Biochemistry 3380G: Biochemistry Laboratory  
Winter Term 2020

Schedule
Section 1&3: Thursdays, 1:30-5:30 pm in MSB 120.
Section 2&4: Fridays, 1:30-5:30 pm in MSB 120.

You are expected to attend all sessions, unless I give you special permission, which may require documentation to be submitted to the office of the Dean of Science (see The Fine Print below). You are expected to be familiar with the day’s work when you arrive.

Instructor
Dr. Derek McLachlin, Assistant Professor
Medical Sciences Building Room 349 (office) or 127 (lab)
Telephone: 519-661-3072
E-mail: derek.mclachlin@schulich.uwo.ca

I have no set office hours this term. If you want to see me, phone me or send an e-mail and we can arrange an appointment time. Spontaneous visits are also fine, but I may not be in my office when you come!

Course materials
The required lab manual is available in the bookstore. Students must record data in a bound notebook (but not necessarily a new one). Students should bring a lab coat and safety glasses, and wear them at all times while in the lab. For advice on report writing, see “Writing in the Biological Sciences,” 3rd edition, by Angelika Hofmann, or “Essentials of Writing Biomedical Research Papers,” 2nd edition, by Mimi Zeiger.

Course objectives
The experiments in this course are intended to introduce you to some of the methods and equipment used in biochemical and molecular biological research, and to illustrate some of the principles taught in the biochemistry lecture courses. An important part of the research process is communicating findings. You will learn to write a laboratory report in an accepted scientific format. You will be assessed on these written reports and on your understanding of the techniques and the principles behind them.

By the end of this course, you should be able to:
1. Safely perform basic biochemical laboratory procedures such as micropipetting, spectrophotometry, gel electrophoresis, DNA purification, polymerase chain reaction, and column chromatography, and interpret the results obtained.
2. Explain the theory behind the basic biochemical laboratory procedures performed in the course, and apply these procedures to solve problems.
3. Work in a biochemistry laboratory and interact with colleagues in a professional manner.
4. Locate, understand, and evaluate papers published in the biochemical literature that relate to a topic of interest, and properly cite those papers in written work.
Communicate experimental results in a style and format appropriate to the primary biochemical literature.

**Methods of Evaluation**

The final grade will be assigned as follows:
- 3% based on 5 online report-writing quizzes
- 6% based on 3 assignments
- 50% based on 6 written submissions
- 3% based on 3 ComPAIR tasks
- 10% professionalism and performance
- 28% final exam

Regardless of performance on the above assessments, students who miss more than two lab sessions, even with documentation, will not pass the course.

**Report-writing Modules**

Six modules have been posted to OWL to explain concepts in writing reports: Ethical Responsibility, Abstract, Introduction, Materials & Methods, Results, and Discussion. The modules consist of text explaining different aspects of report-writing. Five of the modules include quizzes with multiple choice or short-answer questions based on the readings. The five modules must be completed online by **11:55 pm on Friday, January 24**. Correct answers and feedback will be available shortly after the deadline. Each quiz is worth 0.6% of your final mark, and they contain valuable advice for preparing the lab reports.

**Assignments**

Students will submit three assignments. The Lab 1 assignment (see end of Lab 1) gives you practice generating figures and tables. The second assignment (posted online) relates to literature searching strategies. The third assignment (see end of taste receptor module) is designed to lead you through data analysis or important concepts related to the taste receptor module.

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<thead>
<tr>
<th>Assignment</th>
<th>Due date</th>
<th>Value</th>
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<tbody>
<tr>
<td>Assignment #1: Lab 1</td>
<td>Jan 16, Jan 17</td>
<td>2%</td>
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<tr>
<td>Assignment #2: Literature searching</td>
<td>Jan 27, Jan 27</td>
<td>2%</td>
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<tr>
<td>Assignment #3: Taste receptor</td>
<td>Feb 27, Feb 28</td>
<td>2%</td>
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Submit assignments via the Assignments tab on OWL by **1:30 pm** on the date specified. Assignment #1 should also be submitted to ComPAIR (see section on ComPAIR below). Late assignments will be penalized as for written submissions (see below). These assignments will not be submitted to Turnitin.

**Written Submissions**

Students will submit the following pieces of writing:
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<tr>
<th>Submission</th>
<th>Due date</th>
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<tbody>
<tr>
<td></td>
<td>Section 1</td>
<td>Section 2</td>
</tr>
<tr>
<td>Abstracta</td>
<td>Jan 23</td>
<td>Jan 24</td>
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<tr>
<td>EGFP mutagenesis proposal</td>
<td>Jan 23</td>
<td>Jan 24</td>
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<tr>
<td>Lab 2 (myoglobin) Results &amp; Discussionb</td>
<td>Jan 30</td>
<td>Jan 31</td>
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<tr>
<td>Lab 2 (myoglobin) full reporta</td>
<td>Feb 13</td>
<td>Feb 14</td>
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<tr>
<td>Lab 3 (enzyme kinetics) full report</td>
<td>Mar 12</td>
<td>Mar 13</td>
</tr>
<tr>
<td>EGFP mutagenesis full report</td>
<td>Apr 3</td>
<td>Apr 3</td>
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a Students must submit the Abstract (the one due Jan 24 or 25) and only the Results section of their Lab 2 full report to ComPAIR via the ComPAIR tab on OWL (see ComPAIR section below), in addition to the regular submissions via the Assignments tab on OWL.

b Students must submit at least the Results and Discussion sections (along with a Title, References, and Supplemental Information), but have the option of submitting a full report (including Abstract, Introduction, and Materials and Methods sections). All work submitted will be graded using the appropriate posted rubric, and TAs will give feedback. Students may use this feedback to prepare the full report, which will be worth 5%.

Marks for the reports will be distributed as follows:
- Title and abstract: 10%
- Introduction: 8%
- Methods: 4%
- Results: 25%
- Discussion: 25%
- References: 8%
- Organization, grammar, style, etc.: 20%

The written assignments will be marked according to a rubric, available to students via the OWL site. In addition to the rubric, the report-writing modules and Appendix A in the lab manual provide guidance on how to prepare the reports. Students may also find it helpful to consult Mimi Zeiger’s book “Essentials of Writing Biomedical Research Papers,” 2nd edition, and Angelika Hofmann’s book “Writing in the Biological Sciences,” 3rd edition.

Written submissions are due at exactly 1:30 pm on the date specified. Submit an electronic copy in PDF format via the appropriate link on the OWL site. After successful submission you should be emailed a confirmation number; record this number in case it is needed to verify your submission. A printed or hard copy of the submission is not required. The electronic document will be analyzed by Turnitin.

The official time of submission will be as shown on OWL. Reports will be considered late if they are submitted after 1:30:00. Please do not wait until the last moment to submit your file, because the OWL site may be sluggish. Late submissions will be penalized 10% (e.g., a mark of 80% will count as 70%) if submitted within 24 hours of the deadline, 20% if submitted 24 to 48 hours after the deadline, and 30% if submitted 48 to 72 hours after the deadline. Reports submitted more than 72 hours after the deadline will receive a mark of 0%.
ComPAIR
ComPAIR is peer assessment software developed at the University of British Columbia (see http://ubc.github.io/compair/site/index.html). After you submit your work to ComPAIR via OWL, you will be presented with three anonymous pairs of work submitted by your peers. For each pair, you will be asked to assess which submission is better based on criteria provided through the software. You will provide anonymous feedback for each answer, and will be able to view feedback provided by your peers. Detailed instructions are posted in a separate document on OWL.

The software is based on the idea that people can accurately make judgements about the relative quality of two things when comparing them to each other. It is harder to evaluate a single piece of work in isolation than it is to notice and prioritize differences between two comparable pieces of work. During the comparison process, you should think critically about what makes one piece of work better than the other. Therefore, this activity should help you evaluate your own work more appropriately and understand areas in which you can improve. After you compare three pairs of student work, you will be expected to write at least one sentence reflecting on your own submission and how you think it could be improved.

You will use ComPAIR for three submissions: 1) Assignment #1; 2) the Abstract due January 23 or 24; and 3) the Results section (only) of the Lab 2 resubmission. Completing the ComPAIR tasks for each of these submissions will be worth 1% (for a total of 3% of your final mark). For each submission, you will earn 0.2 marks for submitting, 0.6 for completing three comparisons (including comments for your peers), and 0.2 for writing a reflective statement.

When writing feedback for your peers, please be respectful. Criticism should be constructive and not insulting or mean-spirited. Feedback deemed inappropriate may affect your professionalism mark.

One-Time 24-Hour Extension
Each student will be granted a 24-hour extension for any one of the pieces of work described above, of the student’s choosing. No reason needs to be provided; simply email me and your TA stating that you want to use your 24-hour extension. The named piece of work will be accepted without penalty as long as it is submitted within 24 hours of the original deadline. Note: If this extension is used for a jointly-submitted EGFP mutagenesis proposal, then both students will be considered to have used their one 24-hour extension.

Revised deadlines for self-reported absences
If a student misses a deadline because of a self-reported absence, then the revised deadline for the relevant piece(s) of work will be 48 hours after the end of the accommodation period.

Professionalism and performance
This mark includes, but is not necessarily limited to, attendance, being on time, preparedness, proper keeping of a lab notebook, integrity, respect for others, attention to and participation in what is going on in the lab, participation in clean-up, proper attire, and general lab technique.
Exam
The 3-hour final exam is based on all aspects of the course. Questions will be multiple choice, calculations, and short answer. Bring a non-programmable calculator and a ruler. No other electronic devices will be allowed. Sample questions will be available before the exam.

Statement on Academic Offences
Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Even though you are working in pairs, lab reports must be prepared independently and must be original. Plagiarism is a scholastic offence and is defined as “The act or an instance of copying or stealing another’s words or ideas and attributing them as one’s own.” (Excerpted from Black’s Law Dictionary, West Group, 1999, 7th ed., p.1170.) This applies to all lab reports and all components of the reports (e.g., graphs or diagrams). Even though partners share photographs of gels, each student must label them individually. Plagiarism will result in a mark of zero for that report, and will also affect your professionalism mark. In addition, information related to the academic offence will be kept on record in the Office of the Associate Dean for Basic Medical Sciences Undergraduate Education.

The web pages listed below should help you understand what constitutes plagiarism, and how to avoid inadvertent plagiarism. Note, however, that in scientific writing, direct quotations from another’s work are used very rarely, and only if there is a compelling reason. If it is possible to state the same idea in different words, you should not use a direct quotation.

http://www.plagiarism.org
https://wts.indiana.edu/writing-guides/plagiarism.html

Rounding of marks
Final grades in this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be rounded to the nearest integer (e.g., 74.4 becomes 74, and 74.5 becomes 75). Marks WILL NOT be bumped to the next grade or GPA level (e.g., 84 will NOT be bumped up to 85). The mark attained is the mark you achieved and the mark assigned; requests for mark “bumping” will be denied, in accordance with Bachelor of Medical Science Undergraduate Education policy.

This course is supported by the Science Student Donation Fund.
If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students’ Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing paperwork in the Faculty of Science Dean’s Office. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the chair of your department or email the Science Students’ Council: ssc@uwo.ca.
The Fine Print

Prerequisites: Biochemistry 3381A and 3382A

Senate regulation regarding the student’s responsibility regarding requisites:
Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Academic Consideration for Missed Work
Students who are seeking academic consideration for missed work during the semester may submit a self-reported absence form online provided that the absence is 48 hours or less and the other conditions specified in the Senate policy at https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf are met.

Students whose absences are expected to last longer than 48 hours, or where the other conditions detailed in the policy are not met (e.g., work is worth more than 50% of the final grade, the student has already used 2 self-reported absences, the absence is during the final exam period), may receive academic consideration by submitting a Student Medical Certificate (for illness) or other appropriate documentation (for compassionate grounds). The Student Medical Certificate is available online at https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

All students pursuing academic consideration, regardless of type, must contact their instructors no less than 24 hours following the end of the period of absence to clarify how they will be expected to fulfill the academic responsibilities missed during their absence. Students are reminded that they should consider carefully the implications of postponing tests or midterm exams or delaying submission of work, and are encouraged to make appropriate decisions based on their specific circumstances.

In Biochemistry 3380G, academic consideration for the reports for Labs 2 and 3, and the EGFP mutagenesis proposal, will require documentation to be submitted to the Dean’s Office as stated above, even though these reports are worth less than 10% of the final grade. Accommodation for assignments should be discussed directly with Dr. McLachlin.

Students who have conditions for which academic accommodation is appropriate, such as disabilities or ongoing or chronic health conditions, should work with Accessible Education Services to determine appropriate forms of accommodation.

If you miss the Final Exam, please contact your faculty’s Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam). You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

Academic Policies
The website for Registrarial Services is http://www.registrar.uwo.ca.

In accordance with policy, http://www.uwo.ca/its/identity/activatenonstudent.html, the centrally administered e-mail account provided to students will be considered the individual’s official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.
OWL

Students should check OWL (https://owl.uwo.ca/portal) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL on a regular basis. Submission and grading of written work will also be done through OWL.

Turnitin

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Support Services:

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, http://westernusc.ca/services.