

# Syllabus 2026

## Modern Approaches in Biomedical Research

### Anatomy and Cell Biology 3700G Pathology 3700G

Course Coordinator: **Dr. Martin L. Duennwald**

Course Administrator: **ACB: Ms. Karyn Bailey**

**Pathology: Ms. Cheryl Campbell**

#### 1. **Course Description:**

This course focuses on various modern research approaches, model systems, experimental designs, and analytical methods used to study human diseases and the underlying cellular, genetic, and molecular mechanisms. The course will use contemporary learning tools and a variety of evaluation and assessment methods. Examples will be taken from major diseases, such as cancer and neurodegenerative disorders.

The course is taught in mixed format with online activities and mandatory weekly in-class activities (two hours per week).

For a list of the topics to be covered see the Lecture Schedule.

**Prerequisite(s):** Biochemistry 2280A and registration in a BMSc degree.

#### **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.

This hybrid course will take place online in asynchronous lectures and assignments and weekly in-person tutorials. The Brightspace site will be the major resource (announcements, forum, assignments etc.).

### **Technical Requirements:**

Stable internet connection

Laptop or computer

Working microphone

Working webcam

### **2. Learning Outcomes:**

#### **COURSE GOAL:**

At the end of this course, students will have a comprehensive understanding of modern research approaches, experimental designs, model organism, and analysis tools in biomedical research with a focus on cancer and neurodegenerative diseases.

#### **OBJECTIVES:**

Students will be able to:

- Differentiate between clinical and basic research, understand the value, contributions, and limitations of both.
- Critically analyze the use, opportunities, and limitations of model organisms in biomedical research; understand and critically evaluate experimental design, data analysis, and interpretation of results.
- Critically analyze the use, opportunities, and limitations of genetic, pathological, and computational analyses, in biomedical research. Acquire a detailed understanding of procedures and protocols, trouble shooting, and critical evaluation of results and interpretations.
- Analyze and critically evaluate original research literature; develop skills to find, evaluate, critically evaluate, and properly use information from different on-line sources.
- Critically discuss ethical issues regarding the use of genetic analyses, use of animals, and more in biomedical research – present an informed opinion.
- Develop written and oral presentation skills;
- Develop communication skills to discuss new concepts and opposing opinions with peers in direct interactions and online communication tools.
- Understand opportunities, expectations, and challenges associated with careers in biomedical research in general and also for the students own individual career plans.

### **3. Course materials:**

#### **LECTURE NOTES, ARTICLES, WEB PAGES, VIDEOS ETC.:**

These will be posted to Brightspace for each lecture. Summaries (e.g., slides, text, tables, links to other materials) for each lecture will also be posted on Brightspace.

Students are encouraged to bring their own laptop computers to class/tutorials.

Course content will be discussed in weekly tutorials – participation in these tutorials is mandatory.

Also, students will give oral presentations (individually and in small groups) and provide feedback to their peers' presentations.

#### **TEXT:**

There is no required text (or textbook) for this course.

#### 4. Evaluation

Evaluation will be based on different student contributions (essays, oral presentations, participation etc.), as detailed below:

<b>Component</b>	<b>Format</b>	<b>Weighting</b>	<b>Due Date</b>
Essay	Five paragraph essays (max 800 words)	20%	TBD
Summary	Short summaries of two clinical trials (max. 400 words total)	10%	
Model organism presentations	Presentations: teams of three students, 20 minutes max., comprehensive introduction to one model systems, in class	20%	TBD
Protein analysis methods - presentations	Presentations: individual, short (5 minutes max.); comprehensive summary of method, recorded and submitted to Brightspace	10%	
Careers in biomedical research, health sector	Short presentations (5 minutes max.), individual, to presented in class	10%	TBD
Exam1: clinical trials, model organisms	In class exams – to be completed during tutorial	15%	TBD
Exam2: methods, stem cells	In class exams – to be completed during tutorial	15%	TBD

#### 5. **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 website: [http://www.uwo.ca/univsec/handbook/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf)

#### 6. **Similarity Review Software:**

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

#### 7. **Artificial Intelligence:**

The use of artificial intelligence (e.g., ChatGPT or Grammarly) is prohibited for all assignments of this course.

### **Western Academic Policies and Statements**

#### **Absence from Course Commitments**

##### [Policy on Academic Consideration for Student Absences](#)

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a **self-reported absence** or via the **Academic Counselling** unit. Students have two self-reports to use throughout the academic year; absence from course commitments including tests, quizzes, presentations, labs, and assignments that are worth 30% or less can be self-reported. Self-reported absences cover a student for 48 hours (yesterday + today or today + tomorrow). Your instructor will receive notification of your consideration; however, you should contact your instructor immediately regarding your absence. Students are expected to submit missed work within 24 hours of the end of the 48-hour period. Please review details of the [university's policy on academic consideration for student absences](#).

If you have used both their self-reported absences or will miss more than 48 hours of course requirements, a Student Medical Certificate (SMC) should be signed by a licensed medical or mental health practitioner and you should contact academic counselling. Academic Counselling will be operating virtually this year and can be contacted at [scibmsac@uwo.ca](mailto:scibmsac@uwo.ca).

#### **Information about late or missed evaluations:**

Late assessments without self-reported absences will be subject to a late penalty 50%/day

Late assessments with self-reported absences should be submitted within 24 hours of the end of the 48-hour period

An assessment cannot be submitted after it has been returned to the class. A make-up test will be offered as an oral exam

If a make-up assessment is missed, the student will receive an INC and complete the task the next time the course is offered

#### **Accommodation for Religious Holidays**

The policy on Accommodation for Religious Holidays can be viewed [here](#).

### **Special Examinations**

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

### **Academic Offenses**

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### **Accessibility Statement**

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#).

### **Correspondence Statement**

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. You can read about the privacy and security of the UWO email accounts [here](#).

### **Turnitin and other similarity review software**

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. Students will be able to view their results before the final submission. 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 Western University and [Turnitin.com](#).

### **BMSUE Academic Policies and Statements**

#### **Cell Phone and Electronic Device Policy (for in-person tests and exams)**

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School that any electronic devices, i.e., cell phones, tablets, cameras, or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student’s bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual’s pocket. Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

### **Copyright and Audio/Video Recording Statement**

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

### **Rounding of Marks Statement**

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. *Final grades* on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and 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, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

## **8. Absence from Course Commitments**

### **ABSENCE FOR MEDICAL ILLNESS:**

Students must familiarize themselves with the Policy on Accommodation for Medical Illness for Undergraduate students, located at: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

### **Statement from the Academic Counselling Office, Faculty of Science (for Science and BMSc students)**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found

at:

[http://www.uwo.ca/sci/undergrad/academic\\_counselling/resources\\_and\\_self\\_service/forms.html](http://www.uwo.ca/sci/undergrad/academic_counselling/resources_and_self_service/forms.html)

Please note that the format of a make-up exam is at the discretion of the course manager.

**ABSENCE FOR NON-MEDICAL REASONS:**

**Students will not be accommodated for course commitments that are missed due to non-medical reasons.**

**SPECIAL EXAMINATIONS**

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents.

To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information can be found at the following link:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/exam/definitions.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/exam/definitions.pdf)

**9. Additional Information/Statements****STATEMENT ON USE OF ELECTRONIC DEVICES**

Students may only bring pencils, pens and erasers to exams. No other material or electronic devices are permitted unless otherwise stated prior to the test/examination.

**STATEMENT ON ROUNDING OF MARKS**

Across the Basic Medical Sciences Undergraduate Education programs and within the IMS module we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. Final grades on this course will be rounded up to the next whole integer, e.g. a 73.5 becomes a 74 and marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be rounded up to an 80, an 84 WILL NOT be rounded up to an 85, etc. The mark attained is the mark you achieved and the mark assigned; requests for mark “bumping” will be denied.

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**ACCESSIBILITY STATEMENT**

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10. **Support Services:**

- Registrarial Services: <http://www.registrar.uwo.ca>
- Academic Counselling (Science and Basic Medical Sciences): [http://www.uwo.ca/sci/undergrad/academic\\_counselling/index.html](http://www.uwo.ca/sci/undergrad/academic_counselling/index.html)
- USC Student Support Services: <http://westernusc.ca/services/Student>  
Development Services: <http://www.sds.uwo.ca>
- Student Development Services: <http://www.sdc.uwo.ca>
- Student Health Services: <http://www.shs.uwo.ca/>
- Appeal  
Procedures: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/appealsundergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/appealsundergrad.pdf)
- **Students that are in emotional/mental distress should refer to Mental Health@Western** <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options how to obtain help.