heat and spicing chilli peppers
1. Caterina, M.J., et al. (1997), *Nature* 389: 816-824 and comments.
2. Reading Enrichment: Montell, C., et al., (2002) *Mol. Cell* 9(2):229-31 (review)
3. Reading Enrichment: Jordt S.E., et al., (2002), *Cell* 108: 421-430

Session 6:
Signaling in sensing pain, hot, and cold
1. Tominaga, M. et al (1998) *Neuron*
2. Reading Enrichment: Julius, D., (2001), *Nature* 413(6852): 203-10. (Review)

Session 7:
Molecular basis of infrared sensation in vampire bats and snake
1. Gracheva E., et al. (2011), *Nature* 476: 88-91 and comments.
2. Gracheva E., et al. (2010), *Nature* 464: 1006-1011 and comments.

Assignment 3: *summary the signaling pathway of taste (total 600 words)*

Session 8:

Signaling in sensing tastes 1: receptor

1. Adler E., et al. (2000), *Cell* 100, 693–702.
2. Chandrashekar J., et al. (2000) *Cell* 100, 703–711
3. Reading Enrichment: 2000 *Nature* paper and 1999 *Cell* paper.

Session 9:

Signaling in sensing tastes 2: neurotransmitter and postsynapse receptor

1. Finger, T.E., et al. (2005), *Science* 310: 1495-9 as well as the supplementary data.
2. Reading Enrichment: Vandenbeuch, A., et al (2009), *J. of Biology*, 8: 42.1-5
3. Reading Enrichment: Palmer, R.K., (2007) *Molecular Interventions*, 7(2): 87-98

Session 10:

Signaling in sensing tastes 3: molecular basis of neurotransmitter release.

1. Taruno, A., et al. (2013), *Nature* 495: 223-226

Session 11: (Group presentation and discussion)

CRISPR Genome editing: principle

1. Cong L., et al (2013) *Science* 339: 819-823
2. Wang H., et al (2013) *Cell* 153: 910-918

Session 12: (Group presentation and discussion)

CRISPR Genome editing: application in cells and animals and patent debate

Session 13 and 14:

2 Oral presentation session: Each student picks up one research paper and presents in 13 min + 2 min Q & A. (5 students per session)

Attendance Policy: Class attendance is expected and is strongly recommended.

Standards of Academic Integrity: As noted in the graduate bulletin: "As a community of scholars, the University at Albany has a special responsibility to integrity and truth. By testing, analyzing, and scrutinizing ideas and assumptions, scholarly inquiry produces the timely and valuable knowledge that guide and inform important and significant decisions, policies, and choices. Our duty to be honest, methodical and careful in the attribution of data and ideas to their sources establishes the foundations of our work. Misrepresenting or falsifying scholarship undermines the essential trust on which our community depends. Every member of the community, including both faculty and students, shares an interest in maintaining the highest standards of academic integrity." For more information and information regarding the consequences of academic dishonesty, please see the graduate bulletin: http://www.albany.edu/graduatebulletin/requirements_degree.htm

Accommodations for Students with Disabilities: If you need accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. To request academic accommodations (for example, a note taker), students must contact Disabled Student Services Campus Center 137, Phone: (518) 442-5490, http://www.albany.edu/studentlife/DSS/index.html). For additional help you may contact the Office of Academic Support Services (website http://www.albany.edu/eop/).

ABIO 523 Biochemistry and Biomolecular Structure Fall 2020 Syllabus

Course number: ABIO 523
Class no: 1368
Credit Hours: 3
Lecture times: Tuesdays and Thursday at 9:00 – 10:00 am
Lecture location: Online

Instructor: Dr. Hua Shi, PhD
E-mail: hshi@albany.edu
Office: Life Sciences 2050
Office Hours: By appointment

Instructor: Dr. Richard Cunningham, PhD
E-mail: rcunningham@albany.edu
Office: Biology 131
Office Hours: By appointment

Pre-requisites: Biochemistry course equivalent to ABIO 365

Course Description:
Biochemistry is the keystone of modern biomedical and life sciences. Because our graduate students come with varying degrees of exposure and preparation in biochemistry, the major objective of this course is to quickly touch on a number of basic concepts that are central to understanding bio-molecular science. In particular, this course serves as a Core and Tools course for the MCDN graduate students. Since MCDN fields are primarily experimental biology, success in thesis research is heavily dependent on laboratory techniques. This course thus presents a unique opportunity to use the biological facts to illustrate essential research tools.
Dr. Shi will be covering the topics pertaining to macromolecular structure; Dr. Cunningham will be covering the topics pertaining to biochemical reactions.

Learning Objectives: At the completion of this course students will:

- Demonstrate knowledge of the fundamental principles in biochemistry, and specific topics relating to the integration of chemistry and biology.
- Students will be able to explain/describe the structure, function and topology of proteins and nucleic acids.
- Students will be able to describe/explain the structure, function and kinetics of enzymes.

Course Requirements:

Teaching Modality:
This is a course that has no in-person meetings and we will conduct all class activities online. Class interaction

with the instructor and peers occurs through Zoom and Blackboard during the scheduled class meeting times. The day before each class a Zoom invitation will be sent via e-mail to each student. Dr. Shi's Lecture Presentations (slides and/or notes) will be made available on Blackboard. (Remember, these are outlines and not necessarily the entire material covered in the class. They are NOT a substitute for attending the lectures.) Dr. Cunningham's lectures will also be available on Blackboard. Details on how to access these and other on- line course information will be provided during the first lecture. In lieu of conventional office hour, students may request ZOOM meetings with an instructor.

Textbook:
The Molecules of Life: Physical and Chemical Principles. ISBN: 978-0815341888.

Course work:
There will be occasional homework assignments throughout the semester. These assignments will not be graded but students will be called upon in class to provide solutions to selected problems. In particular, there will be a molecular viewing and modeling exercise assigned so you can learn to use the Deepview software. A collection of original research papers and reviews will be assigned through the first part of the course as additional reading materials to provide background for the comprehensive case study. Several research papers focusing on various aspects of thermodynamics, kinetics and macromolecular binding phenomena will be discussed during the second half of the course. Students are expected to participate in in-class discussions of these papers.

Changes:
The schedule and procedures described herein are subject to change in the event of extenuating circumstances, especially as the semester progresses to adapt to the new on-line modality. The instructors retain the right to modify the syllabus and to give notice in class of any modifications in a timely fashion. Students are responsible for apprising themselves of such notices.

Grade Policy:
Your Final Grade will be based on your performance in Exam I, II and the Final Exam, according to the percentages listed below: Exam I, 30%; Exam II, 30%; Final Exam, 40%.
The Final exam will consist of questions from the entire course material with emphasis on the material covered in the last 4 of Dr. Shi's lectures and the last 4 of Dr. Cunningham's lectures.

ABIO 523 Lecture Schedule

Dr. Shi's Section:

These lectures are an overview of fundamental aspects of molecular structure of protein and nucleic acids, and how their structures relate to the way these molecules behave, e.g. how they interact to achieve important biological functions.

Aug. 25	Lecture 1	Introduction to Biomolecular Structure	Chapter 1
Aug. 27	Lecture 2	Physical and Chemical Properties of Water	Chapter 6C
Sept. 1	Lecture 3	Proteins I: Amino Acids and Primary Structure	Chapter 4AB
Sept. 3	Lecture 4	Proteins II: Secondary, Tertiary & Quaternary Structures	Chapter 4CD
Sept. 8	Lecture 5	Proteins III: Folding and Stability	Chapter 5AB
Sept. 10	Lecture 6	Proteins IV: Modification, and Function	Chapter 5CD
Sept. 15	Lecture 7	Nucleotides and Nucleic Acid Sequences	Chapter 2A
Sept. 17	Lecture 8	DNA: Secondary Structure, Topology, and Dynamics	Chapter 2A
Sept. 22	**Exam I**		
Sept. 24	Lecture 9	RNA Structure and Dynamics	Chapter 2B
Sept. 29	Lecture 10	Protein-Nucleic Acid Interactions I: General Principles	Chapter 13
Oct. 1	Lecture 11	Protein-Nucleic Acid Interactions II: Examples	Chapter 13
Oct. 6	Lecture 12	Comprehensive Case Study: Molecular Structures, Interactions and Function in the Process of Eukaryotic Transcription Initiation	

Dr. Cunningham's section:

These lectures are an overview of fundamental aspects of thermodynamics and kinetics and will describe the chemical basis of biochemical catalysis and macromolecular interactions.

Oct. 8	Lecture 13	Models, Equations and Regression Analysis	-
Oct. 13	Lecture 14	Thermodynamics	Chapter 6
Oct. 15	Lecture 15	Thermodynamics	Chap.9&10
Oct. 20	Lecture 16	Catalysis and Kinetics	Chapter 15
Oct. 22	Lecture 17	Steady-State Enzyme Kinetics	Chapter 16
Oct. 27	Lecture 18	Steady-State Enzyme Kinetics	Chapter 16
Oct. 29	Lecture 19	Enzyme Inhibition	Chapter 16
Nov. 3	Lecture 20	Pre-Steady State Enzyme Kinetics	-
Nov. 5	Lecture 21	Pre-Steady State Enzyme Kinetics	-
Nov. 10	**Exam II**		
Nov. 12	Lecture 22	Ligand Binding	Chapter 12
Nov. 17	Lecture 23	Ligand Binding	Chapter 12
Nov. 19	Lecture 24	Chemical Nature of Enzyme and Ribozyme Catalysis	Chapter 16
Nov. 24	Lecture 25	Cooperativity in Binding and Catalysis	Chapter

Nov. 30 – Dec. 1 Final Exam (take home due in 24 hours) HOMEWORK:

ABIO 524 Advanced Molecular Biology Spring 2020 Syllabus

Course number: ABIO 524
Class no:
Credit Hours: 3
Lecture times: Tuesdays and Thursday at 10:15 – 11:35 am
Lecture location: Biology 152

Instructor: Dr. Ben Szaro, PhD
E-mail: bszaro@albany.edu
Office: Life Sciences 1059
Office Hours: Monday 4:30 – 6:00 pm and Tuesday 2:30 – 4:00 pm

Instructor: Dr. Morgan Sammons, PhD
E-mail: masammons@albany.edu
Office: Life Sciences 2078
Office Hours: Wednesday 11:00 am – 12:30 pm and Tuesday 12:00 – 1:30 pm

Pre-requisites: ABIO 301, 111N or equivalent; ACHM 342 or ABIO 365, ACHM 343 or ABIO 367, or ACHM 440A,B or equivalent

Course Description: Biosynthesis and function of biological macromolecules. Current work on the different species of RNA and RNA-containing structures in the cell, DNA synthesis in chromosome replication, protein synthesis, and control mechanisms operating at the levels of nucleic acid and protein synthesis. Two 1 1/2-hour lecture periods per week. Given spring semester only.

Learning Objectives: The overall objective of this course is to provide students with a conceptual framework that will enable them to follow and eventually advance new knowledge in the field of Molecular Biology (see below). In the process, students will become familiar with and integrate concepts and approaches across the multiple sub-disciplines forming the field of Molecular Biology, as outlined in the course description and series of objectives below.

> *Students will be able to describe the various subdisciplines that constitute the growing field of Molecular Biology, which is the branch of biology that deals with the structure and function of the macromolecules that are essential to life.*
>
> *Students will come to understand theoretical and practical approaches to studying macromolecular structures and their organization within the cell.* The 1930's saw the convergence of previously separate disciplines – *e.g.*, biochemistry, genetics, microbiology, virology, cell biology, embryology, and physics – into the new field of Molecular Biology, with the hope of understanding life at its fundamental, molecular level. In the 1940's and early 1950's, with the application of X-ray crystallography to elucidate the structure of DNA (Franklin, Watson, Crick, Wilkens), proteins (Pauling)

and viruses (Franklin), along with the discovery that genes are located on DNA and encode proteins (Beadle, Tatum, Avery, Hershey, Chase), molecular biology began to take on its modern form.

Students will gain mastery of the theoretical and practical approaches to genetic engineering and be able to apply these principles to practical situations. Through the mid-1970's, molecular biologists were versed mainly in biochemistry and molecular biophysics and used relatively simple model systems (viruses, bacteria, yeast) to probe the relationship between the structures of biological macromolecules and their relationships to genetics. With the development of techniques for sequencing and modifying DNA through recombinant DNA technology and for introducing these modified DNAs back into cells and organisms to study gene function, the mid-1970's saw the beginnings of a revolution that permeated all of Biology by providing biologists from all disciplines with a common language. During this period, molecular biology became synonymous with what was previously referred to as molecular genetics.

Students will gain understanding of theoretical and practical principles to studying gene expression and its control at the levels of both individual genes and gene networks be apply to use these in practical situations for analyzing data and planning experiments. In the past decade, new techniques for generating and analyzing massive amounts of data that require large amounts of computing power to analyze have ushered in a new era for molecular biology, bringing computer science and systems theory to the core of the field. Students will be introduced to these new approaches and given opportunities to apply them to hypothetical, practical situations.

Course Requirements:

Textbook:

The textbook for this class is recommended, but not required. We recommend you use this, or another textbook of modern cell and molecular biology of your choice, as a reference to accompany the lectures, as noted below. We will, from time to time, assign additional readings from review articles and other original research papers, which whenever possible, will be made available on Blackboard (see note on Readings, below).

Recommended text: B Alberts, A Johnson, J Lewis, D Morgan, M Raff, K Roberts, P Walter (2014) Molecular Biology of the Cell, 6th Edition. Taylor & Francis Group, Garland Science, New York, NY (ISBN-13: 978-0-8153-4432-2), 1464 pp.

Lectures, Readings, and Study Questions:

Lectures draw on the textbook as well as original papers from the literature. Materials will be posted on the ERES section of Blackboard. Whereas readings from the text are listed here, additional readings will be assigned during the semester, along with study questions, which will be posted on Blackboard with the lectures. Some, but not all, of these additional readings are listed below. Check the notes for each lecture and any updates to the reading list below on Blackboard to ensure you have all the readings. Also, although your answers to the study questions will not be collected or graded, it is nonetheless recommended you write out answers to these questions on your own. You may work on the study questions in groups, if you like, which will help you prepare for the exams.

Blackboard:
The class syllabus, additional readings not yet assigned, lecture notes, and other announcements will be posted on the University's Blackboard site for the course.

Grade Policy:
Grades will be determined from students' performance on the midterm and final exam. Performance on each exam will contribute 50% of the semester's grade. Class attendance and participation will be used to decide grades in borderline cases. Examinations will be essay format take home exams. They will be posted electronically on Blackboard and the written exams will be due on the dates indicated in the syllabus. Exams will be submitted electronically by email, as instructed on the exam. Late exams will only be accepted under extraordinary extenuating circumstances that prevent the student from finishing by the required date, in accordance with University policy (see https://www.albany.edu/undergraduateeducation/attendance.php and https://www.albany.edu/graduatebulletin/requirements_degree.htm#attendance). In case an exam will be late, the student must make every effort to contact the instructor ahead of time to make suitable arrangements.

Class participation
Class attendance is expected, but not required. Although class participation is not counted directly in the course grade, it is taken into consideration if your grade is borderline.

Examination format
Exams are take-home. The exams will be posted online and are due on the dates listed in the class schedule. In answering exam questions, you may refer to class notes and any published material. You will not, however, be permitted to work together with another classmate, or seek help from anyone, either orally or through correspondence. Exams will emphasize topics covered in class lectures, as well as in the specific papers assigned. Exams must be emailed to the instructor (Dr. Szaro, midterm; Dr. Sammons, Final) by the end of class on the dates indicated on the syllabus.

Grading and the "curve"
Grades in this class are not curved. Your grade will be what you earned, regardless of how well or poor the rest of the class does. Exams and papers will typically be graded on an A to E scale. Grading is as follows:

- 4.0 (A) is given to an answer (or paper) that is accurate and addresses the question or topic at hand in a complete, and appropriately logical and concise way.
- 3.0 (B) is given to an answer that is acceptable but may contain slight inaccuracies or is incomplete in some area that is necessary for the logical argument (for example, presenting too much irrelevant information or failing to build a clean, logical argument).
- 2.0 (C) is given to an answer that is partially correct but has major gaps or inaccuracies, making it unacceptable at the graduate level.
- (D) is given to an answer that demonstrates only marginal understanding of a topic.
- (E) is given when the answer is missing or is completely inaccurate.

Academic Integrity: Please note that failing grades are given for plagiarism on an assignment. Students will be

expected to adhere to University standards of academic integrity at all times, as outlined in the Graduate Bulletin of the University at Albany (https://www.albany.edu/graduatebulletin/requirements_degree.htm).

Absence policies: Students who miss class are nonetheless responsible for the material covered during the class period, which is available on the course website. The class adheres to the University at Albany's University's Medical Excuse Policy: (https://www.albany.edu/health_center/medicalexcuse.shtml)

With regard to absences due to religious observance, refer to New York State Education Law (Section 224-a) whereby campuses are required to excuse, without penalty, individual students who are absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences. Students should notify the instructor in a timely manner.

ABIO 524 Lecture Schedule:

Date	Lecturer	Topic/Reading
Th 01/23	Szaro	Course Introduction; Structure and Function in Molecular Cell Biology Text: Alberts, Ch. 9
Tu 01/28	Szaro	Probing Macromolecular and Cellular Structure, Part I References [1-4]
Th 01/30	Szaro	Probing Macromolecular and Cellular Structure, Part II References [5-7]
Tu 02/04	Szaro	The Structure of DNA, RNA, Prokaryotic Chromosomes and Eukaryotic Chromatin Text: Alberts, Ch. 4, pp. 173 – 216; References [8]
Th 02/06	Szaro	Genetic Engineering, Part I Text: Alberts, Ch. 8
Tu 02/11	Szaro	Genetic Engineering, Part II
Th 02/13	Szaro	mRNA and Protein Expression – Nucleic Acid Hybridization, and Antibodies
Tu 02/18	Szaro	The Polymerase Chain Reaction and the Sequencing of DNA, Part 1
Th 02/20	Szaro	The Polymerase Chain Reaction and the Sequencing of DNA, Part II
Tu 02/25	Szaro	Studying Gene Expression through RNA-seq and Proteomics, Part I
Th 02/27	Szaro	Studying Gene Expression through RNA-seq and Proteomics, Part II [9]
Tu 03/03	Szaro	DNA Replication and Repair Text: Alberts, Ch.5; [10-12]
Th 03/05	Szaro	DNA Recombination and Transposition, Part I
Tu 03/10	Szaro	DNA Recombination and Transposition, Part II
		Midterm Exam Posted; Due Tuesday, March 24th
Th 03/12	Szaro	Review and Special Topics
Tu 03/17 Th 03/29		Spring Break – No Class Spring Break – No Class
Tu 03/24	Sammons	Eukaryotic Gene Organization and Analysis Text: Alberts Ch. 1, pp. 10 – 39; Ch. 4, pp. 216 – 234; Ch 8, pp. 463 – 494 **Midterm Exam Due in Class**
Th 03/26	Sammons	Eukaryotic Transcription I – RNA Polymerases and Transcription Factors Text: Alberts, Ch 6, pp. 299 – 317
Tu 03/31	Sammons	Eukaryotic Transcription II – Actions of TFs Text: Alberts, Ch. 7
Th 04/02	Sammons	Eukaryotic Transcription III – Chromatin Biology Text: Alberts, Ch. 7
Tu 04/07	Sammons	Eukaryotic Transcription IV – Cell Signaling Text: Alberts, Ch. 15
Th 04/09	Sammons	Post-transcriptional Regulation, Part I Text: Alberts, Ch. 6, 7
Tu 04/14	Sammons	Post-transcriptional Regulation, Part II Text: Alberts, Ch. 6, 7
Th 04/16	Sammons	Post-transcriptional Regulation, Part III Text: Alberts, Ch. 6,
Tu 04/21	Sammons	Gene Control in Development, Part I

		Text: Alberts, Ch. 21
Th 04/23	Sammons	Gene Control in Development, Part II Text: Alberts, Ch. 21,22
Tu 04/28	Sammons	Systems Biology and Introduction to Gene Regulatory Networks Text: Alberts, Ch. 7, 8
Th 04/30	Sammons	Gene Regulatory Networks, Part I
Tu 05/05	Sammons	Gene Regulatory Networks, Part II **Final Exam Posted; Due Tuesday, May 12th**
St 05/12	**Final Exam Due; Tuesday, May 12th, 2020, 1 – 3 pm**	

Additional Readings (listed above as "References [#]" (Note, additional ones will be added):

[1] Henriques R, Griffiths C, Rego EH, & Mhlanga MM (2011) PALM and STORM: unlocking lice-cell super-resolution. Biopolymers 95, 322-331.
[2] Huang B, Bates M, & Zhuang X (2009) Super-resolution fluorescence microscopy. Annu Rev Biochem 78, 993-1016.
[3] Huang B, Babcock H, & Zhuang X (2010) Breaking the diffraction barrier: super-resolution imaging of cells. Cell 143, 1047-1057.
[4] Webb RH (1996) Confocal optical microscopy. Rep Prog Phys 59, 427-471.
[5] Cressey D & Callaway E (2017) Cryo-electron microscopy wins chemistry Nobel. Nature 550, 167.
[6] Unwin N (2013) Nicotinic acetylcholine receptor and the structural basis of neuromuscular transmission: insights from Torpedo postsynaptic membranes. Q Rev Biophys 46, 283-322.
[7] Bartesaghi A, Merk A, Banerjee S, Matthies D, Wu X, Milne JLS, & Subramaniam S (2015) 2.2 Å resolution cryo-EM structure of b-galactosidase in complex with a cell-permeant inhibitor. Science 348, 1147-1151.
[8] Watson J & Crick F (1953) Molecular structure of nucleic acids: a structure for deoxyribose nucleic acid. Nature 171, 737-738.
[9] Conesa A, Madrigal P, Tarazona S, Gomez-Cabrero D, Cervera A, McPherson A, Szczesniak MW, Gaffney DJ, Elo L, Zhang X, & Mortazavi A (2016) A survey of best practices for RNA-seq data analysis. Genome Biol 17, 13-19.
[10] Bohgaki T, Bohgaki M, & Hakem R (2010) DNA double-strand break signaling and human disorders. Genome Integrity 1, 15.
[11] Cahill D, Connor B, & Carney JP (2006) Mechanisms of eukaryotic DNA double strand break repair. Front Biosci 11, 1958-1976.
[12] Davis AJ & Chen DJ (2013) DNA double strrand break repair via non-homologous end-joining. Transl Cancer Res 2, 130-143.

ABIO 540 Principles of Bioinformatics Spring 2020 Syllabus

Course number: ABIO 540
Class no: 9651
Credit Hours: 3
Lecture times: Tuesdays and Thursday at 1:15 – 2:35 pm
Lecture location: LS 2094

Instructor: Dr. Andy Berglund, PhD
E-mail: aberglund@albany.edu
Office: Life Sciences 2033I

Office Hours: Tuesday and Fridays 10 – 11 am, or by appointment

Contacting the instructor:
Please contact instructor by e-mail. Include ABIO 540 in the subject line. Any changes to the syllabus, course outline, schedule, office hours, or other pertinent information will be posted to Blackboard and sent to students via email with as much notice as possible.

Pre-requisites: ABIO 524 or permission from the instructor

Course description: In this course, you will learn basic programming skills that will allow you to analyze biological data sets with a focus on next-generation sequencing data sets. This course focuses on Unix shell and Python programming skills and applies them to basic problem sets relating to parsing large files, e.g., data that is generated by next generation sequencing. Students will also learn how to manage computer resources and work in a shared user environment (HPC).

Course objectives: At the completion of this course, students will to:

- Demonstrate a proficiency in navigating a command line environment using Unix/Linux
- Construct a pipeline utilizing basic commands in Unix/Linux
- Write functions in Python which demonstrate basic algorithmic logic
- Understand and interpret common file formats (FASTA, FASTQ, SAM, GFF, GTF, etc.)
- Perform quality assessment, filtering, and initial analysis of high throughput sequencing data
- Utilize various programs or tools to analyze transcriptomic data
- Explain how algorithms function
- Successfully submit jobs to a computer cluster and work efficiently and within parameters of a shared user environment
- Demonstrate proficiency at reading, discussing, and critiquing primary research literature
- Analyze and visualize RNA-seq data using the program R

Course Organization:

Blackboard Material: Syllabus, PowerPoint slides and reading material for the lectures will be posted on Blackboard. Course materials, including lecture notes, will not be distributed in class.

Important dates:
Wed, January 22: Classes begin at 8:00 am
Thu, January 23: Late registration begins. Late registration fee charged. Tue, January 28: Last day to drop semester length with 0% financial liability
Wed, January 29: Last day to add semester length course without permission of instructor. Tue, February 4: Last day to drop semester length course without receiving a "W"
Tue, February 4: Last day of late registration for the semester Mon, March 9: Midterm Point
Sat, March 14 - Fri, March 20: Spring Break; No Classes
Sat, March 21: Classes Resume at 8:00 am Tue, May 5: Last day of classes
Wed, May 6: Reading Day
Thu, May 7: Final examinations begin Wed, May 13: Final examinations end

Attendance Policy: Class attendance is expected and is strongly recommended.

Standards of Academic Integrity: The University's Standards of Academic Integrity as defined in the Undergraduate Bulletin will be strictly enforced. As noted in the graduate bulletin: "As a community of scholars, the University at Albany has a special responsibility to integrity and truth. By testing, analyzing, and scrutinizing ideas and assumptions, scholarly inquiry produces the timely and valuable knowledge that guide and inform important and significant decisions, policies, and choices. Our duty to be honest, methodical and careful in the attribution of data and ideas to their sources establishes the foundations of our work. Misrepresenting or falsifying scholarship undermines the essential trust on which our community depends. Every member of the community, including both faculty and students, shares an interest in maintaining the highest standards of academic integrity. "For more information regarding the consequences of academic dishonesty, please see (http://www.albany.edu/undergraduate_bulletin/regulations.html) and http://www.albany.edu/studentconduct/27179.php

Accommodations for students with disabilities: If you need accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. To request academic accommodations (for example, a note taker), students must contact Disability Resource Center, Phone: (518) 442-5490, http://www.albany.edu/disability/). For additional help you may contact the Office of Academic Support Services (http://www.albany.edu/academics/advising.shtml).

Grade Policy:

The final grade for this course will be calculated as follow:

Projects:	40%
Lab notebook:	10%
Final Project and Presentation:	50%

1. **Projects:**
   During the class, you will be assigned in-class assignments as well as two projects that you work on in class and outside of class (see course outline for more details). It is anticipated that you will be able to complete much of this work during in-class lab time, but out of class time will be required for the two projects with figures and short reports. – 40% of grade

2. **Lab notebook:**
   Students should keep a lab notebook (either digitally or on paper) to be turned in at the end of the course. It should contain notes/comments on all your work throughout the course. This should include detailed information such as software/package version. – 10% of grade

3. **Final Project and Presentation:**
   Each student will select a genomic / transcriptomic data set and analyze this data to generate figures that could be used in a publication. Students can use data from their own research projects or their lab for this project. Alternatively, students can download publicly available data for this project. An oral presentation to the class near the end of the term and written report with figures will be due at the end of the semester. – 50% of grade

   The information required to complete projects will be given in class. If you find yourself googling how to write a piece of code, you are most likely going about the problem wrong. You must be able to describe how any piece of code you turn in operates.

Note: Students are encouraged to work together and share information. Some students will have a higher skill level than others, and we encourage those students with more experience to help their peers. However, no direct sharing of code is allowed – each student must write their own code for their projects.

Grade Scale:
Final letter grades will be based on the knowledge you have achieved. The following averages will earn the indicated letter grade:
A ≥ 90; A - 89-85; B+ 84-80; B 79-75; B- 74-70; C 69-60; D 59-50; F ≤ 49.

ABIO 540 Lecture schedule:

Week 1 & 2 (Jan. 23, 28, 30)
Introduction to biological questions that can be answered using Next-Generation sequencing approaches. Description of next-generation sequencing technologies and strengths and weaknesses. Introduction to library prep and considerations to be taken with NGS data (RNAseq, CHIPseq, CLIPseq and others). Introduction to UNIX and the shell (background, file hierarchy and file management programs) as well as git and Github.

Week 3 (Feb. 4, 6)
Continuing developing skills in UNIX and the shell (File management programs, wc, cut, grep, pipes). Introduction to file formats for next-generation sequencing (fasta, fastq, SAM and BAM). High Performance computing lab to introduce managing large data sets. Introduction to Jupyter (open source tool) and reproducible computing.

Week 4 (Feb. 11, 13)
Introduce DMseq.org and biology of project 1. Continuing working with file formats for next-generation sequencing (fasta, fastq, SAM and BAM, GFF, GTF). Begin working with RNAseq files for project 1.

Week 5 (Feb. 18, 20)
Introduction to bcl2fastq and sequencing programs (fastQC and MultiQC). How to run programs and what to look for – trouble shooting. Continue working on project 1.

Week 6 (Feb. 25, 27)
Short-read alignment algorithms and associated lab. RNA-seq and differential gene expression analysis. Continue working on project 1.

Week 7 (Mar. 3, 5)
Generating read counts for differential gene expression and introduction to R for data analysis and visualization. Continue working on project 1.

Week 8 (Mar. 10, 12)
Alternative splicing analysis and visualization. Project 1 due March 13th.

Week 9 – Spring Break

Week 10 (Mar. 24, 26)
Introduce single cell sequencing and biology of project 2. Introduction to programs for analyzing RNAseq from single cell experiments. Work on Project 2. Submit final project and plan receive approval for final project.

Week 11 (Mar. 31, April 2)
Comparative Genomics and homology. Continue to work on project 2 with Project 2 due April 3rd.

Week 12 (Apr. 7, 9)

Phylogenetic Thinking and Inference, Maximum likelihood Phylogenetic Inference. Work on final project

Week 13 (Apr. 14, 16)
Continue to work on final project.

Week 14 (Apr. 21, 23)
Student presentations on final presentations

Week 15 (Apr. 28, 30)
Student presentations on final presentations

Final written project due on May 5th

Changes in the course outline may occur based on availability of guest speakers. Students will be notified of those changes via Blackboard.

ABIO 441 / 541 Molecular Neurobiology Fall 2020 Syllabus

Course number: ABIO 441 (Class no.) / ABIO 541 (Class no.)
Credit Hours: 3
Lecture times: Tuesday and Thursday 6:00-7:20 pm
Lecture location: Online

Instructor: Dr. Ben G. Szaro, PhD
E-mail: bszaro@albany.edu
Office: Life Sciences 1059
Office Hours: Monday 4:30-6:00 pm and Tuesday 2:30-4:00 pm
I will not be physically meeting with students in my office this semester. Office hours will instead be held virtually, by Zoom, twice a week, at the times scheduled above. I've set up links on Blackboard for office hours.

Contacting the instructor: Outside of office hours, the best way to contact me is by email (bszaro@albany.edu). You may also try to reach me by telephone (518-591-8852). I won't answer unless I'm in my office, but you may leave a message. Voice messages are forwarded to my email. I will try to get back to you as quickly as possible (generally within 24 hours).

Pre-requisites:
ABIO 441 - ABIO 365 and ABIO 341 or ABIO 301
ABIO 541 – Graduate standing or consent of the instructor

Course Description: The molecular biology of learning, memory, neural development and neurological disease. The course will relate the structure and function of receptors, second messengers, cytoskeletal proteins, transcription factors and gene structure to their roles in the nervous system.

Learning Objective: Students will gain the knowledge needed to read and critically evaluate the scientific literature of the biochemistry and molecular biology underlying brain structure and function in health and disease.

Course Requirements:

1. Lectures:

Class lecture will be held via Zoom Session: Students should log in using the Zoom link for the course on Blackboard. The current link is 960 2535 4949; passcode 9w377q

Consult the class web pages on Blackboard for any updates or changes in the information needed for logging in to Zoom sessions.

The class will meet virtually, online, this semester. For security and identification purposes, please use the

University Zoom links to log on, and identify yourself by name in your participant identification so that the instructor and classmates will know who is speaking. Lecture notes and readings will be posted ahead of time on Blackboard. Lectures will be given at the designated class times, and students will be able to listen to the lectures, follow along with the lecture notes, ask questions of the instructor, and enter into class discussions synchronously during the class period. Although classes will generally be recorded for later viewing, you will not be able to participate in class discussions unless you log in during the designated time period. Remember, class participation in these sessions will be taken into consideration for final grading (see below).

Current links and passcodes are:
Mondays 4:30 to 6 pm: 934 5309 1345; passcode, 51876o
Tuesdays 2:30 to 4 pm: 926 6832 2516; passcode, 1k824k

2. Textbook:
"Basic Neurochemistry: Molecular, cellular and medical aspects. 8th edition." Siegel et al., Academic Press. Additional readings will also be assigned from the original scientific literature. These readings will be listed separately in updates posted on Blackboard throughout the semester. Whenever possible, electronic copies will be posted on the course web page prior to the day they are discussed.

3. Course web page:
We will use Blackboard to post announcements, assignments, lecture notes and readings.

4. Class participation:
Class attendance is expected, but not required. Although class participation is not counted directly in the course grade, it is taken into consideration if your grade is borderline. This is especially important on days labeled "Literature discussion". On these days, you are expected to read the assigned papers before class.

5. Academic Integrity:
Failing grades are also given for plagiarism. Students will be expected to adhere to University standards of academic integrity at all times, as outlined in the Undergraduate and Graduate Bulletins (http://www.albany.edu/undergraduate_bulletin/regulations.html and http://www.albany.edu/graduatebulletin/requirements_degree.htm#academic_standards) Bulletins of the University at Albany.

6. Absence policies:
Students who miss class are nonetheless responsible for the material covered during the class period, which is available on the course website. The class adheres to the University at Albany's University's Medical Excuse Policy: (https://www.albany.edu/health_center/medicalexcuse.shtml)

With regard to absences due to religious observance: refer to New York State Education Law (Section 224-a) whereby campuses are required to excuse, without penalty, individual students absent because of religious beliefs, and to provide equivalent opportunities for make-up examinations, study, or work requirements missed because of such absences. Students should notify the instructor in a timely manner.

Grade Policy:

Grades for the semester will be determined as follows:
Midterm exam 45%
Final exam 55%

Examination format:
Exams are take-home. The exams will be posted online and are due on the dates listed in the class schedule. In answering exam questions, you may refer to class notes and any published material. You will not, however, be permitted to work together with another classmate, or seek help from anyone, either orally or through correspondence. Exams will emphasize topics covered in class "Lectures", as well as the specific papers covered in the "Discussions". Exams must be emailed to the instructor (bszaro@albany.edu) by the end of class on the dates indicated on the syllabus.

Differences in requirements for ABIO 441 (undergraduate) vs. ABIO 541 (graduate) students:
Although most of the exams will overlap between the two sections, students enrolled in ABIO 541 will receive an additional question(s) on each exam. These will be thought questions involving data interpretation and proposing additional follow up experiments. Whereas ABIO 541 students will be required to answer this question, ABIO 441 students may choose to answer this question for extra credit.

Grading and the "curve":
Grades in this class are not curved. Your grade will be what you earned, regardless of how well or poor the rest of the class does. Exams and papers will typically be graded on an A to E scale.
Grading is as follows:

- 4.0 (A) is given to an answer (or paper) that is accurate and addresses the question or topic at hand in a complete, and appropriately logical and concise way.
- 3.0 (B) is given to an answer that is acceptable but may contain slight inaccuracies or is incomplete in some area that is necessary for the Version of 08/17/2020 logical argument (for example, presenting too much irrelevant information or failing to build a clean, logical argument).
- 2.0 (C) is given to an answer that is partially correct but has major gaps or inaccuracies, making it unacceptable at the graduate level.
- (D) is given to an answer that demonstrates only marginal understanding of a topic.
- (E) is given when the answer is missing or is completely inaccurate.

ABIO 441 /541 Lecture schedule

Day/Date	Topic	Text Readings
Tu 08/25	Molecular Structure and Function	Ch.1 Ch. 2
Th 08/27	Molecular Neuroanatomy - Cell membrane structure Membrane transport	Ch. 3
Tu 09/01	Molecular Neuroanatomy - Cell membrane structure Membrane transport	Ch. 3
Th 09/03	Ion channels	Ch. 4
Tu 09/08	Cell adhesion	Ch. 9
Th 09/10	Literature discussion – Membranes and ion transport	See reading list
Tu 09/15	The neuronal and glial cytoskeleton	Ch. 6
Th 09/17	Axonal transport	Ch. 8
Tu 09/22	Axonal transport	Ch. 8
Th 09/24	Literature discussion – Cytoskeleton and transport Neurotransmitters, principles	See reading list
Tu 09/29	Acetylcholine and its receptors	Ch. 12 Ch.13
Th 10/01	Neuropeptides	Ch. 20
Tu 10/06	Excitatory amino acids	Ch. 17
Th 10/08	Neurotrophins Exam 1 Posted	Ch. 29
Tu 10/13	G proteins and phosphoinositides	Chs. 21, 23, 52
Th 10/15	Cyclic nucleotides and Ca ++	Chs. 22, 24
Tu 10/20	Protein phosphorylation Exam 1 Due	Chs. 25, 26
Th 10/22	Literature Discussion – Cell Signaling, Pt. 1	See reading list
Tu 10/27	Literature discussion – Cell Signaling, Pt. 2	See reading list
Th 10/29	Gene expression in the CNS – transcriptional control	Ch. 27
Tu 11/03	Gene expression in the CNS – post-transcriptional control	Ch. 27
Th 11/05	Literature discussion – Gene Expression	See reading list
Tu 11/10	Neurodegenerative Disease	Ch 41, 45, 48
Th 11/12	Alzheimer’s Disease and related dementia	Ch. 46, 47
Tu 11/17	Molecular biology of Parkinson's disease	Chs. 14, 49
Th 11/19	Literature discussion – Neurodegenerative Diseases	See reading list
Tu 11/24	Learning and memory	Ch. 56
Th 11/26	No class - Thanksgiving	

Note: Final Exam will be posted by 11/24/20
Final Exam Due: (date to be determined when the final examination schedule is posted by the University)

ABIO 399/499 Supervised Research for Juniors & Seniors Syllabus

Course number: ABIO 399 (Class no.) / ABIO 499 (Class no.)
Credit Hours: ABIO 399 (1-3 credits) / ABIO 499 (1-4 credits)
Lecture times: TBD
Lecture location: TBD

Coordinator: Dr. Robert Osuna, PhD
E-mail: rosuna@albany.edu
Office Hours: By appointment

Pre-Requisites: ABIO 399 & 499 do not have stated pre-requisites; however, **individual supervisors may request that students have completed course work in specific areas** such as genetics, molecular bio, chemistry etc.

Course Description: ABIO 399/499 Supervised Research for Juniors (1-3 credits) Seniors (1-4 credits). Conduct research on selected topics in biology. A **research paper will be required** at the end of each semester**. Students taking two or more semesters of ABIO 399 OR 499 will make a poster or oral presentation** at the Annual Research Symposium. Students completing **departmental honors**, are **required to give an oral presentation.**

Course Objectives: ABIO 399 and ABIO 499 are intended to engage students in a specific field of research by using the scientific method of investigation. Students will learn to design experiments to test a hypothesis, learn to execute experiments, analyze results and arrive at conclusions. Students will communicate their findings through a written report at the end of each semester and by a presentation at an annual research symposium.

Course requirements

1. **Course Fulfillment:**
   - **4 credits over 2 semesters** in these courses may be used to fulfill one upper-level lab requirement.
   - A Maximum of **6 credits in ABIO 399** and; **8 credits in ABIO 499** may be earned. However, ABIO 399/499 may only contribute a **total of 4 credits** toward the biology major.
   - **Academic Integrity:** See http://www.albany.edu/undergraduate_bulletin/regulations.html

2. **Student Expectations:**

While not easy to evaluate this experience with a single letter grade, a level of consistency and fairness in grading may be achieved by considering, similar evaluation criteria.

- **Time**: University regulations state: **3 hours of work/ per week/ per credit in the Fall/Spring**

Semester or 8-10 hours/ week/ credit in the Summer session. If a student is able and willing to devote more time per week, he or she may do so.
At times during the semester, students may need more time to study for exams, which may temporarily affect their availability for research. However, students should discuss this with their supervisor, and plan to make up this time in otherweeks.

- **Training**: Students are expected to make reasonable progress in responding to lab training by learning and correctly executing the required laboratory techniques.

3. Biology Safety Training:

The first time students register for undergraduate research (Bio399 or Bio499), they are **required** to complete an online Biology Safety Training (https://www.citiprogram.org/) in order to obtain permission to register. Student participation and completion will be tracked.

4. Motivation:

Students are expected to show genuine interest in, and become intellectually involved, in their research problem. This may be demonstrated by:

- Completing assigned readings for their research (e.g. advanced textbook chapters, published papers, lab theses, etc.)
- Being prepared for any lab presentations (at least one presentation per semester would be appropriate, where the student may receive feedback from the various lab members)
- Questions asked and interest in discussing the research with their supervisor.
- Level of responsibility and dedication toward their experiments.

5. Data Collection

Students are expected to maintain a well-kept lab notebook, containing accurate and detailed notes regarding each experiment, data collected, and conclusions arrived at. It should be organized, neat, and legible.

A RESEARCH PAPER IS REQUIRED FOR EACH registration of this course:

- Papers are submitted to the mentor for grading. Graded papers are then emailed to nroberts2@albany.edu
- There is no set length for this paper; however, it should follow a scientific publication format, **and must include**
  - Project Title and Student's name **AND**
  - **Introduction** (with cited references within the text)
  - **Materials and Methods** (with cited references within the text)
  - **Results** (including relevant data and figure legends)
  - **Discussion** (with cited references within the text)
  - **References**
- **AN ELECTRONIC copy of the paper is required with the Application form as the cover sheet (sent from theResearch Instructor) 1 week after the last day of classes each semester**
- Supervisor should email the paper and letter grade to nroberts2@albany.edu. (cc to rosuna@albany.edu)

- A letter grade will not be entered without the research paper. In absence of a paper by the deadline, a grade of incomplete will be assigned. A supervisor may request (via email to Robert Osuna rosuna@albany.edu) to assign a grade of incomplete. A grade on incomplete will be granted for one semester only.

6. Annual Symposium:

- Participation in the Biology annual research symposium (Oral or Poster Presentation) is REQUIRED After 2 registrations in(ABIO 399/499). The presentation is typically held on the last Friday of April.

Grade Policy

- The final grade should take into consideration all of the Student Expectations (above). A grade inferior to "A" is acceptable, if one or more of the criteria are less than excellent.
- A student's grade ***should not be issued on the basis of the results*** *of their experiments* (as experimental results are unpredictable by nature).
- It is a good idea to discuss these and other expectations with a student at the beginning of each semester, and to discuss their progress regularly throughout the semester.
- Incomplete grades are discouraged, *but may be requested* of the research mentor, prior to the last day to submit grades each semester.

Suggested Course Grade Range for ABIO 399/499 components

Evaluation Criteria	Excellent (A)	Very Good (B+ to A-)	Good (B- to B)	Marginal (C- to C+)	Poor (E to D+)
Amount of Time Devoted					
Response to Training					
Motivation					
Data Collection					
Research Paper					

Research/Lab Schedule

To be determined by research mentor.

ABIO 399/499 Application Research Paper Cover Sheet

PASTE Abstract below -- New Abstract Required for Every Registration

Submit to Biology Main Office No Later than, the Last Day to DROP/ADD each semester.

Student Contact Information:			
First & Last Name:		**Student ID:**	
UAlbany Email:		**Phone:**	
Previous Registration: If you have previously taken ABIO 399 OR ABIO 499 write the year, semester, and no of credits below			
Course No:	**No of Credits:**	**Year:**	**Semester:**
Course No:	**No of Credits:**	**Year:**	**Semester:**
Course No:	**No of Credits:**	**Year:**	**Semester:**

Current Registration Information:					
Enter Year	**Enter Semester**	**Enter Course choose between ABIO 399 or ABIO 499**	**No. of credits (when registering select desired credits)Juniors, 2-3; Seniors, 2-4 credits**	**Class # (office use only)**	**Permission # (office use only)**

CITI Biosafety Training

Students please be advised the **CITI "Basic Biosafety Training" must** be completed before a permission number will be assigned. You cancomplete this training by creating an online account at: https://www.citiprogram.org/ . Once you complete the training along with this application, please email an electronic copy (preferably a PDF version) to biology@albany.edu.

Completed: Yes [ ]

Supervisor Contact Information: (sign your name as an agreement that you will supervise the student in the lab at all times)			
First & Last Name:		**Affiliation:**	
Department:		**Room No:**	
Phone:		**Email Address:**	
Supervisor Signature:			
Final Grade:	**Supervisor Signature:**		**Date:**

Dr. Robert Osuna, Coordinator ~ rosuna@albany.edu
~ Biology Office ~ biology@albany.edu ~ Bio126