MBIOTECH

MASTER OF BIOTECHNOLOGY PROGRAM

Compulsory Course Component

BTC 1600H & 1610H

BIOPARTNERING I
&
BIOPARTNERING II

Duncan Jones

Fall Term, 2021

MASTER OF BIOTECHNOLOGY
UNIVERSITY OF TORONTO MISSISSAUGA

BTC 1600H & 1610H – Biopartnering I & II

Course Outline (Fall 2021)

Class Location:	Online through Zoom (details to follow) with student presentations and critiques on site.
Class Times:	Tuesdays, 6:30-8:30PM, 7-Sep to 7-Dec (14 classes)
Professor:	**Mr. Duncan Jones,** MSc, MBA, PMP
Office Hours:	By appointment
Contact:	(416) 301-6700, duncan.jones@utoronto.ca

Course Instructor

Duncan Jones is currently an Associate Professor in the Institute of Management & Innovation (**IMI**), the Director of the ICUBE accelerator, and the Associate Director of the Master of Biotechnology (**MBiotech**) Program at the University of Toronto, Canada.

Duncan holds a Bachelor's of Science (Chemistry and Biochemistry), a Master's of Science (Biochemistry) and a Master's of Business Administration, all from the University of Toronto. In addition, he is a Project Management Professional (PMP). For over 30 years, he has primarily worked with inventors in the Life Sciences, especially University professors assisting them in bringing their ideas to market. He has worked in a major pharmaceutical company, as a venture capitalist and with the technology transfer teams at each of Ontario's Universities. He has lectured on and taught business and biotechnology at the high school, college and university levels. Duncan also manages **Hexagon Innovating** (www.hexagon-innovating.com), a consulting firm focused on the fuzzy front end of new product development, sourcing and in-licensing technology, performing technology and intellectual property reviews, doing market research and competitive intelligence, developing business models and strategy, partnering, fundraising, as well as project and portfolio management.

Duncan bringing his commercial and industry experience to the classroom as well as his interest in pædagogy, especially as it relates to critical thinking and experiential learning (https://duncanjones.weebly.com/education). Over the last 2+ years, he has taught 11 half-courses at UofT. This represents 7 different courses: 4 in the MBiotech Program, one Master's level elective at the Institute of Management of Innovation (UTM), and one undergraduate course in each of the IMI Business Minor (UTM) and Human Biology (St. George) programs.

Course Description

This course is composed of two components: a series of **seven** guest lectures, followed by a series of **seven** student team presentations.

For the seven guest lectures, a pre-read article and short quiz will be posted on Quercus. In addition, a brief post-seminar assignment will be required.

The seven student team presentations provide an opportunity for teams comprised of Junior/Year 1 MBiotech students from both the Biopharma and Digital Health streams to develop and present their solutions to a range of pre-assigned commercialization problems.

The teams of Senior/Year 2 students will each serve as mentors for one Junior/Year 1 presenting team as well as lead critics following the presentation of one other team (so called "Dragons"). In addition, the Senior/Year 2 students will be required to complete an individual paper on a disruptive technology coming to the heath care arena.

The course challenges students to provide insights into industry issues that would be seen as a valuable contribution by experts in the area. Second, the course is designed to teach students what it means to give (or critique) a professional presentation in the private sector.

Evaluation & Grades

Grading breakdown for the course is listed below.

BTC1600H (Junior/Year 1 students)		BTC1610H (Senior/Year 2 students)	
Individual participation (35%)		**Individual participation (65%)**	
Pre-read quizzes	15%	Pre-read quizzes	15%
Post-seminar insights	10%	Post-seminar insights	10%
Contribution to team presentation	5%	Disruptive technology paper	35%
Final presentation	5%	Peer reviews	5%
Team presentation (65%)		**Team presentations (35%)**	
Research/Copyright	10%	Mentorship activities	10%
Dress rehearsal	5%	Dragon's Den conduct	15%
Abstract	5%	Written critique	10%
Final presentation	30%		
Questions	15%		

Student Team Presentations

The teams for this course will the same 7 as your previous BTC1600 team for Senior/Year 2 Biopharma students and the current 7 teams for the Junior/Year 1 Biopharma students with the addition of Digital Health Technology (DHT) individuals from each year's students as assigned by the instructor.

The order, mentorship teams, critique teams and the problem topics for the student team presentations will be assigned randomly by the instructor. The problem topics will cover various issues facing the commercialization of biopharmaceuticals.

Graduate-level presentation quality is expected, which means students must demonstrate *their own analysis and insights*. It is expected that faculty and industry personnel viewing your presentation should obtain value from your work, even if they already work in the industry segment your team is addressing. The question all student teams should ask themselves is: "As a result of our work, what will the main stakeholder do differently?" The emphasis is on impact and practical value.

Each presentation should introduce itself by clearly articulating the problem and the decision criteria that the group tackled in the context of their topic. This convention helps ensure students choose a sufficiently narrow topic, such that their work can be of professional value; *and that they understand their responsibility to <u>close</u> their presentation with their own analysis and recommendations*. You are accountable for understanding any slide you show your audience, and your team must be prepared to answer detailed questions on any and all slides. Finally, a reading of basic review papers in the area of your chosen topic will be conducted by the instructor to help ensure that your insights are not already anticipated by the field at hand.

For students looking for guidance on what constitutes "insight" the rule of the series is **FIND & FIX**: **Having identified a problem, propose a unique solution that can be achieved or at least properly tested in 2 years with a budget of approximately $200,000.** Simply evaluating whether or not you think a project or product will be successful is not enough. You want your solution to be seen as useful and 'find and fix' is the best way to showcase your abilities. Expect representative from the actual companies to view your presentation, which sometimes happens.

Before contacting ANY regulatory authority regarding your project, teams are required to check with the instructor first.

For a quick example on some outstanding presentations from previous years, please see the following presentations archived on our website that are also copyright compliant:

http://webcast.utm.utoronto.ca/1/watch/839.aspx Designing a Better Insulin Pump

http://webcast.utm.utoronto.ca/1/watch/847.aspx *C. Difficile* testing

http://webcast.utm.utoronto.ca/1/watch/600.aspx Portable Ultrasound

http://webcast.utm.utoronto.ca/1/watch/586.aspx iPhone medical imaging

Note: Prior to 2010 our talks were not copyright compliant.

Presentation stylistic points:

1. One minute at least is spent explaining and discussing each slide.

2. Presentation duration 40 minutes long; longer durations will be penalized.

3. Clearly explain your graphs and data and do not include extraneous information.

4. Properly source your data at the bottom of your slides. "Jones, 2000" is not a complete citation.

5. No political humour. Humour in general is discouraged.

6. You should have slides for your Question & Answer period ready to use – if you need them. Typically, teams will have 20 slides for this purpose.

7. Smile during your talk (your potential employers may review these sessions).

8. Gentlemen wear a tie. All of you are expected to dress in attire consistent with a

presentation in a formal corporate setting.

9. **See Copyright Compliance**. Remember, it is harder to put together a talk that is copyright compliant so you will need to get permissions from experts & companies as you go along to quote them or use their visuals.

10. A white background for your slide decks is suggested.

Some key conceptual points to consider are:

11. **Clear presentation of key data.** Is the key data behind the issue/invention actually presented? Do the students appear to understand the data?

12. **Range of options considered.** Briefly outline options that were considered and dismissed.

13. **Strength of conclusions, recommendations.** Are they well supported by the preceding analysis/data? How well do they answer the question/hypothesis/ decision posed at the beginning of the presentation?

14. **Novelty and relevance of supporting analyses performed by team.** How novel are these recommendations? Do they already appear in the literature?

15. **Presentation quality (speaking, materials, references).** Was the talk clear? Concise? Understandable? Engaging? Professional?

16. **Responses to questions.** Did the students answer questions correctly? Were their answers concise? Were additional insights demonstrated during this segment of the presentation? Did students know the data?

Opening Team Slide: The slide introducing your talk title and team members and identify "Supervisor: Duncan Jones (duncan.jones@utoronto.ca)."

First Content Slide: The style is not relevant, but the key headings are (i.e., objective/question and the decision criteria). Decision criteria define the scope and expectations of your talk and the validity of your FIX. *These decision criteria should make mention of ROI, budget and timeline.* You can use this slide to define the focus of your talk and point out which questions are "out of scope" in the question period based on this slide. If you are asked a question that falls within the scope of your presentation you are expected to have an answer.

Post your PowerPoint presentations, in PC format, to Quercus, no later than one hour before your talk. Your copyright compliance summary of permissions must also be posted to Quercus 1 hour before your talk.

Copyright Compliance

It is a requirement of all presentations that they are copyright compliant. ***This means you cannot simply cut and paste relevant images from the internet and will require advanced planning during your preparation to collect images that you have copyright permission to show.*** Each slide must indicate the copyright permission obtained as appropriate. A word document must be uploaded prior to your presentation indicating in detail how permission was obtained for each image/ quote in your presentation: contact person, e-mail communication or phone call to obtain permission. Organize permissions in this document by the slide number in your talk.

Copyright compliance is a requirement of private sector and academic settings, for talks that are or could be deemed public events. Therefore, as young professionals, your

presentations will also be required to be copyright compliant. Don't underestimate the work copyright compliant presentations require. You will need time to make and find the right figures or obtain formal consent from the firm/artist in question. Do not assume that because it's on the internet it's not covered by copyright: Indeed the opposite is usually true.

For a video tutorial on copyright compliance please see:

Creating Copyright Compliant Talks & Reports with Shelley Hawrychuck, Copyright Librarian, UTM Library. Tuesday, September 16th, 2014, 6:30PM.

http://webcast.utm.utoronto.ca/1/Watch/1634.aspx?query=copyright

Abstracts

Presenting groups must post their abstract by 6:00PM on the Tuesday prior to their talk on Quercus. This abstract should seek to summarize in approximately 250 words:

1. Conclusion/recommendations
2. Supporting analyses
3. Key data collected
4. Why we care
5. Team photo

Evaluation and Feedback

One week after the student presentation there will be two forms of feedback:

1. Written evaluation by a senior student team.
2. Instructor Evaluation posted on Quercus. Immediately following the presentation, the instructor will need up to 30 minutes with the presenting team to provide feedback and ask follow-up questions.

Presentation Timeline

Time Period	Purpose	Supporting Activities
Weeks 1 & 2	Background reading	Understand the science - how does it work? How is it regulated? What was the pathway to market approval? How were similar products regulated? Is it a commodity? Who are the competitors? What are the threats? Opportunities? What are the patent claims? How big is the market? What is the growth rate? What are customers looking for in this product? Do a supply chain and Porter's 5 forces overview. **AT CONCLUSION MEET WITH INSTRUCTOR FOR DISCUSSION.**
Weeks 2-5	Contact experts (physicians, scientists, company)	Come armed with specific questions. Be sure to get permission to use quotes or images. You cannot misrepresent yourselves. Do NOT contact the FDA or Health Canada without the instructor's permission first (send me an e-mail with your intended questions). Meet with Senior/Year 2 mentorship team at least twice over this period.

Time Period	Purpose	Supporting Activities
Week 3	Analyze data so far	What is the "real problem" (FIND)? What are possible "FIXES"? If you need survey or focus group responses now is the time to get this data. With a FIX in mind your questions are now very focused in contacting experts.
Week 4	Test your FIX	Basic financial modelling, product feature matrix and examine stakeholder, expert and industry reactions to your idea. You need to get pricing data and customer reactions to it in many cases and this is the time to do so. **AT CONCLUSION MEET WITH INSTRUCTOR FOR DISCUSSION.**
Week 5	FIX again	Your first FIX likely failed – this is a chance to revisit the problem and try a new FIX.
Week 6	Slide deck assembly & rehearsal	Time to make your slide deck. It must be copyright compliant. 40 slides of content and approximately 20 slides for the question period. Post your abstract on Quercus. **AT CONCLUSION MEET WITH INSTRUCTOR AND MENTORSHIP TEAM FOR DRESS REHARSAL.**
Week 7	Presentation	Plan approximately 6-8 minutes per person to talk – practice giving your presentation with the slide order backwards without hesitation. Present to friends and family to overcome any anxiety in public speaking. Post your slides, copyright compliant statement prior to the event. Within the week post the review of your mentorship team.

Mentorship

Each Senior/Year 2 team is required to mentor a single **presenting team** on their topic, solution, and preparation. You decide how much time you wish to spend on this. Your grade for mentorship will be based primarily on the evaluation that the presenting team gives you. One key area that students generally need help with is with their handling of questions following their talk – a clear area where they can use practice.

Considering the teams will be meeting with the instructor 3 times in the 6 weeks leading up to their presentation, the expectation is that you meet with the teams 3 times in this period. We recognize that your time is limited but being available to respond to some quick questions by e-mail during their preparation would be helpful.

One week after their presentation, i.e., 6:00PM the following Tuesday, the Presenting team is to post a short paragraph outlining the value of the Senior/Year 2 mentorship that was received and provide a mark out of 10.

Presenting teams are to meet with the instructor every two weeks over the 6 weeks to discuss your progress and findings – it is your responsibility to set-up these meetings by Zoom.

The individual *Contribution to team presentation* mark (see table, above) is based on questions the instructor asks of students in preparatory meetings leading to the seminar, during and immediately after the seminar. During discussion the instructor will look for insight, preparedness, initiative, and depth of understanding of the project material for the section the student in question is working on.

Critique: The "Dragons' Den"

While one Senior/Year 2 team will be responsible for mentoring a presenting team, a second Senior/Year 2 team will be responsible for the written critique of both the student presentation as well as serving as the "Dragons' Den" team.

The Dragons' Den team is expected to do their best to ask the toughest questions regarding the content of the team's presentation, with particular focus on the presenting team's insight or proposal. It is the Dragons' Den's responsibility and opportunity, to be the first to challenge the team's solution regarding the topic. The Dragons' Den team will have exclusive control of the question period and ask all questions during the first **20 minutes** of the question period, moderated by the instructor. Everyone on the Dragons' Den team is expected to ask questions. Once the instructor has signalled that the Dragons' Den is finished, the floor then opens up such that all students and Faculty in attendance can ask questions.

The grade for the Dragons' Den and the written report are based on the following criteria: insight, professionalism, critical thinking and constructive criticism.

The written critique is to be 2-4 pages long and should be posted on Quercus as a PDF, the following Tuesday by 6:00PM. The comments should be professional and constructive. Try to have suggestions for each criticism you have with the talk (whether of the analysis or presentation style). Late penalties apply at 10% per day. Identify all team members and your team's name on this deliverable.

Disruptive Technology in Health Paper (Individual Assignment for Senior/Year 2)

In this paper you are each asked to forecast the impact of the most disruptive and promising technology on the biopharmaceutical (or medical device) industry within the next 10 years. Technology is changing all the time, so what do you think will be an important technology that will emerge that will impact the industry within the next 10 years?

We hope that all your assignments are fun, and this gives you a lot of room for creative thinking. But be practical. We are talking about a 10-year time horizon. The technology you identify as being important could impact the supply chain from pharma to patient (or doctor) at any point.

Choose a single technology that you believe, based on your *analysis*, will be a disruptive influence in healthcare (pharma, medical devices etc). This might impact how physicians treat patients (e.g., text message reminders for medication dosing) or how industry colleagues collaborate on health problems (e.g., mind mapping software or specialized web portals like Medlantis) or how technology is used to facilitate clinical trial enrolment (e.g., Apple's Health Kit) and execution or a new way to screen chemical libraries of compounds for preclinical testing (e.g., using AI to go through such libraries). These are just examples. You want to identify a technology that will grow and have a pervasive effect in healthcare, or any industry involved in healthcare. As soon as you have selected a topic, it should be posted to Quercus. To avoid too much overlap, your topic needs to be approved by the instructor on a first-come basis.

We also want you to be convincing. Make your case with rigour using the various tools and practices you have learned in the Program. Be professional and scholarly in making your case. In making the strongest case possible for your prediction, the tools you will use, in addition to others not listed here, are: best in class product examples, worst in class product examples, sales data, costing analysis, trends among start-up companies, buy/sell side investor analyst reports, market and consulting reports, peer reviewed

literature, technology bloggers, expert commentary, industry commentary, user commentary and competitor analysis (this list is not exhaustive; use what you consider appropriate to make the strongest case you can). Your writing is also important, such as proper paragraph construction for arguments. Lastly, your appropriate use of sources is critical here. Personal communications from experts or writings of technology bloggers are relevant for some points you wish to make, but not appropriate for others (e.g., a tech blogger could talk about usability, but if the topic is safety or mechanism, that would be found in the peer reviewed literature or in the patent, as appropriate). To keep your arguments tight, while the technology you have chosen may have many promising applications, focus on one only, so that you can make your case in as much detail as possible.

Caution: A competitor analysis does not demonstrate the industry segment you identified will grow or is important. A competitor analysis demonstrates who is the leader within an industry segment but that does not mean that industry segment will grow; e.g., a competitor analysis on the best hot air balloon company identifies the leader in balloon transportation, but is not relevant to arguing that balloons will grow as mode of transportation.

In summary, choose a single technology that exists today, or is emerging, and make the case it will be a dominant technology within the next 10 years within healthcare. Don't forget that healthcare adoption is generally a very slow process.

> **Written length:** 4-5 pages
>
> **Appendices:** Unlimited length
>
> **Submission:** Post to Quercus
>
> **Due date:** 6:00PM 30-Nov
>
> **Completion of two peer reviews:** 6:00PM 8-Dec
>
> **Late penalties:** 10% per day

Each Senior/Year 2 student will also be responsible for completing 2 one-page written peer reviews to be posted on Quercus.

Attendance For All Students

All students are required to login before 6:30PM (i.e., before the start of the presentation). **Attendance at fewer than 12 of the seminars in this series will require an exam to be written for this course.** Students viewing only the recording of a presentation will be considered ABSENT. You must be virtually present for the event to receive attendance credit. Any effort to forge or misrepresent your attendance will be treated as an academic offence. We understand that absenteeism for work events or "networking" events does occur hence the leniency outlined above. Nevertheless, the MBiotech Program has a "brand" to build and protect. In the past, we have seen many occasions where students have abused discretionary absence to the point where our guest speakers present to a half empty room. The absenteeism measures here have evolved to protect the obligations of the Program to the speakers that we invite, and the hard work of the student teams who present.

Pre- & Post-Lecture Assignments

Prior to each guest seminar a relevant pre-read article and short quiz will be posted to Quercus to be completed before class. Following each lecture, a short paragraph or series of bullet points outlining the major insights that you derived from the seminar should be posted to Quercus by 6:00PM the following Tuesday (i.e., before the next class).

Final Exam

Usually, there is no final exam for this course. However, specific students are required to write an exam covering the entire course if they have exceeded the allowed number of absences. This exam is tentatively scheduled for Wednesday, 8-Dec at 6:00PM.

Failure on the exam will result in a **NO CREDIT** for the course, which means the course will have to be repeated. For the purposes of grade determination for the term, the exam will determine the entire grade for the semester in question (e.g., 100% weighting). It will be a short answer exam up to 2 hours in length based on **ALL** presentations in the term, both guest lecturers and students. The exam is comprehensive and is **NOT** an open book exam; no aids are permitted.