

Biology 4300G – Selected Topics in Cell Biology

“Subcellular Dynamics”

Course Outline

1. Course Information

Biology 4300G – Selected Topics in Cell Biology; Winter Term

Hours: Three in-person lecture hours per week, 0.5 course

Prerequisites:

Biology 3316A/B, Biology 3338A/B, and completion of at least one additional half course in Biology course at the 3000-level or above; and registration in Year 4 of an Honours Specialization module offered by the Department of Biology. Unless you have either the requisites for this course or written special permission from your Dean’s Designate (Department or Science Academic Advisors) 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.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Joshua Pemberton (Course Coordinator)	joshua.pemberton@uwo.ca	BGSB 3030	519-661-2111 x 83131	By appointment only.

Students must use their Western (@uwo.ca) email addresses in all communications with the instructor and include “**Bio4300G**” in the subject line. While emergency situations will be dealt with as quickly as possible, a reminder that responses to emails will occur during regular business hours – typically within 12-24 hrs. The format for scheduled discussions of the coursework can include either in-person (preferred) and virtual meetings (Zoom through Western Technology Services; <https://wts.uwo.ca/zoom/index.html>).

3. Course Syllabus, Schedule, Delivery Mode

Biology 4300G will provide registrants with a contemporary overview of emerging concepts in subcellular biology, including the dynamic regulation of organelle remodeling, membrane trafficking, cytoskeletal organization, and molecular quality control. The course will not only focus on current mechanistic insights into these processes, but will also aim to discuss the technologies and experimental approaches that ultimately facilitate modern cell biology research.

The course content will be delivered in-person as part of twelve lectures, which are scheduled for each Thursday of the winter term. After two introductory lectures led by the instructor, where students will be familiarized with the general course structure and shown an example presentation, in the subsequent weeks, two students will each present a ~80-minute seminar that will introduce one new research method and one new cell biology concept (~30-35 of the 80 minutes allotted), and then lead a short discussion (~40-45 of the 80 minutes allotted) of a primary research article that served as the basis for the new content. Presentations will be evaluated by the instructor (35% of grade) as well as by the student participants (5% of grade). The research articles to be discussed will be circulated to the registrants on the Friday preceding the scheduled discussion. Each week, all students who are not presenting will prepare brief summaries of the research articles that are to be submitted as part of the participation grade for each week. Given this course structure, registration is capped at twenty to allow each student to have the opportunity to run their own research discussion. As the final project, each student will compose a research proposal (40% of grade) that builds on the topics introduced in their presentation.

The tentative course schedule, which is subject to change, will be as follows:

Date	Topic / Discussion
Week #1	Course Outline, Policies, and an “ <i>Introduction to Subcellular Dynamics</i> ”.
Week #2	Introductions, Scheduling, & “ <i>Subcellular Biology Primer</i> ” – Dr. Pemberton.
Week #3	Example Primary Research Presentation – Dr. Pemberton.
Week #4	Primary Research Presentations – Student #1 / 2.
Week #5	Primary Research Presentations – Student #3 / 4.
Week #6	How to Craft an Impactful Research Proposal – Dr. Pemberton.
READING WEEK	
Week #7	Primary Research Presentations – Student #5 / 6.
Week #8	Primary Research Presentations – Student #7 / 8.
Week #9	Primary Research Presentations – Student #9 / 10.
Week #10	Primary Research Presentations – Student #11 / 12.
Week #11	Primary Research Presentations – Student #13 / 14.
Week #12	Primary Research Presentations – Student #15 / Student #16.
Week #13	Primary Research Presentations – Dr. Pemberton / Guest.
Submission of the Student Research Proposals.	

Course-Level Learning Outcomes

By the end of this course, students should be able to:

1. Critically read and analyze articles from the primary literature, as well as assess their contribution to the field of cell biology.
2. Understand the appropriate application of contemporary methods used in cell biology, including advanced techniques for the real-time analysis of intact cells.

3. Use relevant open-access databases, *in silico* analytical tools, and online data repositories to inform both background knowledge and research questions relevant to the field of cell biology.
4. Effectively organize and deliver impactful oral presentations that clearly disseminate cell biology techniques, emerging concepts, and experimental results from the primary literature.
5. Generate testable hypotheses and specific aims to address research questions of interest.

4. Course Materials

All course material is copywritten and cannot be shared. There is no textbook for this course, as the primary materials will be recent research articles selected by the instructor and student participants.

Course materials will be posted to OWL: <https://westernu.brightspace.com/>. Students are responsible for checking the course OWL site regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class. If students need assistance with the course OWL site, they can seek support on the [OWL Brightspace Help](#) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800. Students are expected to follow online etiquette expectations provided on OWL. All course materials created by the instructor(s) are copyrighted and cannot be sold/shared. Recordings (audio or video) are not permitted without explicit permission and any permitted recordings are not to be distributed.

Technical Requirements

This course involves access to modern search engines and online resources and will require students to have access to a computer and stable internet connection. Additionally, if a student requests a virtual meeting and ZOOM resources are utilized, a webcam and working microphone are also required.

5. Methods of Evaluation

Grading Scheme and Assessment Dates:

The overall course grade will be calculated as listed below:

Student Presentation (Variable Dates; ~80 min Total Duration)	40%
Technique of Choice (~20 min)	10%
Background / Topic of Choice + Discussion (~60 min)	25%
Peer Assessment (Average of Responses)	5%
 Weekly Participation (Described Below)	 20%
Top 10 of the 16 Scheduled Discussion Sessions	2% each x 10
 Research Proposal	 40%

Components of the Research Proposal:

The student research proposal will be prepared using formatting standards slightly modified from those set by the ***Natural Sciences & Engineering Research Council of Canada*** (NSERC), which are outlined below. In general, the proposal can be a maximum of five pages in length, with an additional two pages for referencing, and should address the points highlighted below. Please note that images and graphics are permitted, but are included in the five-page limit.

Overview: Provide a summary of the proposal that briefly describes the nature of the work to be done.

Specific Objectives: Define the short- and long-term objectives of your research program. Note that students should propose a minimum of two short-term projects that effectively complement the longer-term goals of the overarching research program.

Literature Review & Recent Progress: Discuss the literature pertinent to the proposal, placing the proposed research in the context of the state of the art.

Methodology: Describe the methods and proposed approach, providing sufficient details to allow for the feasibility and impact of the research activities to be assessed.

Research Impact: Explain the anticipated significance of the work.

List of References: In addition to the main text, a maximum of two pages of references can be provided.

- Provide a list of literature references in support of your proposal.
- Do not refer reviewers to websites for additional information on your proposal.
- Do not include hyperlinks or footnotes in your list of references.

Formatting Standards: All text, including references, must conform to these standards.

- Acronyms and abbreviations must be spelled out completely on initial appearance in text;
- Pages must be 8 ½" x 11" (216mm x 279mm);
- Pages must be single-spaced, with no more than six lines of type per inch;
- All text must be in 12 pt. Times New Roman font;*
- Condensed fonts will not be accepted;
- Colour imagery is acceptable, but the text should be in black;
- All margins must be set at a minimum of ¾" (1.87 cm);
- Your name must appear outside the set margins of the page, at the top right corner of every page;
- For multi-page attachments, pages must be numbered sequentially; and
- Do not introduce hyperlinks or bookmarks in your documents (ensure that your software's 'Create bookmarks' option is de-selected);

* The font type and size requirements do not apply to text inside tables and figures. However, for text inside tables and figures, you must use a font type and a font size that are clearly legible. Once again, note that figures and tables count toward the specified page limits.

General Information About Missed Coursework:

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person. The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage: https://registrar.uwo.ca/academics/academic_considerations/.

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- **Primary Research Presentation** (Designated by the instructor as the one assessment that always requires documentation when requesting Academic Consideration).

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments

Students are expected to attend all lectures in-person. If a student misses their presentation week, it will be rescheduled in an open timeslot available in a subsequent week. If the course is at capacity, make-up presentations will be rescheduled for the final week of the semester.

Essential Learning Requirements

Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade.

- Completion of the student's own primary research presentation,
- Participation in a minimum of 12 out of the 20 possible student-led discussions, and
- A grade of 50 or better on the research proposal, which satisfies the Senate requirement that students demonstrate "*some minimal competence in essay writing*" in order to pass the course.

Coursework with Assessment Flexibility

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

Flexible Completion

Weekly Participation. This course has 20 possible primary research discussions, with the expectation of student participation. For the weekly participation assessment, student's will be required to prepare brief article summaries that include discussion points that they would like to raise for each of the two research articles circulated by the presenters. These summaries can be written or in point-form and should not exceed one-page in length. Students can use their summaries as prompts during the discussion period, with submission due at the end of each Thursday lecture. Completion of the summary is worth 1% of the weekly participation grade. In addition, student contributions to the in-class discussion of the article will be monitored by the instructor, with 1% of weekly grade based on active involvement in the discussion period. Taken together, each week, there is a possible 2% available for the student participation grade. Out of the possible 20 student-led presentations, the 10 participation assessments with the highest marks are counted towards your final grade.

Deadline with a No-Late-Penalty Period

Research Proposal. Students are expected to submit the research proposal by the end-of-day on the final day of classes. Should extenuating circumstances arise, students do not need to request Academic Consideration and they are permitted to submit their assignment up to 48 hrs past the deadline without a late penalty. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the *No-Late-Penalty Period* (48 hours).

6. Additional Statements

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test). Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays: <https://www.edi.uwo.ca>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf

Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

In accordance with policy, https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf, 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 their official university address is attended to in a timely manner.

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:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

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 (<http://www.turnitin.com>).

Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic-related matters: <https://www.uwo.ca/sci/advising/>.

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

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at:

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

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 Accessible Education at: http://academicsupport.uwo.ca/accessible_education/index.html.

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

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