

# Surgical Innovation II

**Winter 2018**

Presented by:



### COURSE OBJECTIVES

Experimental Surgery: The process of surgical innovation and acquisition of hands-on skills necessary to work within a multi-disciplinary team in the creation of a novel, need driven, and marketable prototype used in the care of the surgical patient. This is the second of two courses on Surgical Innovation introducing concepts and performing needs analyses right through to exploring the entrepreneurial skills needed to launch a start-up company. In this semester, teams are expected to create a prototype of the solution as determined in the first course, establish and validate the value proposition, and present the prototype and business model.

### RECOMMENDED Readings

**Textbook**

Yock P., Zenios, S. and Makower, J. (eds). **Biodesign: The Process of Innovating New Medical Technologies**, 2nd edition (Cambridge University Press 2015)

**Internet content**

<http://ebiodesign.org/>

This website is the companion to the 2nd edition of Biodesign: The Process of Innovating Medical Technologies. It provides readers with supplemental content to the textbook. Use the navigation above to access Getting Started sections, videos, and appendices for each chapter; or access complete collections of these resources using the icons on the right-hand side.

### REQUIRED MATERIAL

Prototype development may require financial outlay by students. Please bring your estimated expenses to the course coordinator, and save all original materials receipts. Some funds are available to help defray these costs.

### WORK STATIONS

Space is available at the McGill Steinberg Centre for Simulation and Interactive Learning, for team work in prototype development. Please contact Philippe Legault, Operations Manager at the Simulation Centre, to book space for your group: email [Philippe.legault@mcgill.ca](mailto:Philippe.legault@mcgill.ca) or call 514-398-3029. Students are asked to respect booked times, and are encouraged to book blocks of time well in advance, according to team schedules.

### EVALUATION PROCEDURE

Students will be expected to be prepared for classes and to participate in all class discussions. Your final grade will be comprised of:

|  |  |  |
| --- | --- | --- |
| Item | Due date | Weight |
| Attendance and participation – winter ⇨ 10%  Peer evaluation (multiplicative) ⇨ 5% |  | 15% |
| Concept development/prototype check 1 |  | 10% |
| Concept development/prototype check 2 |  |
| Concept development/prototype check 3 |  |
| Project management evaluation | February 14 | 10% |
| Business plan submission | April 4 | 10% |
| Final presentation – technical pitch | April 11 | 25% |
| Final presentation  ⇨ business pitch  ⇨ brochure  ⇨ poster | April 18 | 30% |
| Winter total |  | 100% |

### GRADING CORRESPONDENCE

|  |  |  |  |
| --- | --- | --- | --- |
| Letter Grade | Numerical equivalent (Concordia & ÉTS) | Numerical equivalent (McGill) | Description |
| A+ | 90% and above |  | Exceptional in all respects |
| A | 85% - 89% | 85% - 100% | Excellent |
| A- | 80% - 84% | 80% - 84% |
| B+ | 75% – 79% | 75% – 79% | Very good |
| B | 70% - 74% | 70% - 74% | Adequate to Good |
| B- | 65% - 69% | 65% - 69% |
| C | 60% - 64% | 60% - 64% | Weak |

### ACADEMIC INTEGRITY

The Code of Conduct (Academic) at Concordia University states that the “integrity of University academic life and of the degrees, diplomas and certificates the University confers is dependent upon the honesty and soundness of the instructor-student learning relationship and, in particular, that of the evaluation process. As such, all students are expected to be honest in all of their academic endeavours and relationships with the University.”

All students enrolled at Concordia are expected to familiarize themselves with the contents of this Code. You are strongly encouraged to visit the following web address: <http://www.concordia.ca/programs-and-courses/academic-integrity/> . A similar site outlining McGill University’s Student Responsibilities around academic integrity and honest work ethic can be found at: <http://www.mcgill.ca/students/srr/honest/> . These websites provide important information regarding institutional expectations around academic integrity.

### DISCLAIMER

The faculty reserve the right to change or update this outline, and any other course related materials, at any time. The student will be informed in a timely manner through emails and/or announcements during class.

### DELIVERABLES & EVALUATIONS

**Project management evaluation**

Based on the January 10th Project Management presentation, teams will have specific goals and timelines to consider in planning their projects. A project management plan will be submitted on February 14th when groups will meet with the facilitator in 30-minute sessions to informally present their plans, and to receive mentorship and feedback about possible plan weaknesses or omissions. ***(10% of final grade)***

**Technical and scientific evaluations: Concept development / prototype checks 1, 2 & 3**

Groups' presentations on the technical and scientific aspects of their project. Although these are evaluated check points, these presentations don’t need to be formal and presented with a PowerPoint support. They should be prepared and organised in a way that we can see the research, reflections, choices and orientation of the prototype or concept development and design, with consideration of customer- and market needs. ***(10% of final grade)***

**Business plan**

Based on the market needs and concept development considerations, a business plan will submitted based on materials given to students. The business plan needs to take into account stakeholders: Who will be the target audience for the product? Who will be the audience for the business plan (e.g. investors, banks, venture capital, government funding agencies etc.)? ***(10% of final grade)***

**Final presentation – Application or prototype**

Each team will have 20 minutes to present, followed by 10 minutes Q&A.

Formal presentations will be done in front of Engineers. ***(25% of final grade)***

**Final presentation – Business pitch**

1. Each team will have 10 min minutes to present, followed by 10 minutes Q&A.
   * What do you need to take your project to the next level? Why should we help you? Ie. If you need money, why should I invest? If you need lab space, why should I give it to you? Etc. etc. ***(20% of final grade)***
2. Each team will provide a brochure (8.5 x 11” tri-fold format) describing their project: the brochure should be something that audience members can take home or give to contacts. In addition, each team will be expected to produce a poster outlining the science, the need, the market etc. (consider that you are at a trade show/conference and need to get people to stop and talk to you). This is an opportunity to entice audience members and judges to ask you questions about your project. ***(10% of final grade)***

**Attendance and Participation**

Attendance will be kept for all program classes and workshops. Since team work and collaboration are at the heart of the Surgical Innovation program, your participation in the group project and presentations is also evaluated. Grading is as follows:

1. Attendance and participation ***(10% of final grade)***
2. Peer evaluation ***(5% of final grade)***

### SYLLABUS

This outline lists the topics covered during the course and any required readings.

Class are held every Wednesday from 1 to 4pm:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Session** | **Date/time** | **Instructor(s)** | **Topic** | **Location** | **Deliverable** |
| 1 | January 10 | Orly Weinberg  Nathalie Goyette  Tina Cerulli | CREATE – Supplemental information  Class syllabus; Team building activity  Project Management class – Lecture | ÉTS  B-4418 |  |
| 2 | January 17 | Steve Arless | *“Lessons Learned as a serial MedTech entrepreneur….preparing compelling business plans and the financing strategy to support and execute them”*  Lecture and mentorship | ÉTS  B-4418 |  |
| 3 | January 24 | Monika Paape-Miyoshi | Patent Workshop | ÉTS  B-4418 |  |
| 4 | January 31 | Vincent D.  Yvan Beaudoin | Technical and scientific evaluation 1  '’Financing in the healthcare industry’’ | ÉTS  B-4418 |  |
| 5 | February 7 | Andrew Churchill | Presentation skills  (scientist and business pitches) | ÉTS  B-4418 |  |
| 6 | February 14 | Tina Cerulli  Sandra Betton | Project management – follow up and evaluation  Business plan materials & discussion, support | ÉTS  B-4418 | 1 page project management plan |
| 7 | February 21  *Concordia closed* |  | Field trip to Soundbite Medical Solutions Inc. | 2300, boul. Alfred Nobel  Suite 230  Ville Saint Laurent, H4S 2A4 | |
| 8 | February 28 | Vincent Duchaine  Edna Chossack | Technical, scientific and customer oriented design evaluation 2  Mentorship – business development | ÉTS  B-4418 |  |
| 9 | March 7  *McGill closed* | TBA | Round Table – Funding | ÉTS  B-4418 |  |
| 10 | March 14 | Andrew Churchill | Presentation Skills – Part 2 | ÉTS  B-4418 |  |
| 11 | March 21 | Vincent Duchaine | Technical, scientific and customer oriented design evaluation 3 | ÉTS  B-4418 |  |
| 12 | March 28 | TBA | Successful and worst pitching stories  (Real world of pitching)   * + Small panel of trade pitchers   **OR** Accelerators overview | ÉTS  B-4418 |  |
| 13 | April 4 |  | Preparation time | ÉTS  B-4418 |  |
| 14 | April 11 | Vincent D. & Natalia N. | Prototyping – Final presentation | ÉTS  B-4418 |  |
| 15 | April 18 | Innovation Teams | Final Project Pitch | McGill – Glen Hospital site | * Business plan * Brochure * Poster |