

Department of Biochemistry  
Biochemistry 3385B – Human Biochemistry

Course Syllabus for Winter 2024



Western University is committed to a **thriving campus**; therefore, your health and wellness matter to us! The following link provides information about the resources available on and off campus to support students: <https://www.uwo.ca/health/> Your course coordinator can also **guide you** to resources and/or services should you need them.

1. Technical Requirements



*Stable internet connection*



*Laptop or computer*

2. Important Dates



Classes Begin	Classes End
Monday, January 8, 2024	Monday, April 8, 2024

\* March 7, 2023: Last day to drop a second-term half course without penalty

Reading Week	Study day(s)	Exam Period
February 17–25	April 9-10	April 11-30

### 3. Contact Information



Instructor(s)	Contact Information
Dr Caroline Schild-Poulter (course coordinator)	<a href="mailto:cschild-poulter@robarts.ca">cschild-poulter@robarts.ca</a>
Dr Michael Boffa	<a href="mailto:mboffa@uwo.ca">mboffa@uwo.ca</a>
Dr Martin Duennwald	<a href="mailto:martin.duennwald@schulich.uwo.ca">martin.duennwald@schulich.uwo.ca</a>
Dr Marlys Koschinsky	<a href="mailto:mlk@robarts.ca">mlk@robarts.ca</a>

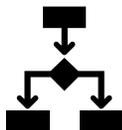
Teaching Assistant(s)	Contact Information
Brianna Kaplanis	<a href="mailto:bkaplani@uwo.ca">bkaplani@uwo.ca</a>
Mofei Wang	<a href="mailto:mwang585@uwo.ca">mwang585@uwo.ca</a>

### 4. Course Description and Design

**Delivery Mode:** in-person

#### **BIOCHEM 3385B: Human Biochemistry**

Issues of human health, lifestyle and disease are common in today’s media stories that appear in newspapers, magazines, television and the internet. But the scientific background to many of these topics is not always well covered and the level of scientific literacy among today’s public readership is not high. Modern university graduates can benefit themselves and society by becoming more literate in science and, particularly, by considering many human health issues from a biochemical point of view. Through biochemistry we can understand the molecular basis of biology in both normal individuals and in patients with disease. This course will examine several areas of human biology / disease from a biochemical point of view using the expertise of four instructors and a case-based approach.



#### **Timetabled Sessions**

Component	Date(s)	Time
lectures	M T/Th	2:30-3:20 (NCB 117) 10:30-11:20 (B&GS 0153)

Attendance at sessions is recommended

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

NOTE: If a COVID-19 resurgence prevents face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). Remaining assessments may be conducted online at the discretion of the instructor.

## 5. Learning Outcomes

Upon successful completion of this course, students will be able to:

The broad goal of the course is to present the underlying biochemistry / metabolic pathways of several areas of human wellness and disease.

Each instructor will present specific learning objectives for her / his section and will use examples of real situations in a case-based instructional approach.

**Dr. Caroline Schild-Poulter** (cschild-poulter@robarts.ca): 9 lectures: cancer, apoptosis, cell senescence, DNA repair mechanisms, diseases resulting from failure of normal DNA repair.

**Dr. Marlys Koschinsky** (mlk@robarts.ca): 6 lectures: The molecular and genetic basis of Familial Hypercholesterolemia (FH), also encompassing lipoproteins and lipoprotein metabolism, atherosclerosis (the main medical complication of FH), drug therapy for FH, and molecular diagnosis of FH.

**Dr Martin Duennwald** (mduennwa@uwo.ca): 11 lectures: The molecular biology, biochemistry, and genetics of major neurodegenerative disease (Alzheimer's, Parkinson's, Huntington's, ALS, prion disease) and the impact of aging and cellular protein quality control

**Dr Michael Boffa** (mboffa@uwo.ca): 10 lectures: Blood coagulation and blood clot breakdown, disorders that result in thrombosis or abnormal bleeding, and therapeutic interventions, all focusing on protein structure-function relationships.



Upon successful completion of this course, students will be able to:

1. Relate specific alterations in biochemical and cellular processes and pathways to the development of cancer.
2. Apply knowledge of the structural and functional properties of coagulation/fibrinolysis proteins to explain disorders of hemostasis and thrombosis and associated drug treatments.
3. Understand the cellular and molecular mechanisms underlying protein misfolding and impaired cellular protein quality control and how they relate to one another. Apply analytical concepts and devise experimental approaches to study neurodegenerative diseases at a mechanistic level.
4. Apply knowledge of the structural and functional properties of lipoproteins and lipoprotein receptors to explain the biochemical and genetic basis of Familial Hypercholesterolemia (FH) and the mechanistic basis for current drug therapies.

6. Course Content and Schedule

**BIOCHEM 3385B: 2022– 2023**  
**Mon 2:30-3:20 NCB-117**  
**Tues & Thurs 10:30-11:20 B&GS-0153**

<b>DATE</b>	<b>LECTURER</b>	<b>TOPIC</b>
Mon, Jan 8	Duennwald	Neurodegenerative diseases - Introduction
Tues, Jan 9	Duennwald	Alzheimer's disease - Abeta
Thurs, Jan 11	Duennwald	Alzheimer's disease – tau, Taupoathies
Mon, Jan 15	Duennwald	Repeat expansion diseases, Huntington' disease, Spinocerebellar Ataxias
Tues, Jan 16	Duennwald	Amyotrophic lateral sclerosis
Thurs, Jan 18	Duennwald	Parkinson's disease
Mon, Jan 22	Duennwald	Prion diseases
Tues, Jan 23	Duennwald	Protein misfolding, oligomers, amyloids, inclusions
Thurs, Jan 25	Duennwald	Prion-like spreading in neurodegeneration
Mon, Jan 29	Duennwald	Cellular protein quality control
Tues, Jan 30	Duennwald	Aging and neurodegeneration
Thurs, Feb 1	Koschinsky	Familial Hypercholesterolemia (FH): Introduction to Lipids, Lipoproteins, and Lipoprotein Metabolism
Mon, Feb 5	Koschinsky	Atherosclerosis and the Genetic Basis of FH
Tues, Feb 6	Koschinsky	Structure, Function, and Dysfunction of Proteins Involved in FH
Thurs, Feb 8	Koschinsky	Treatments for FH
Mon, Feb 12	Koschinsky	Testing and Molecular Diagnosis of FH
Tues, Feb 13	Koschinsky	FH Case Studies
Thurs, Feb 15	Guest Lecturer	Animal models of atherosclerosis
Feb 17-23	<b>Spring Reading week, NO CLASS</b>	

Mon, Feb 26	Boffa	The Coagulation Cascade
Tues, Feb 27	Boffa	Case Study 1
Thurs, Feb 29	Boffa	A Cellular Model for Hemostasis
Mon, March 4	Boffa	Case Study 2
Tues, March 5	Boffa	Fibrinolysis: Clot Bustin'
Thurs, March 7	Boffa	Case Study 3
Mon, March 11	Boffa	Thrombosis: Arterial and Venous
Tues, March 12	Boffa	Anticoagulant Therapy
Thurs, March 14	Boffa	Of Bacteria, Bats, Snakes, and Leeches
Mon, March 18	Schild-Poulter	Cancer: Introduction and Concepts I
Tues, March 19	Schild-Poulter	Cancer: Introduction and Concepts II
Thurs, March 21	Schild-Poulter	Cell Cycle
Mon March 25	Schild-Poulter	Apoptosis
Tues March 26	Schild-Poulter	Senescence and Immortality: Role of Telomeres
Thurs, March 28	Schild-Poulter	Overview of DNA Damage
Mon, April 1	Schild-Poulter	Overview of DNA Repair
Tues, April 2	Schild-Poulter	Diseases Resulting from DNA Repair Deficiencies I
Thurs, April 4	Schild-Poulter	Diseases Resulting from DNA Repair Deficiencies II
Mon April 8	Last day of class	<i>No class - General review if requested</i>

## 7. Participation and Engagement



- Students are expected to participate and engage with content as much as possible
- Students can also participate by interacting in the forums with their peers and instructors

## 8. Evaluation



Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date
Quizzes and tests	Mixed: Take home tests, written assignments, timed tests	70%	Various dates, from Jan15 to April 8

Final exam	Mixed MCQs and short answer questions	30%	April 2024, TBD

- All assignments are due at 11:55 pm EST unless otherwise specified
- Students are responsible for ensuring that the correct file version is uploaded; incorrect submissions including corrupt files could be subject to late penalties (see below) or a 0
- Written assignments will be submitted to Turnitin (statement in policies below)
- Students will have 2 submissions to Turnitin
- Rubrics will be used to evaluate assessments and will be posted with the instructions
- A student might not receive the same grade as their group members if it is determined that the distribution of work was not equal
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

90-100	One could scarcely expect better from a student at this level
80-89	Superior work which is clearly above average
70-79	Good work, meeting all requirements, and eminently satisfactory
60-69	Competent work, meeting requirements
50-59	Fair work, minimally acceptable
below 50	Fail

**Information about late or missed evaluations:**

- Late assessments without accommodation will be subject to a late penalty of 20%/day.
- All policies will apply to missed work worth less than 10%.
- An assessment cannot be submitted after it has been returned to the class; the weight will be transferred to the final grade
- A make-up test will be offered OR the weight of a missed test will be transferred to the final test
- If a make-up assessment is missed with documentation, the student will receive an INC and complete the task the next time the course is offered
- 1 make-up exam will be offered for those who missed the final test.

**INC (Incomplete Standing):** If a student has been approved by the Academic Counselling Office (in consultation with the instructor/department) to complete term work at a later date, an INC will be assigned. Students with INC will have their course load in subsequent terms reduced to allow them to complete outstanding course work. Students may request permission from Academic Counselling to carry a full course load for the term the incomplete course work is scheduled.

**SPC (Special examination):** If a student has been approved by the Academic Counselling Office to write a Special Examination and the final exam is the only outstanding course component, an SPC will be assigned. If the class has a makeup exam, the student is expected to write the makeup exam. If the class doesn't have a makeup exam or the student misses the makeup exam for reasons approved by the Academic Counselling Office, the student will write the exam the next time the course is offered. Outstanding SPCs will reduce the course load for the term the exam is deferred as outlined in [Types of Examinations](#) policy.

## 9. Communication



- Students should check the OWL site every 24–48 hours
- Students should email their instructor(s) and teaching assistant(s) using email, forum.
- Emails will be monitored daily; students will receive a response in 24–48 hours
- This course will use a forum on OWL for discussions
- Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses

## 10. Office Hours



- Regular Office hours will not be held. Meetings can be arranged in person or by Zoom by contacting course instructors or TA.

## 11. Resources



- All resources will be posted in OWL

## 12. Professionalism & Privacy



Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared (e.g., Must Knows Facebook group, Course Hero, Chegg, etc.)
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments

Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's [Non-Discrimination/Harassment Policy \(M.A.P.P. 1.35\)](#) and [Non-Discrimination/Harassment Policy – Administrative Procedures \(M.A.P.P. 1.35\)](#).

Any **student**, staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's [Human Rights Office](#). Harassment and discrimination can be human rights-based, which is also known as EDI-based, (sexism, racism, transphobia, homophobia, islamophobia, xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

## 13. How to Be Successful in this Class

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.



1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule your time throughout the course.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Follow weekly checklists created on OWL or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
5. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).
7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

## 14. Western Academic Policies and Statements

### Absence from Course Commitments

#### A. Absence for medical illness:

Students must familiarize themselves with the [Accommodation for Illness Policy](#).

A student seeking academic accommodation for any **work worth less than 10%** must contact the instructor or follow the appropriate Department or course specific instructions provided on the course outline. Instructors will use good judgment and ensure fair treatment for all students when considering these requests. You are not required to disclose details about your situation to your instructor; documentation is not required in this situation, and you should not send any pictures to your instructor.

If you are unable to meet a course requirement for any **work worth 10% or greater** due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counseling 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. Please note that the format of a make-up test, exam, or assignment is at the discretion of the course coordinator.

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/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)

#### B. Absence for non-medical reasons:

Student absences might also be approved for non-medical reasons such as religious holidays and compassionate situations. Please review the policy on [Accommodation for Religious Holidays](#). All non-medical requests must be processed by Academic Counselling. Not all absences will be approved; pay attention to the academic calendar and final exam period when booking any trips.

#### C. 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**

Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

### **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](#).

### **Discovery Credit Statement**

Students are permitted to designate up to 1.0 Discovery Credit course (or equivalent) for pass/fail grading that can be counted toward the overall course credits required for their degree program. The details of this policy and the deadlines can be found [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](#).

## **15. 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, e.g., cell phones, tablets, cameras, smart glasses, smart watch 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., 74.45 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.

## Statement on the use of ChatGPT and other Artificial Intelligence (AI) Platforms

The use of AI platforms is not recommended and will be discouraged. AI platforms are not expected to help students in this course. This course is meant to train students to reason on the material taught and develop their own understanding of the scientific subjects presented in the course.

## 16. Support Services

The following links provide information about support services at Western University.

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](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](mailto:support@uwo.ca).

[Academic Counselling \(Science and Basic Medical Sciences\)](#)

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)