

HMB301H1F-2016 BIOTECHNOLOGY

"In the face of overwhelming odds, I'm left with only one option, I'm gonna have to science the *heck* out of this,"
Mark Watney in [The Martian](#) (2015)

The Science of the Business and the Business of the Science

OUTCOMES:

Upon successful completion of this course, students will have a working knowledge of the biological drug development process, its inherent risks and various mitigating strategies from both a scientific and business perspective.

DESCRIPTION:

As Gary Pisano outlines in [Science Business](#), "For more than twenty-five years, the biotechnology industry has been host to a profound and important experiment: the fusion of science and business. Perhaps in no other industry have science and business been as tightly interwoven..." In this course, we explore the various aspects of discovering, developing and commercializing a potential biological product, with a particular focus on human therapeutics (See [6 Tenets Model](#)). The course is divided into two parts: In the Science of the Business, we examine the history of biotechnology, the high-risk nature of the industry, the drug development process, and the current and up-and-coming technologies. In the Business of the Science, we explore the major pillars that support any successful biotechnology enterprise including intellectual property, talent, access to capital, partnerships and market need.

A major component of this course involves an individual examination of a chosen, publicly-listed small to mid-sized [biotechnology company](#). Each student will be required to select a firm, research and report on how it approaches and navigates this biotechnology landscape including its chosen technology and target market(s), its competitive and patent position, as well as its drug development process and financial requirements. This so called "Stock Analysis Assignment" culminates in a complete report akin to a stock analyst report or a business plan.

LOGISTICS:

[Human Biology Program, University of Toronto](#)

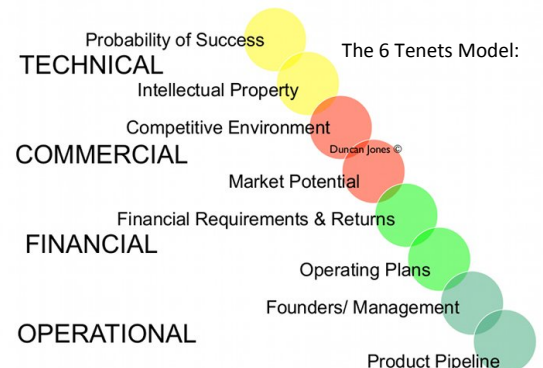
Fall Term 2016 2 hours/week: **Tuesdays 12:00-1:00 PM & Thursdays 12:00-1:00 PM**

Office hours to be announced/ by appointment

Location: [Wilson Hall, New College](#) WI-524 40 Willcocks Street

Instructor: Duncan Jones MSc, MBA, PMP duncan.jones@utoronto.ca Text/cell: 416.301.6700

Teaching Assistant: Ken Grise MSc, PhD candidate



A dedicated [Blackboard portal](#) will be available for this course where course materials, updates and announcements will be posted.

There is no required textbook for this course (See recommendations next page) however links to a number of required readings and videos will be posted throughout the term. In addition, a Twitter feed of relevant, current events in biotechnology will be part of the course (#HMB301).

The course evaluation is based on a major assignment (the "Stock Analysis Assignment" broken down into sections related to the lecture material), a mid-term test, a final examination and a class participation component. Completion of all components of the assignment is required as is attendance at the mid-term test and final examination (See course outline and due dates next page).

Regular attendance is highly recommended as there is a class participation mark of 10%, based on relevant/valuable contributions to the discussion. This includes being prepared to talk about the company you are analyzing as part of the major assignment.

POLICIES:

As outlined in the [Faculty of Arts and Science Calendar – Rules and Regulations](#):

- Students that fail to submit assignments or sit term tests for medical reasons must submit a valid UofT Verification of Student Illness or Injury Form. The HMB Program office verifies all medical notes. If the note was submitted for an assignment, the assignment is still due.
- All assignments must be submitted electronically to blackboard in .pdf (preferred), Word or Pages format by 8:00 PM on the due date.
Late penalties equal to 20% per day (24 hour period) will be assessed until the assignment is submitted.
- Students are permitted to record lectures as a form of note-taking for personal use. The lectures are the intellectual property of the instructor, and the recordings must respect this. More specifically, students are not to upload the recordings to a shared drive, folder or hosted platform such as YouTube or Facebook, nor publish an instructor's notes to a website or sell them.
- Academic misconduct is taken very seriously. Academic integrity is a fundamental value of learning and scholarship at the UofT. The Code of Behaviour on Academic Matters outlines the behaviours that constitute academic misconduct, the processes for addressing academic offences, and the penalties that may be imposed. Potential offences include:
 - Using someone else's ideas or words without appropriate acknowledgement in assignments.
 - Obtaining unauthorized assistance on any assignment.
 - Using or possessing any unauthorized aid, including a cell phone on a test or exam.
 - Looking at someone else's or letting someone else look at your test or exam answers.

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The Science of Business and the Business of Science

DATE	TOPIC	OTHER EVENTS	READINGS	HOMEWORK	MARKS/ DUE DATE
12:00 - 13:00					
SEPT					
Tue 13	Course Introduction	START	X	Company Selection V	
Thur 15	History of Biotechnology		AOM Avarice V V		
Tue 20	Microeconomics 1			Technology/Pipeline (1) V	
Thur 22	Microeconomics 2		AOM Bonds/ Video V V	V V	
Tue 27	Science-Business 1			Market (2) V	4%
Thur 29	Science-Business 2		Clinical Trial Paper V V	V V	
OCT					
Tue 4	Drug Development 1				4%
Thur 6	Drug Development 2		AOM Stocks V V	Plans/Management (3) V V	
Tue 11	Technology 1	THANKSGIVING		V V	
Thur 13	Technology 2				4%
Tue 18	Catch-up and Review			STUDY V V	
Thur 20	MIDTERM in class	MIDTERM	IP Pre-read V V		20%
Tue 25	Intellectual Property 1			V V	
Thur 27	Intellectual Property 2		License Video V V	IP (4) V V	
NOV					
Tue 1	Market, Competition and Partnerships 1			V V	
Thur 3	Market, Competition and Partnerships 2		Finance Pre-read V V	Comp/Partners (5) V V	4%
Tue 8		BUSINESS OF SCIENCE	Course Drop Date READING DAYS V V	V V	
Thur 10	Finance and Macroeconomics 1		Macroeconomics Pre-re. V V	V V	
Tue 15	Finance and Macroeconomics 2				4%
Thur 17	Finance and Macroeconomics 3			Finance (6) V V	
Tue 22	Industry Models and Trends 1			V V	
Thur 24	Industry Models and Trends 2			Strategy/Final Report V V	4%
Tue 29	Operations and Careers 1			V V	
DEC					
Thur 1	Operations and Careers 2			V V	
Tue 6	Catch-up and Review				11%
Dec 9-20 (to be announced)	FINAL EXAM	FINAL EXAM			35%
	Class Participation				10%

Logistics (again):

[Human Biology Program](#)

[University of Toronto](#)

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Teaching Assistant:

Ken Grise MSc, PhD candidate

Marking Scheme:

Stock Analysis Assignment **35%**

- 6 weekly, 4% sub-assignments

- A final 11% report

Mid-term Test (1 hour) **20%**

Final Exam (2 hours) **35%**

Class Participation **10%**

Total **100%**

Suggested Texts (but not required):

[SCIENCE BUSINESS](#)

By Gary P. Pisano

2006 Harvard Business Press

ISBN 1591398401

[THE ASCENT OF MONEY](#)

By Niall Ferguson

2008 Penguin Group

ISBN 9781 59420 1929

[PBS TV SERIES](#) here!

