

Medical Sciences 4930F/G: Selected Topics in Medical Sciences.

1. Course Information

This is a lecture based course that will introduce students to techniques used in scientific research and topics covering the study of disease. Major topics include animal models, disease, metabolism, proteomics and signaling pathways. This material will complement lab topics covered in Medical Science 4900 F/G. Students will also be introduced to writing in the sciences.

Lectures:

2 hours

Requisites:

Prerequisite(s): Enrolment in final year of Honors Specialization in Medical Sciences 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.

2. Instructor Information:

Instructors	Discipline	Email	Office Hours
Dr. Doug Jones (Course Coordinator)		doug.jones@schulich.uwo.ca	email
Dr. Michelle Belton		michelle.belton@schulich.uwo.ca	email
Dr. Ted Tweedie	Pathology	edward.tweedie@lhsc.on.ca	email
Dr. Keith St. Lawrence	Medical Biophysics	kstlaw@lawsonimaging.ca	email
Dr. Derek Boughner	Anatomy and Cell Biology	derek.boughner@lhsc.on.ca	email
Dr. Geoff Pickering	Biochemistry	gpickering@robarts.ca	email
Dr. Joe Torchia	Biochemistry	jtorchia@uwo.ca	email
Dr. Martin Sandig	Anatomy and Cell Biology	martin.sandig@schulich.uwo.ca	email
Dr. Murray Huff	Biochemistry	mhuff@uwo.ca	email
Dr. Robert Gros	Physiology	rgros@robarts.ca	email
Dr. David Bailey	Pharmacology	david.bailey@lhsc.on.ca	email

WebCT:

Lecture material will be posted to WebCT: <http://webct.uwo.ca/>

Assignments will be handed in electronic format to WebCT and will be compared for plagiarism.

Students with WebCT issues should contact the Computer Support Centre at 519 661-3800 or fill out the WebCT webform:

<https://servlet.uwo.ca:8081/vistahelpdesk/controller.jsp>.

3. Evaluation:

6 assignments (worth ~8.3% each)	50%
Midterm test	25%
Final test (Not cumulative)	25%

Assignments: Assignments will be assigned at least one week prior to the due date. They will be based on lecture material and contain short answer and short essay components.

Midterm Test and Final Exam: Both the midterm test and final exam will consist of multiple choice questions from lecture material. There will not be any practice exam questions provided.

Absence from course commitments**A. Absence for medical illness:**

Students must familiarize themselves with the Policy on Accommodation for Medical Illness: <https://studentservices.uwo.ca/secure/index.cfm>

Statement from the Dean's Office

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/handbook/appeals/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:

https://studentservices.uwo.ca/secure/medical_document.pdf

B. 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.

A Special Examination must be written at the University or an Affiliated University College no later than 30 days after the end of the examination period involved. To accommodate unusual circumstances, a date later than this may be arranged at the time permission is first given by the Dean of the Faculty. The Dean will consult with the instructor and Department Chair and, if a later date is arranged, will communicate this to Registrarial Services. If a student fails to write a scheduled Special Examination, permission to write another Special Examination will be granted only with the permission of the Dean in exceptional circumstances and with appropriate supporting documents. In such a case, the date of this Special Examination normally will be the scheduled date for the final exam the next time the course is offered.

4. Course Syllabus

Introduction & Scientific Writing

Dr. Douglas Jones and Dr. Michelle Belton

Students will be introduced to the main genres of scientific writing and the purposes that motivate scientific writing. We will look at the IMRAD structure of scientific papers, the purposes for each section of these reports, and the strategies for writing successfully in each section (argument, description, procedures). We will also map the features of a scientific abstract and locate them in a research article.

Pathogenesis of Atherosclerosis

Dr. David Bailey

A pathologist will lead a discussion on the clinical and pathological consequences of atherosclerosis. This discussion will include risk factors and pathogenesis that contribute to myocardial infarcts ranging from subclinical to fatal manifestations.

Drug Metabolism

Dr. Ted Tweedie

Lecture will focus on the human circumstance related to drug metabolism, clinical pharmacokinetics and drug interactions (mediated by inhibition or induction) using simvastatin as the sample drug. Simvastatin would represent a broad class of medications metabolized by CYP3A4, probably the most important human drug metabolizing enzyme. Other possible enzymes that could be covered include CYP2D6 and CYP2C9.

Medical Imaging techniques**Dr. Keith St. Lawrence**

Lectures will cover the basic principles of medical imaging along with an overview of the major imaging modalities. Particular attention will be given to ultrasound and how it can be applied to study of atherosclerosis.

Signal transduction pathways & atherosclerosis**Dr. Rob Gros**

This lecture will briefly review different signal transduction pathways including G-protein-coupled receptor pathways, mitogen/growth factor signaling pathways and inflammatory cytokine signaling pathways. In addition, various techniques and assays available for assessing alterations in these signaling pathways during disease will also be discussed, including second messenger assays, western blotting, binding studies and functional assays.

Cholesterol and the Liver**Dr. Murray Huff**

This section will focus on the fundamentals of lipid and lipoprotein metabolism. Topics will include the absorption and transport of dietary fat and cholesterol, the regulation of liver fatty acid and cholesterol metabolism and the fundamentals of hepatic lipoprotein secretion. Furthermore the mechanism of action of pharmacological mediators of lipoprotein metabolism, including statins, will be discussed.

Gene regulatory pathways & lipid metabolism**Dr. Joe Torchia**

Gene regulatory pathways involved in regulating specific enzymes and proteins important to lipid metabolism will be discussed. This will be focused predominantly on the nuclear receptor superfamily members such as PPARs which are key mediators of specific genes important to lipid metabolism. An introduction to regulatory pathways involved in induction of the p450 enzymes by specific nuclear receptors.

Microscopy & Histopathology**Dr. Martin Sandig****Clinical Intervention: Coronary Artery Disease****Dr. Geoff Pickering**

A clinician will present a "bench to bedside" lecture which specifically highlights coronary artery disease and the way in which research is used to treat this condition.

Clinical Intervention: Aortic Valve Sclerosis**Dr. Derek Boughner**

A cardiologist will present a "bench to bedside" lecture which specifically highlights aortic valve disease and the way in which research is used to treat this condition.

5. 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.

The use of computers during lectures to check email, browse the internet or use various messenger programs is not permitted.

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/handbook/appeals/scholoff.pdf> .

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. 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>).

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

Support Services:

Registrarial Services: <http://www3.registrar.uwo.ca/index.cfm>

Academic Counselling (Science and Basic Medical Sciences):
<http://www.uwo.ca/sci/counselling/index.html>

Student Development Services: <http://www.sds.uwo.ca>

Student Health Services: <http://www.shs.uwo.ca/>

Resources:

McMillan, Victoria. E. *Writing Papers in the Biological Sciences*. 4th Ed. Bedford and St. Martin's. Boston. 2006

Pechenik, Jan. *A Short Guide to Writing about Biology*. 6th Ed. Pearson, New York. 2007.