



McGill MIMM 387 Syllabus

Faculty of Medicine
Department of Microbiology and Immunology



“The Business of Science”

Winter 2015

Course Title:	The Business of Science
Course Number:	MIMM 387
Credits:	3
Prerequisite	At least one 200-level biological or biomedical discipline Or permission of instructor.
Location:	Duff Medical Building THTR 1
Class Time:	Monday and Friday 11:35 a.m. – 12:55 p.m.
Course Coordinator:	Dr. Robert A. Murgita (robert.murgita@mcgill.ca)
Office:	Room 408, Lyman Duff Building (4 th Floor)
Teaching Assistant:	Alison Hirukawa
Undergraduate Student	
Course Assistants (USCA):	Melissa Williams, Andrea Dumont, Vivian Ku, Benazir Premji, Marc Allard

I. Course Description

Over the past three decades, science and business have united to give rise to cutting-edge start-up biotech companies, which have become the driving force behind scientific innovation. It has become evident that many pioneering scientific institutions stem from a productive interaction between Academia and private investment sources. The contrasting ideologies in public and private research and the potential of private capital to accelerate innovation will be discussed. The Human Genome Project, which represents an important model for these interactions will be analyzed in depth. Scientists from the private sector will highlight important events that link basic research to the commercial drug discovery process. Thus, this course will reveal not only (1) cultural differences between Pharmaceutical and Biotechnological industries, but also (2) beneficial relationships between Academia and Industry in the complex and expensive process of moving new and novel therapeutics from bench to bedside.

High-profile academic clinicians will address controversial issues associated with therapeutic interventions and vaccine programs. Also, the interface between Law and Science will, in part, be examined by addressing the topic of hospital associated infections. National healthcare systems from three different countries will be analyzed to compare their relative efficiencies in administering healthcare services to their population.

This course is designed to be interactive and to develop the student's critical thinking. Thus, active exchange between students and lecturers during and after the presentations is encouraged.

II. Course Objectives

Careers in the technical, clinical, legal and managerial areas of Biotech and Pharmaceutical industries are increasingly becoming a lucrative option for Science Graduates. However, while undergraduate students learn copious scientific facts belonging to their respective discipline, they seldom gain an opportunity to assimilate this knowledge into well-formulated concepts. In their collaboration with private industry, modern scientists require knowledge of Business, Law and the rules of intellectual property protection in form of patents. This is why this course offers students the opportunity to interact, question, and network with experts from various disciplines to understand the business aspect of the bioscience and health science sectors.

III. Learning Outcomes

Acquiring Knowledge:

- Understand that academia and the private sector can overlap for scientific ventures.
- Understand the transition of scientific discoveries into marketable products.
- Explore the regulatory and financial challenges faced by the scientific world.
- Learn to write a term paper using conventional scientific writing skills.

Critical Thinking Skills:

- Leverage prior scientific knowledge or skills to critically analyze controversial scientific issues.
- Understand the manner in which facts can be misinterpreted and/or manipulated to promote a certain agenda.
- Learn to recognize information that tends to mislead the general public and avoid being drawn in to false conclusions.
- Learn to develop a balanced viewpoint and an educated opinion on subjects in which there is no wrong answer.

Team Building Skills:

- Learn to interact with peers in order to collaborate on ideas and produce quality work.
- Learn to recognize strengths and weaknesses of team members and assign tasks accordingly.
- Learn to manage time to comply with set deadlines.
- Learn to seamlessly integrate divided tasks into a final coherent work.

IV. Course Material

No textbook is required for this course. All readings and selected power point slides for individual lectures will be posted on MyCourses.

Note:

1- Participation: Students are encouraged to provide their own views and opinions to create a dynamic class environment. Students can access the Lecture Preview folder on MyCourses to view a short blurb and supplemental readings related to each lecture.

2- Lectures will not be recorded and selected lecture presentations will not be provided due to confidentiality policies agreed with lecturers from the private sector. However, any other presentation will be made available on MyCourses after the lecture.

V. Grading Scheme

(A) Examination (2 tests: 20%+15%)

The two tests are closed book and consist of short answer questions. All the material presented by the lecturers in class is subject to examination. While students will not be tested on additional readings and supplementary material, they are recommended to read them to help formulate excellent answers for the two tests. If a student cannot attempt a test due to a valid medical reason, a doctor's note is required. **Without a doctor's note, a grade of zero will be given for the test.** If the first test is missed, the second test will be worth 35%. However if the second test is missed, the term paper will then be worth 55%

(B) Term Paper Draft (25%):

Refer to "Draft guidelines" for instructions and expectations on writing the draft document.

(C) Term Paper (40%):

For further information regarding the term paper, and finding adequate resources in the literature, consult the "Term Paper Writing Guide", which can be found on MyCourses.

Team Assignment: Groups of 3 students will be assigned on January 23rd, 2015. However, for those who wish to work individually, there is a **group opt-out option** and the student should ***contact*** the teaching staff members by **February 6th, 2015**. After this deadline, every student will be committed to work with his/her group and will receive an overall grade for the group.

Grading criteria: All term papers will be graded by Dr. Murgita. Grading is based on content, organization, coherence, depth of topic coverage, extent of literature review, proper usage of in-text citations, correct format of the "Bibliography" section, sentence structure, grammar, neatness, and style. Students must make every effort to produce term papers free from typographical or grammatical errors.

Submission: The draft is due on **March 9th, 2015 in class**. The term paper must be submitted to Dr. Murgita at Lyman Duff Room 408, on **April 14th, 2015 by 5pm**. Electronic copies of the draft and of the term papers will not be accepted. No extensions of the due dates will be allowed. Late submission will be penalized.

Important dates

Evaluation	Grading % Of Final Mark	Exam/Due Dates
Test 1	20%	February 27 th , 2015
Test 2	15%	April 14 th , 2015
Term Paper Draft	25%	March 9 th , 2015
Term Paper	40%	April 14 th , 2015

MIMM 387- Business of Science: Tentative Lecture Schedule (2015)

DATE			LECTURER
1	M Jan 05	Introduction and Overview: Part I	Dr. Robert Murgita Professor, Micro&Imm
2	F Jan 09	Introduction and Overview: Part II	Dr. Robert Murgit Professor, Micro&Imm a
3	M Jan 12	Video: "Cracking the Code of Life" followed by in class discussion	Dr. Robert Murgita Professor, Micro&Imm
4	F Jan 16	University-Industry relationships	Dr. Robert Murgita Professor, Micro&Imm
5	M Jan 19	Clinical Trials in Multiple Sclerosis	Dr. Amit Bar-Or MD, FRCP(C) Montreal Neurological Institute (MNI)
6	F Jan 23	New Drugs in Multiple Sclerosis Term Paper Groups Assigned	Dr. Jack Antel MD Former Chairman of the Department of Neurology and Neurosurgery, MNI
7	M Jan 26	Clinical research in drug development	Dr. Rosanne Seguin Clinical Study Co-coordinator and Project Manager, MNI
8	F Jan 30	Trial and Error - The Jesse Gelsinger Case	Dr. Robert Murgita
9	M Feb 02	Patents in Technology and Science	Mr. C. Cawthorn Partner, Norton Rose Law Firm
10	F Feb 06	Pharmaceutical patents in an international context End of opt-out period for group term paper	Richard Gold Professor, Faculty of Law
11	M Feb 09	"The business of scientific publishing: A paradigm change for scholarly journals"	Dr. Eduardo Franco Chair, Department of Oncology McGill University
12	F Feb 13	Ethical Issues in Vaccine Programs	Dr. Brian Ward, MDCM, DTM&H Montreal General Hospital
13	M Feb 16	How Science Can Assist the Debate About HPV Vaccination?	Dr. Eduardo Franco Chair, Department of Oncology McGill University
14	F Feb 20	Health Care Systems: Canada vs. United States	Dr. Antonia Maioni Associate Professor Institute for Health and Social Policy
15	M Feb 23	Review of lecture bloc (3-14)	Dr. Robert Murgita Professor, Micro&Imm
16	F Feb 27	Exam # 1: Lecture 3-15	Dr Robert Murgita Professor, Micro&Imm
March 2nd – March 6th: READING WEEK (no classes)			
17	M Mar 09	Entrepreneurship in the Health Care Sector Draft Due in class (No extensions allowable)	Dr. Peter Younkin Assistant Professor Desautels' Faculty of Management
18	F Mar 13	From Big Pharma to Start-Up	Dr. Cameron Black Vice President, Kaneq Pharma
19	M Mar 16	Immunology research and Drug Development at Genzyme	Dr. Johanne Kaplan Vice President, MS and Immunology Research, Genzyme
20	F Mar 20	Generic Drugs: Manufacturing, Pricing and Distribution	Ms. L. Ferreira Director, Government Relations SANDOZ CANADA INC
21	M Mar 23	Heretics and Conspiracy Nuts in Science and Medicine	Dr. Joe Schwarz Professor, McGill Department Chemistry
22	F Mar 27	Comparing Curiosity-driven research vs. Translational research	Dr. Robert Murgita Professor, Micro&Imm
23	M Mar 30	Healthcare Related Infection Outbreaks and the Law	Dr. Lara Khoury Associate Professor Faculty of Law, McGill University
	F Apr 03	Good Friday – No classes	
	M Apr 06	Easter Monday – No classes	
24	F Apr 10	Entrepreneurship : How to succeed and how to fail	Dr. Gregory Vit Director of Dobson Centre for Entrepreneurship Desautels' Faculty of Management
25	M Apr 13	Review of lecture bloc (17-24)	Dr. Robert Murgita Professor, Micro&Imm
26	T Apr 14 Fri classes	Exam # 2: Lecture 17-25 Term Paper Due at 5:00 pm (No extensions allowable)	Dr. Robert Murgita Professor, Micro&Imm

McGill Policy Statements

1. ***"McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest/ for more information).*** (approved by Senate on 29 January 2003)

The FRENCH TRANSLATION of the Academic Integrity statement may also be used on your course outline:

"L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/students/srr/honest/)."

2. ***"In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded."*** (approved by Senate on 21 January 2009 - see also the section in this document on Assignments and evaluation.)

The FRENCH TRANSLATION about this right may also be used on your course outlines:

"Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue)."