

**BIOE 342 - SECTION 002**  
**LAB MODULE IN TISSUE CULTURE**  
**Spring Semester 2024**

**INSTRUCTOR**

Dr. Bilal Ghosn

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**COURSE TIMES**

General Lab Time: **Tues** 1 pm – 6 pm, **Thurs** 1 pm – 6 pm, **Sat** between 9 am – 11 am\*  
Full Semester: See Schedule for your section's assigned days.

Students are expected to be PROMPT (if not a few minutes early) to lab. Late arrival will result in point deductions as described below. Students are also expected to stay until their experiments are complete—even if this is past 6:00 p.m. On Saturdays, do not start 45 min of work at 10:30 a.m., when the session ends at 11:00 a.m. Students that are late (after the 1 PM start time) will have a penalty applied to their developing tissue culture skills grades.

**GRADING POLICY**

The final grade will be based on the following:

<input type="checkbox"/> Poster on NIH/3T3 Cell Experiments:	30 %
<input type="checkbox"/> Laboratory Notebook Maintenance:	15 %
<input type="checkbox"/> Experiment and Analysis Questions:	30 %
<input type="checkbox"/> Online Practical Exam:	10 %
<input type="checkbox"/> Developing Tissue Culture Skills:	15 %

**COURSE ASSIGNMENTS**

**Poster of NIH/3T3 Cell Experiments**

A majority of the experiments will focus on the survival and function of NIH/3T3 (human dermal fibroblast) cells *in vitro*. Each student is required to put together a poster that covers the objectives, succinct summary of experimental methods, experimental results, and implications of these experiments.

A draft of the poster must be uploaded to Canvas by Friday, April 5<sup>th</sup> at 1:00 p.m. Your poster will be critiqued by Dr. Ghosn. Comments and a grade for the draft will be returned by Friday, April 12<sup>th</sup>. A revised/final poster is due Friday, April 19<sup>th</sup>, by 1:00 p.m.

Further information on the format and content of the poster will be distributed at a later date. The poster on the NIH/3T3 cell experiments will count 30% of your final grade (10% draft; 20% revised/final).

**Lab Notebook Maintenance**

Carbon copy lab notebooks must be used. Copies of the laboratory work from each day must be turned in when you leave the lab on every Tuesday and Thursday. (Laboratory notebook writing from Saturday will be turned in with the Tuesday material.) Staple your pages together. See the Schedule for the particular materials that must be turned in each day.

BIOE 342 will use the same format for keeping a lab notebook as BIOS 311; instructions and information can be found on the web at <http://www.owl.net.rice.edu/~bios311/bios311/notebook.html>. A few important things to note: First, there are some graded questions and observations that must be made during lab. These questions must be answered in your laboratory

notebook and will be graded as part of the Experiment and Analysis Questions. As such, these questions and observations are due on the day the lab is conducted. Second, do not copy down all the protocols from the protocol book if you followed them exactly. You can note: The Micropipette Exercise was followed as given on pages 1-2 of the BIOE 342 Lab Protocols Book. However, when you make changes from the protocol, they should be noted. In addition, the cell type and passage number should be noted for all experiments.

A simple grading scale of  $\sqrt{+}$  (A),  $\sqrt{\phantom{x}}$  (B), and  $\sqrt{-}$  (C) will be used. Maintaining your lab notebook will count 15% in your final grade.

### **Experiment and Analysis Questions**

Listed at the end of most protocols are Experimental and Analysis Questions. Answers to these questions, as well as appropriate figures and tables, must be completed. Questions must be answered once the last day of a particular protocol has been completed and turned in the following Tuesday. For example, if an experiment ran Tuesday and Wednesday, the Questions must be answered and turned in by the following Tuesday at 1:00 p.m. Staple your pages together. See the Schedule for details.

Please number your answers to Questions and label to which experiment they are associated. Each experiment should be on its own document. Answers to Questions will count 30% in your final grade. Points for observations discussed above will be included in this part of the grade.

This section will also include your open-ended experiment for the end of the session. Students will develop an alternative protocol to answer a related research question to studies currently performed. Students will be evaluated for their experimental design/plan as part of the Questions grade.

### **Developing Tissue Culture Skills**

A major objective of this course is to learn cell and tissue culture. The instructor and T.A.s will be working with and observing students one-on-one. Frequent verbal and written (minimum of three times) feedback will be given to students. A simple grading scale of  $\sqrt{+}$  (A),  $\sqrt{\phantom{x}}$  (B), and  $\sqrt{-}$  (C) will be used. Evaluations of your tissue culture skills will count 15% in your final grade.

### **Online Practical Exam**

Your skills will also be evaluated through an online practical exam focused on your ability to identify appropriate application of protocols as well as early stage data collection and analysis for basic techniques taught in the lab.

## **COURSE ADMINISTRATION**

### **Course Materials**

The Protocol Book for BIOE 342 will be available to students free. The protocol book is required; a previous edition cannot be used, as the protocols are updated yearly. Each student needs a carbon copy laboratory notebook; these are available at the Rice Campus Bookstore. You may use an already-started (i.e., from another class) laboratory notebook. Digital Laboratory Notebook pages will be provided for remote sessions.

### **Honor Code Policy**

Much of the learning in this lab will be from coaching and interaction with other students, the instructor and the T.A.s. It is important that a collegial environment is present. For some experiments, students will need to share data with one another and/or the whole class. However, the maintenance of the lab notebook (including Introduction, Materials and Methods, Data and Summary), answers to Questions, and the draft and final poster must be original work. You may discuss strategies for data preparation and interpretation with other students, but you must do the graphing, tabulating, writing, etc. yourself. You may NOT consult another student's lab report, poster, or notebook or any posters or notebooks from previous classes. You may consult the Lab Protocols, Course Notes, other textbooks, review articles, and published research papers in

preparation of your poster or to answer any Questions. Obviously, information taken from journals, books, and websites must be adequately referenced.

### **Safety**

All students are expected to work safely in the lab. Safety glasses must be worn at all times. Contacts may not be worn. Students must wear long pants, shirts with shoulders (or a lab coat, buttoned up), and close-toed shoes. Students not adhering to these policies will be sent home to change. Absolutely no eating, drinking or gum chewing will be allowed at any place or time in the lab (including tables in Teaching Lab). Headphones, iPods, etc. may not be worn in the lab.

Biohazardous material must be disposed of properly. Details for proper disposal will be discussed in lecture. The instructor retains the right to penalize a student's final grade if egregious safety violations are noted.

### **Attendance Policy**

Students are required to attend all Tuesday and Thursday sessions of the laboratory. On Saturdays, students need to feed or pass their cells between 9 a.m. and 11:00 a.m. Interviews, other classes, or extracurricular activities are not valid excuses. Illness and family emergencies will be dealt with on an individual basis. Contact Dr. Ghoshn immediately as soon as an emergency arises.

### **Late Policy**

1. Laboratory Notebook pages: Pages should be turned in at the end of the lab day in the appropriately labeled box in the lab (BRC 232) or to Canvas by midnight the day an experiment is in a remote class session. Pages that are turned in the following day or later will be graded (e.g. comments, suggestions) but will receive a score of √-. Pages more than 3 days late will not be graded (score of 0).
2. Answers to Experimental & Analysis Questions: Laboratory notebook pages should be turned in by Tuesday at 1 p.m. in the appropriately labeled box in the lab (BRC 232). Pages that are past this deadline but arrive before 1 p.m. on Thursday will be scored to a maximum of 50% of the points available. Pages missing the Thursday deadline will not be graded (score of 0).
3. Draft and Final Posters, CPR: The deadlines for the posters are given above. Posters and CPR participation that miss these deadlines will be scored to a maximum of 50% of the points available.
4. Unexcused late arrival to class (after 1:00 PM on Tuesdays and Thursdays) will result in 1 point deduction on your practical exam scores for each offense
5. Illness and family emergencies will be dealt with on an individual basis. Contact Dr. Ghoshn immediately as soon as an emergency arises.

*TAKE HOME MESSAGE: TURN EVERYTHING IN ON TIME. THE PENALTIES ARE STEEP.*

### **Note on course changes that may occur due to consequences of COVID-19 pandemic:**

Please be aware that the current course format and deadline are structured based on an initial remote portion of roughly 3 weeks of the course followed by in person learning. Should the pandemic shift the mode of instruction or ability to complete tasks, the course structure, assignment deadlines, mode of instructions may be changed.

### **Teaching Assistants**

Paul Spezza

Email: [pas10@rice.edu](mailto:pas10@rice.edu)

Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities should also contact Disability Support Services in Allen Center.