BIOS 223: Cell Biology Laboratory
Department of Biological Sciences
University of Illinois at Chicago

Syllabus

Credit Hours: 2
Prerequisites: Credit or concurrent registration in BIOS 222
Semester: Spring 2018
Location: Science and Engineering Laboratories – East (SELE), Room 4084

Instructor name: Andrea McGinley, Ph.D.
Office location: SEL E 4277
E-mail address: amario3@uic.edu
Office phone: 312-996-9569

Office hours: Monday 1-2
Wednesday 10-12
Thursday 2-3

Teaching Assistants | Email (@uic.edu) | CRN | Meeting Time
--- | --- | --- | ---
Hui (Ann) Liu | hliu209 | 41331 | MW 8:00-9:50 AM
Mengqi (Maggie) Xing | mxing3 | 36483 | MW 10:00-11:50 AM
Natalie Yoshioka | nyoshi2 | 23153 | MW 12:00-1:50 PM
Lillian Perez | perez36 | 23150 | MW 2:00-3:50 PM
Sarah Miettka | smi3nt2 | 23151 | MW 4:00-5:50 PM
Guliz Clare | gotkal2 | 41279 | TR 8:00-9:50 AM
Natalia Cortes-Delgado | ncor2e2 | 39768 | TR 10:00-11:50 AM
Dan Pers | dpers3 | 36484 | TR 12:00-1:50 PM
Chih-Wei Chen | cchen234 | 33789 | TR 2:00-3:50 PM
Edith March | emarch5 | 34971 | TR 4:00-5:50 PM

TA office hour times and locations are available on Blackboard and posted outside the classroom. You may attend office hours of any TA or the instructor. You do not need to make an appointment.

If you have a time conflict with your TA’s or the instructor’s office hours, email them to set up an appointment.

Course Description:
Laboratory experience with modern methods in cell biology. Culture of live cells, microscopy, and independent experiments are emphasized.

Course Objectives:
- Learn how to operate brightfield, phase-contrast, and fluorescence microscopes.
- Become proficient at several modern cell biology techniques: SDS-PAGE, Bradford assay, ELISA, immunostaining, cell culture.
- Prepare professional data figures using Microsoft Office and image editing software.
- Maintain a proper scientific notebook, analyze and interpret data.
- Write short scientific reports in grammatically-correct English with proper format and tone.
- Develop and carry out an independent experiment.
- Write a formal laboratory report analyzing data and conclusions from an independent experiment.
COURSE MATERIALS

Blackboard

http://uic.blackboard.com

Assignments will be posted to a Blackboard course site. Announcements will be e-mailed to you and posted on Blackboard. It is your responsibility to verify the proper functioning of your UIC email address and check this site regularly.

Required Course Materials

- There is no required textbook for the course. Lab handouts will be posted to Blackboard in advance of the lab session; you are responsible for printing these materials and bringing them to class with you.

- It is required that you bring your own Black Sharpie marker pen (Fine Point) to every lab session. You will also need a carbon-copy lab notebook for recording data.

COURSE POLICIES

Attendance Policy

You must attend the lab section for which you are registered. Due to high enrollment and limited availability of extra seats, there are generally no make-up labs. Do not assume that it is ok for you to miss lab due to travel plans. If you must miss lab, contact your TA as soon as possible, ideally before the absence. If you have an excused absence (religious holiday, participation in a UIC athletic event, family emergency, etc.), we will make every effort to arrange alternate deadlines and time to catch up. If you have an unexcused absence (overslept, vacation travel, any absence without contacting the TA or instructor, etc.), any missed work will be recorded as a ‘0’.

Policy for Missed or Late Work

Pre-lab quizzes are given frequently throughout the term. Therefore, you must come prepared and on-time for every lab. Each quiz will be worth 10 points.

Quizzes are distributed at the beginning of your lab section and are collected after 10 minutes. If you miss a quiz because of tardiness or absence, you will receive zero (0) points for that quiz. There are no make-up quizzes. At the end of the semester, your quiz score will be the sum of your ten highest-scoring quizzes.

Assignments are due at the beginning of class on the indicated due date. They will be considered late if submitted any later than 15 minutes after the scheduled beginning of your lab section. The grade you earn will be penalized by 5% for each business day that the assignment is late beginning with the day that the assignment is due. For example-- if a paper is due in your 12:00
PM section, and you submit your paper at 12:20 PM, your grade for that paper will be lowered by 5%. If you submit your paper after 12:00 PM the next day, your grade will be lowered by 10%.

If you need to submit an assignment after your lab section has ended for the day, you should bring it to the instructor’s office (SEL 4277). If the instructor is not there, give your paper to the TA inside the lab. They will sign and date the paper and leave it for your TA. You must have someone verify the date and time of your submission. No papers will be accepted outside of normal lab hours – if the lab is closed, you will need to wait until the lab reopens to turn in your assignment.

Do not email your assignments to your teaching assistant or the instructor. Do not leave your assignments under the door.

Academic Integrity Policy

As an academic community, UIC is committed to providing an environment in which research, learning, and scholarship can flourish and in which all endeavors are guided by academic and professional integrity. All members of the campus community—students, staff, faculty, and administrators—share the responsibility of insuring that these standards are upheld so that such an environment exists. Instances of academic misconduct by students will be handled pursuant to the Student Disciplinary Policy:

http://dos.uic.edu/docs/Student%20Disciplinary%20Policy.pdf

RELIGIOUS HOLIDAYS

Students who wish to observe their religious holidays shall notify the faculty member by the tenth day of the semester of the date when they will be absent unless the religious holiday is observed on or before the tenth day of the semester. In such cases, the student shall notify the faculty member at least five days in advance of the date when he/she will be absent. The faculty member shall make every reasonable effort to honor the request, not penalize the student for missing the class, and if an examination or project is due during the absence, give the student an exam or assignment equivalent to the one completed by those students in attendance. If the student feels aggrieved, he/she may request remedy through the campus grievance procedure.

http://oae.uic.edu/docs/ReligiousHolidaysFY20152017.pdf

ACADEMIC DEADLINES

Jan 16th – Instruction begins
Jan 26th – Last day to complete late registration, switch sections, and drop courses without receiving a ‘W’ on transcripts
March 26-30th – Spring Break Holiday, no class
May 4th – Instruction ends
Please review the UIC academic calendar for a full list of important dates and deadlines.

DISABILITY ACCOMMODATION

The University of Illinois at Chicago is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at UIC. Students with disabilities who require accommodations for access to and/or participation in this course are welcome, but must be registered with the Disability Resource Center (DRC). All such students must obtain a Letter of Accommodation (LOA), and submit your LOA to the instructor or your TA. Appropriate accommodations will then be arranged to support you.

You may contact DRC at 312-413-2183 (v) or 773-649-4535 (VP/Relay) and consult the following: http://drc.uic.edu/guide-to-accommodations.

COURSE REQUIREMENTS, METHODS OF EVALUATION, & GRADING POLICIES

Evaluation Criteria

Criteria for evaluating and grading assignments are provided in the instructions for each assignment. For papers, grading rubrics are provided to help you prepare your work. We encourage you to review assignment instructions and rubrics carefully, and to consult your TA or the instructor if you have any questions – before the assignment is due.

You are expected to know the names and proper spelling of the organisms, equipment, and reagents discussed in the laboratory exercises. Minor spelling mistakes are not penalized - your answers must sound the same as the actual answer when pronounced out loud. If your answer does not sound the same when pronounced out loud, you will not receive credit for your answer.

Graded assignments will be recorded in Blackboard’s Grade Center by your TA. It is the student’s responsibility to confirm the grade on a returned assignment is the same as that recorded in Blackboard. Suspected errors or grading disputes must be addressed with your TA or the course instructor within 1 week of receiving the graded assignment in class.

Course Requirements

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Quizzes (Best 10 of 12)</td>
<td>100</td>
</tr>
<tr>
<td>Lab Reports (10 @ 10 pts each)</td>
<td>100</td>
</tr>
<tr>
<td>Homework (10 @ 20 pts each)</td>
<td>200</td>
</tr>
<tr>
<td>Safety Contract</td>
<td>10</td>
</tr>
<tr>
<td>Experiment Proposal (Part 1 &amp; Part 2 @ 20 pts each)</td>
<td>40</td>
</tr>
<tr>
<td>Independent Project Report</td>
<td>100</td>
</tr>
<tr>
<td>Practical Exam</td>
<td>100</td>
</tr>
</tbody>
</table>

**TOTAL** 650 points
Course Grades

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 – 100 %</td>
<td>A</td>
</tr>
<tr>
<td>80 – 89 %</td>
<td>B</td>
</tr>
<tr>
<td>70 – 79 %</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69 %</td>
<td>D</td>
</tr>
<tr>
<td>&lt; 60 %</td>
<td>F</td>
</tr>
</tbody>
</table>

The section average may be curved in the event that a section’s average is below 75%. If your section’s average is already above 75%, there will be no curve.

Midterm Grades

UIC requires submission of midterm grades for 000 and 100-level courses. Midterm grades will not be calculated or submitted in this course. Students are highly encouraged to keep track of their grades and earned points throughout the semester. Please contact your TA or the course instructor if you have any questions or need help calculating your current standing in the course.

Final Exams

A cumulative practical exam will be given as indicated on the Lab Schedule. Additional information regarding the exam is available on Blackboard. If you miss the practical exam, you will be assigned a grade of INCOMPLETE only if you 1) contact the course instructor and 2) provide proof of a valid excuse. Otherwise, you will receive zero (0) points for the final exam.

GRIEVANCE PROCEDURES

UIC is committed to the most fundamental principles of academic freedom, equality of opportunity, and human dignity involving students and employees. Freedom from discrimination is a foundation for all decision making at UIC.

Students are encouraged to study the University's “Nondiscrimination Statement”. Students are also urged to read the document “Public Formal Grievance Procedures”. Information on these policies and procedures is available on the University web pages of the Office of Access and Equity: http://oae.uic.edu/.

UIC RESOURCES

If you find yourself having difficulty with the course material or any other difficulties in your student life, don’t hesitate to ask for help! Everyone associated with this course wants to see you
succeed. Come to me, or if it is about an issue beyond this class, please contact your college advisors, or get help from any number of other support services on campus. You can get a referral to the right place, or help on the spot, from a concerned advisor in the Undergraduate Success Center (USC) at usc@uic.edu.

See also:

**The Writing Center**, located in Grant Hall 105, offers one-on-one consultation with student writers who need help developing ideas, or need advice, guidance or additional instruction on any aspects of writing in any class. Tutors are prepared to spend fifty minutes per appointment, and there is no limit to the number of tutoring sessions you can have each semester. Make an appointment and be on time! Bring the paper on which you're working, as well as any related drafts or notes, and information about the assignment. For an appointment, call the Writing Center at (312) 413-2206, or stop by room 105 of Grant Hall. Visit the Writing Center website at www.uic.edu/depts/engl/writing for more information.

**The Science and Learning Center**, located in the Science and Engineering South Building (SES) 201B, is a meeting place for students in Biological Sciences, Chemistry, Earth and Environmental Sciences, and Physics. At the SLC, students can meet with graduate teaching assistants for tutoring in 100-level courses, arrange informal group study sessions with other students, or meet up with friends to attend one of the workshops, seminars, or other activities sponsored by the SLC during the semester. Visit the website at http://www.uic.edu/depts/bios/facilities/science_learning_center.shtml

**The UIC Library**
The library is located both on east and west campus, provides access to resources, study rooms, and research support both online via chat and in person. At Daley Library on the east side of campus, stop by the reference desk in the IDEA Commons, or make an appointment for research help on either side of campus. Learn more about library policies at http://library.uic.edu/. To find research materials in specific subject areas view the Research Guides at http://researchguides.uic.edu/.

**Public Computer Labs**
These labs are available throughout campus where you may write and/or print out your work. For a list of labs and the hours they’re open, go to www.accc.uic.edu/pclabs. NOTE: Do not wait until the last minute to print out papers. Sometimes labs have long lines of students waiting for access.

**The Academic Center for Excellence** can help if you feel you need more individualized instruction in reading and/or writing, study skills, time management, etc. Phone: (312) 413-0031.

**Counseling Services** are available for all UIC students. You may seek free and confidential services from the Counseling Center www.counseling.uic.edu. The Counseling Center is located in the Student Services Building; you may contact them at (312) 996-3490. In addition to offering counseling services, the Counseling Center also operates the InTouch Crisis Hotline.
from 6:00 p.m.-10:30 p.m. They offer support and referrals to callers, as well as telephone crisis interventions; please call (312) 996-5535.

**Campus Advocacy Network**

Under the Title IX law you have the right to an education that is free from any form of gender-based violence and discrimination. Crimes of sexual assault, domestic violence, sexual harassment, and stalking are against the law and can be prevented. For more information or for confidential victim-services and advocacy contact UIC’s Campus Advocacy Network at 312-413-1025 or visit [http://can.uic.edu/](http://can.uic.edu/). To make a report to UIC’s Title IX office, contact Rebecca Gordon, EdD at [TitleIX@uic.edu](mailto:TitleIX@uic.edu) or (312) 996-5657.

**CAMPUS SECURITY**

As a UIC student, you've chosen to live in one of the nation's largest cities. But, as at any university, crime is a reality. At UIC, we are strongly committed to our public safety programs, and we encourage students to be proactive in learning what programs and services are available in case of an emergency. You are **DISCOURAGED** from staying in university buildings alone, including lab rooms, after hours and are **ENCOURAGED** to use the POLICE/STUDENT patrol escort if you are uncomfortable traveling anywhere on campus. You may request an escort to accompany you to your campus destination on foot by calling 312-996-2830, and between 11:00 pm and 7:00 am you can dial the Red Car service (312-996-6800) if you are alone and need to leave the building. Through Red Car, the university has established a safe evening transportation service for university employees, students, visitors, and other authorized individuals. The car travels between university facilities within the following general boundaries: Clinton Street on the east; Western Avenue on the west; Jackson Boulevard on the north; and, 16th on the south. This service is available only to individuals possessing a valid UIC i-card. The i-card is required to ensure the safety of the driver and other passengers. Consult the following for more information: [http://www.uic.edu/uic/studentlife/campus/safety.shtml](http://www.uic.edu/uic/studentlife/campus/safety.shtml).

You may wish to subscribe your cell phone to receive text message alerts. An immediate SMS text alert will be sent in case of a serious crime in progress, a weather emergency, or other urgent situation. ([http://sms.accc.uic.edu](http://sms.accc.uic.edu)). Finally, by dialing 5-5555 from a campus phone, you can summon Police or Fire for any on-campus emergency. You may also set up the complete number, 1-312-355-5555, on speed-dial on your cell phone. For more information contact: [http://www.uic.edu/uic/studentlife/campus/emergency-information.shtml](http://www.uic.edu/uic/studentlife/campus/emergency-information.shtml).

**Emergency Response Recommendations**

The emergency response guide can be found at the following website: [https://www.ready.uic.edu/emergency_guide](https://www.ready.uic.edu/emergency_guide) It is encouraged that you to review this website and guide as well as the campus building floor plans website within the first 10 days of class. [https://fimweb.fim.uic.edu/Home.aspx](https://fimweb.fim.uic.edu/Home.aspx).
CALENDAR OF MAJOR COURSE EVENTS AND DEADLINES

See the following Lab Schedule for a complete list of all exercises and assignment due dates. Any necessary changes to the Lab Schedule will be announced via Blackboard.
University of Illinois at Chicago  
Department of Biological Sciences  
BIOS 223: Cell Biology Laboratory  

Lab Schedule – Spring 2018

- **Lab Reports** are in-lab write-ups of your experiment records. These are completed during lab and are due at the end of class on Day 2 (M/W sections: due Wednesday; T/R sections: due Thursday) before you leave lab. No late lab reports will be accepted.
- **Homeworks** consist of worksheets, short written summaries, and scientific figures prepared from collected data. For homework turned in as hard copies, these are due at the beginning of your scheduled lab period on Day 2. For reports submitted online, these are due at the end of the week on the date and time listed on Blackboard.
- Weekly **quizzes** will be given that cover the Lab Exercise assigned for the week. The quiz will be given during the first 10-15 minutes of class on Day 1 (M/W sections: quizzes on Mondays; T/R sections: quizzes on Tuesdays). If you arrive to lab late, you may miss the quiz and will not be able to complete it.
- The following schedule is subject to change. Any changes will be announced via Blackboard.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lab Exercises</th>
<th>Techniques used</th>
<th>Assignments</th>
</tr>
</thead>
</table>
| 1    | Jan 15 - 19| Day 1: (1/15 & 1/16): **NO CLASS**  
          Day 2: Syllabus, Lab Safety, Notebooks  
          Keeping a Lab Notebook  
          Safety Contract          |
| 2    | Jan 22 - 26| Use of micropipettors  
          Measuring protein concentration  
          Bradford assay  
          Micropipetting  
          Spectrophotometry  
          Quiz 1  
          Lab Report 1  
          Homework 1          |
| 3    | Jan 29 - Feb 2| Fish proteomics Part 1  
          Preparing protein extracts  
          Bradford Assay  
          Quiz 2  
          Lab Report 2  
          Homework 2          |
| 4    | Feb 5 - 9  | Fish proteomics Part 2  
          SDS-PAGE  
          Quiz 3  
          Lab Report 3  
          Homework 3          |
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>Methodology</th>
<th>Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Feb 12 - 16</td>
<td>Tetrahymena cell dynamics – Part 1</td>
<td>Phase-contrast microscopy Live cell imaging</td>
<td>Quiz 4 Lab Report 4 Homework 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deciliation &amp; recovery of <em>Tetrahymena</em></td>
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<tr>
<td>6</td>
<td>Feb 19 - 23</td>
<td>Assays of ciliary activity in <em>Tetrahymena</em>: Dye feeding behavior</td>
<td>Phase-contrast microscopy Live cell imaging</td>
<td>Quiz 5 Lab Report 5 Homework 5 Experiment Proposal Part 1</td>
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<td>7</td>
<td>Feb 26 - Mar 2</td>
<td>Independent Projects</td>
<td></td>
<td>Quiz 6 Lab Report 6 Homework 6 Experiment Proposal Part 2</td>
</tr>
<tr>
<td>8</td>
<td>Mar 5 - 9</td>
<td>Independent Projects</td>
<td></td>
<td>Quiz 7 Lab Report 7 Homework 7</td>
</tr>
<tr>
<td>9</td>
<td>Mar 12 - 16</td>
<td>Writing Clinic 1</td>
<td>Peer feedback on independent project report</td>
<td>Quiz 8 Project Report Draft 1</td>
</tr>
<tr>
<td>10</td>
<td>Mar 19 - 23</td>
<td>Tetrahymena cell dynamics – Part 2 Immunostaining of cilia</td>
<td>Immunostaining</td>
<td>Quiz 9 Lab Report 8 Homework 8</td>
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<tr>
<td>11</td>
<td>Mar 26 - 30</td>
<td>NO CLASS – Spring Break</td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>Apr 2 - 6</td>
<td>Writing Clinic 2</td>
<td>TA feedback on independent project report</td>
<td>Quiz 10 Project Report Draft 2 Homework 9</td>
</tr>
<tr>
<td>13</td>
<td>Apr 9 - 13</td>
<td>Imaging Immunofluorescence</td>
<td>Fluorescence microscopy</td>
<td>Quiz 11 Lab Report 9 Project Report Due</td>
</tr>
</tbody>
</table>
|    | Apr 16 - 20 | Immunodetection of serum proteins  
                                         Column separation of proteins | ELISA  
                                         Size exclusion chromatography | Quiz 12  
                                         Lab Report 10 |
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</thead>
<tbody>
<tr>
<td>14</td>
<td>Apr 23 - 27</td>
<td>Practical Exam</td>
<td></td>
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</tr>
</tbody>
</table>
| 15 | Apr 30 - May 4 | Histochemistry of mammalian tissue                                               | H&E staining  
                                         Brightfield microscopy         | Homework 10   |
| 16 | April 16 - 20 | Immunodetection of serum proteins  
                                         Column separation of proteins | ELISA  
                                         Size exclusion chromatography | Quiz 12  
                                         Lab Report 10 |
| 14 | Apr 23 - 27 | Practical Exam                                                                  |                                 |                      |
| 15 | Apr 30 - May 4 | Histochemistry of mammalian tissue                                               | H&E staining  
                                         Brightfield microscopy         | Homework 10   |