

SYLLABUS: BIO 5610, WINTER 2018

Instructor information:

Rashmi Chandra (ee0804@wayne.edu)

Lisa Hanna (lisa.hanna@wayne.edu)

Class schedule:

Rashmi Chandra (ee0804@wayne.edu): Tuesday (12:30 AM to 3:20 PM)

Lisa Hanna (lisa.hanna@wayne.edu): Wednesday (4:00 PM to 6:50 PM)

Office hours: By appointment only (To be arranged through e-mails)

Lab location: 316 Shapero Hall

Class website: Blackboard will provide all the information needed.

Course materials: Students must bring a lab-notebook that will be used for reference while finishing the lab reports and studying for the exams.

Course description: The goal of this course is to understand the concepts of development (taught in BIO 5620) through questions, experiments, and discussions.

Therefore, the students will learn to:

1. Identify the question(s)
2. Devise experimental approaches to address the question of interest
3. Dissect the experimental results
4. Make conclusions based on observations

Course schedule:

Lab No.	Lab Description	Date	Points
1	Understanding <i>Caenorhabditis elegans</i> (roundworm) development and how it is influenced by sensory neurons	1-16-18 1-17-18	10
2	Tracing the importance of cell specification in <i>C. elegans</i> through behavioral assays	1-23-18 1-24-18	10
3	Holometabolous development: <i>Drosophila melanogaster</i> (fruit fly) Lab I: promoter trapping and segmentation gene expression	1-30-18 1-31-18	10
4	Holometabolous development: <i>D. melanogaster</i> Lab II: Tracking CNS and PNS development Part I	2-06-18 2-07-18	10
5	Holometabolous development: <i>D. melanogaster</i> Lab III: Tracking CNS and PNS development Part II*	2-13-18 2-14-18	10
6	EXAM 1	2-20-18 2-21-18	100

7	Hemimetabolous development: <i>Periplaneta americana</i> (cockroach)**	2-27-18 2-28-18	10
8	Do vertebrates develop differently? Proposal discussion I: identifying hypotheses	3-6-18 3-7-18	10
9	SPRING BREAK	From 3-12-18 to 3-17-18	
10	Back to the beginning: fertilization and regenerating <i>Planaria</i> (flatworm) and <i>Acheta</i> (crickets)	3-20-18 3-21-18	10
11	Proposal discussion II: experimental strategies	3-27-18 3-28-18	10
12	EXAM 2	4-3-18 4-4-18	100
13	Proposal discussion III: potential outcomes and alternative approaches	4-10-18 4-11-18	10
14	PROPOSAL SUBMISSION	4-17-18 4-18-18 (by 12 noon)	100

*Cricket amputations

***Planaria* amputations

Lab Report: Students are required to keep records of the experiments. For each session, one experiment will be performed. Details of experiments, like materials and methods, observations and results of each experiment, should be recorded. After the lab, everyone must submit a lab report that should include:

1. Introduction: This section will include background information (1 to 2 sentences), the question that is being addressed, hypothesized results and conclusions.
2. Materials and methods: This section will discuss the protocol followed and the reagents used.
3. Results: The observations and calculations will be explicitly stated in this section with the help of graphs, tables or illustrations.
4. Discussion: This section will discuss the obtained results and list the conclusions that can be made from the observed results. If the observed results do not match with the hypothesized results, this section will also extrapolate and explain the reason for the differences, like experimental artifact, environmental influences, etc.

The entire lab report should be single-spaced, in font 12 (Times New Roman), and not to exceed more than 2 pages of text. This excludes tables, figures, and other illustrations. Each lab report will carry 10 points. The TAs will further explain how to write the lab reports on the first day of the course. To discourage plagiarism, students must submit their lab report through safe-assign. This assignment will be submitted within 48 hours after the class. For example, Tuesday's class will submit the assignment by **Thursday at 3.20 PM**, and Wednesday's class will submit the assignment by **Friday at 6:50 PM**. The lab report for lab number 8 will be split into two parts: first part, 7.5 points for the usual lab report plus 2.5 points for the hypothesis of the research proposal. Labs numbered 11 and 13 will be discussion sessions about the research proposal, where each student will talk about his/her hypothesis/aims/methodology/possible outcomes and participate in discussing other students' presentations. Each discussion session will be worth 10 points, i.e., each student will be graded 5 points for his/her own presentation in each session and 5 points for his/her participation in providing feedback for other students' proposals.

Late submission penalty: There will be a deduction of 10% of the allotted points every 24 hours from the due date. For example, if Tuesday's class submits the assignment by Friday at 3.20 PM, the submission will be graded on 9 points instead of 10 (10% of 10 points = 1 point). On the other hand, if Tuesday's class submits by Saturday at 3.20 PM, the submission will be graded on 8 points and so on. Bottom-line, please submit the assignments on time! Any discussion regarding lab report grades must be brought to the TA's attention within 2 business days of the date when the report is returned.

Research proposal as final exam: Please refer to the file that lists the guidelines on how to write the research proposal, which will be a take-home exam. TAs will explain what is expected for the proposal once the course has started.

In a nut-shell,

Length and formatting of the research proposal:

3 pages of text (excluding figures and references), single spaced, a margin of 0.5 to 0.75 inches, font: Times New Roman (12) or Arial (11).

Illustrations: Graphical illustrations with proper legends explaining the proposal are strongly encouraged but not mandatory.

1st Page:

Explains the general background information and the prevailing gap in the knowledge, thus reasoning out the basis of the question(s) being addressed in the proposal. Once the questions are listed (**2 or 3 questions**), a brief explanation of how those questions will be answered follows. Meanwhile, this page should also contain a few sentences on why someone will fund your project. In other words, what is the significance of your project to the society or to the species you are examining. Key to write an attractive proposal is to clearly state the questions, logically explain the approaches, and defend its importance succinctly within a page.

2nd and 3rd page:

This section should begin with a more specific introduction pertinent to the questions asked. This is different from the first page because now the introduction should be very specific and only written to clearly explain the gap while stating the questions. Experimental strategies should clearly state the name of the experiment, why the experiment is chosen and explain the potential results and outcomes. Alternative strategies are plan B. You should clearly explain plan-B because plan-B defends the faults in plan-A, and together, they fortify the success of getting discrete results through the proposed experiments. During this entire process, one should always keep in mind that simple and doable experiments stand a better chance of yielding unambiguous results. Next, bring the story home with a concluding paragraph, reminding the readers about the usefulness of this project, progress and its contributions to the scientific community.

Lab policies:

- Attendance is mandatory. You will be tested on specimens, slides and experiments that are only available in lab and for that period, e.g., you cannot view last week's specimens and/or slides in the current week. Similarly, you cannot perform last week's experiment in the current week.
- It is strongly recommended that you read the assigned material before attending each lab, as it will keep the lab at a good pace and we will be able to cover what is scheduled.
- The microscopes, slides and all lab reagents and materials must be handled with proper care.
- Everything must be returned to their proper location once each experiment is done.
- There will be no make-up points for any assignment or exam.
- If a student misses the lab because of a valid reason, e.g. job interview, health problems etc., he/she will have to provide valid documentation regarding the issue. If the student can, he/she

must inform the TA before the lab time. If the student fails to provide any of the above, he/she will get a zero for the lab and will not be allowed to do a make-up experiment. If the student submits proper documents, he/she will be allowed to write a report based on hypothetical results/thought experiments regarding the week's lab.

- In general, grades will be calculated on a straight scale, based on a grand total of 380 points. There are 2 lab practical exams worth 100 points each. There will also be a research proposal (take-home final exam) that is worth 100 points. The lab reports will be worth another 80 points (10 points per lab report; and this will also include the marks for the discussion sessions). It is your responsibility to keep track of your grades with the instructor. We will not be allowing grade changes at the end of the semester.

http://www.doso.wayne.edu/student-conduct/Academic_Integrity.html .

Cheating Policy: A student found to be cheating during an exam (using a “cheat sheet”, looking at another’s paper, allowing another to look at yours, etc.) will receive a zero for that test with no opportunity to drop that grade. The instructor also reserves the right to pursue further disciplinary measures, such as issuing an "F" grade for the course and taking further university disciplinary action. No electronic devices (cell phones, blackberries, iPods, computers, cameras, calculators, smart watches, etc.) are to be present at an exam.

Withdrawal Policy: You may drop the class and have tuition reimbursement till Monday, January 22, 2018. Tuesday, Jan 23, till Sunday, Feb 5, is the last week for students to drop the class with no record of enrollment. After this date, you may withdraw with the instructor’s approval and receive a grade of WP or WF (withdrawal passing, withdrawal failing). Your grade (WP or WF) will be determined by your assignments and exam grades up to that time. The WP grade will be given for grades of 60% and higher. After Sunday, March 25, 2018, you cannot withdraw, regardless of the circumstances. This is university policy and cannot be overridden.

Add/Drop/Incomplete Policy: Add Policy: Add forms will not be signed after the first week of class. Incomplete Policy: Please note that “incomplete” grades will not be issued to students in poor standing and who are seeking an alternative to a late drop. Also, any "I" given to a student will automatically revert to "F", if the work is not completed within one calendar year. There are no exceptions. Further information on grading policy can be found at <http://sdcl.wayne.edu/RegistrarWeb/Registrar/policies.htm>.

Students with Disabilities: If you have a documented disability that requires accommodations, you will need to register with the Student Disability Services (SDS) for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. The SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, the TA will be glad to meet with you privately to discuss your special needs. The Student Disability Services’ mission is to assist the university in creating an accessible community, where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University. Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.

Changes to Syllabus: We reserve the right and discretion to amend or change parts of this syllabus if circumstances arise that necessitate such changes. Any such changes will be distributed to the whole class in writing and posted on Blackboard.

Unexpected University Closures: If the University is officially closed on an exam day, the exam will be held on the next regularly scheduled class day. Closure of the University is announced by the following mechanisms: 1. University Newslines (313) 577-5345 * 2. WSU Homepage (www.wayne.edu) * 3. WSU Pipeline (www.pipeline.wayne.edu) * 4. WDET-FM (Public Radio 101.9) 5. by other local radio and television stations * Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcasted by local radio and television stations. Other: Any specific issue not covered by this syllabus will be resolved using University policies. Disputes that cannot be resolved following the guidelines present in this syllabus will be resolved by following the guidelines of the University "Student Due Process".

Grading

• In general, grades will be calculated on a straight scale, based on a grand total of 380 points. There are 2 lab practical exams worth 100 points each. There will also be a research proposal (take-home final exam) that is worth 100 points. The lab reports will be worth another 100 points (10 points per lab report; and this will also include the marks for the discussion sessions). It is your responsibility to keep track of your grades with the instructor. We will not be allowing grade changes at the end of the semester.

Grades will be calculated on the following %:

Letter grade	Percentage
A	92.5-100
A-	90.0-92.4
B+	87.5-89.9
B	82.5-87.4
B-	80.0-82.4
C+	77.5-79.9
C	72.5-77.4
C-	70.0-72.4
D+	67.5-69.9
D	62.5-67.4
D-	60-62.4
F	0-59.9