IBEHS 3E06/A
Health and Engineering Entrepreneurship II
Fall 2019
Course Outline

CALENDAR/COURSE DESCRIPTION

This course introduces students to the process of innovating health technologies. Students will work in teams to identify and characterize unmet clinical needs based on exposure to real-world healthcare challenges. From here, they will have the chance to design initial concepts and solutions, and plan for early-stage implementation. Focus will be on prevalent biodesign and business methodologies to introduce students to entrepreneurship. Strong communication abilities will be emphasized through interactive hands-on activities, experiential learning opportunities and regular progress presentations.

PRE-REQUISITES AND ANTI-REQUISITES

Prerequisite(s): IBEHS 2E06 A/B and registration in the Health, Engineering Science and Entrepreneurship Specialization of the Integrated Biomedical Engineering and Health Sciences (IBEHS) Program

INSTRUCTOR CONTACT INFORMATION

Dr. Anna Korol
korola3@mcmaster.ca
MDCL 3521
Office Hours: Upon request

TEACHING ASSISTANT CONTACT INFORMATION

Liane Ladouceur
ladoucl@mcmaster.ca

COURSE WEBSITE/ALTERNATE METHODS OF COMMUNICATION

Course information, announcements, weekly modules and assignment dropbox on Avenue to Learn:
http://avenue.mcmaster.ca/
IBEHS Blog: https://ibehshese.wixsite.com/3e06

COURSE OBJECTIVES

By the end of this course, students should be able to:

• identify meaningful problems and unmet clinical needs,
• design an innovative health engineering tool and/or service to solve an identified clinical need,
• develop a business model and value proposition for a novel health technology,
• communicate effectively with various stakeholders engaged in the healthcare system,
• outline the procedural and documentation requirements related to intellectual property, investigational product testing and human ethics,
• implement strategies for effective leadership and conflict management when working in a team setting.
**INSTRUCTIONAL METHODS**

This course focuses on experiential learning by engaging students in the process of health innovation and entrepreneurship. This includes interactive sessions, expert mentoring and clinical need finding sessions. Students will work closely in groups on a hands-on biodesign project that takes a needs-driven approach to innovation, placing problem definition at the forefront. Groups will follow an iterative process consisting of: (1) identify, (2) engineer and (3) implement. Groups will have in-class work time to interact with their teams and complete project assignments, while also preparing to put a considerable amount of effort outside lecture hours for meetings and interviews.

**Lectures:** Tuesdays 8:30-11:20 a.m., ABB B118

**Progress Presentations:** Held during lecture time

**Outside Lecture Hours:** Meetings, interviews, design studio

**STUDENT RESPONSIBILITIES**

Lecture periods for this course will be interactive and will include visiting speakers and mentors. As such, attendance, preparation and participation are essential components of this course, both for the learning benefit of the student, as well as out of respect for guests in the classroom. Students who are well prepared and actively engage in the content will get the most out of this course.

**Attendance:** Students are expected to attend each class on time. Attendance and tardiness will be recorded each day and considered as part of the final grade evaluation. Your instructor and group members must be notified in advance if you cannot attend a class for a legitimate reason, at the discretion of the instructor. Attendance and tardiness will be graded for the term as follows:

- Each three unexcused absences = grade drops by ½ a letter (e.g. A to A-)
- Two late arrivals (more than 15 minutes) = full absence

**Preparation:** For each week of the term, there will be a corresponding module available on Avenue to Learn which will outline the concepts that will be explored and tasks the students should complete before each class. These will include readings, podcasts and video assignments that will set the foundation for in-class activities and group work. Student preparation will be measured by their thoughtful contributions in class and during group work time.

**Participation:** It is expected that students complete any assigned work before class and come prepared to participate in all interactive activities and discussions. Your participation will be assessed based on the quality of your contributions. Mere attendance without participation will not earn you participation marks.

Lack of awareness of the course policies cannot be invoked at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.
ASSESSMENT

The course offers a balance of individual and group evaluation methods:

**Fall 2019**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Progress Presentations (group)</td>
<td>30%</td>
</tr>
<tr>
<td>Participation (individual)</td>
<td>25%</td>
</tr>
<tr>
<td>Innovation Notebook (individual)</td>
<td>15%</td>
</tr>
<tr>
<td>Final Report and Presentation (group)</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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**Progress Presentations**

Throughout the term, students will be introduced to concepts and tools which they will be expected to apply to their own design project. To encourage iteration and facilitate development with these tools, groups will be expected to complete interim presentations highlighting the application of the concepts learned in class.

Students will be graded not only on the content of their presentation but also their ability to present information clearly and concisely to the class. It will be important to work together as a group to ensure presentations have fluid transitions between team members. It is expected that all members of the group are present and will contribute equally to this deliverable. An unexplained absence during your group’s presentation will result in a zero for this component.

**Innovation Notebook**

This component of the course requires students to assign themselves weekly actionable goals/tasks and record on their process, progress and completion. Each week, during group work time, individual assigned actions and outcomes are to be briefly shared with all group members. This notebook serves as: (1) an accountability tool, and (2) proof of intellectual contribution and efforts towards specified aspects of the design project. At the end of the term, students will use this notebook as evidence to complete a written self-reflection on their own personal growth and intellectual design contributions.

**Final Report and Presentation**

By the end of the term, each group will propose a solution to an unmet clinical need based on observation, field research and expert feedback. This will be evaluated using two components: report and presentation. Details about the specific requirements for each will be outlined in the BioDesign Project documentation on Avenue to Learn. This evaluation will be completed as a group. It is expected that all members of the group will contribute equally to this deliverable.

**ACADEMIC INTEGRITY**

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.
It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at: 
http://www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

**ACADEMIC ACCOMMODATIONS**

Students who require academic accommodation must contact Student accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contact by phone at 905.525.9140 ext. 28652 or e-mail at sas@mcmaster.ca. For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities.

**NOTIFICATION OF STUDENT ABSENCE AND SUBMISSION OF REQUEST FOR RELIEF FOR MISSED ACADEMIC WORK**

1. The McMaster Student Absence Form is a self-reporting tool for Undergraduate Students to report absences DUE TO MINOR MEDICAL SITUATIONS that last up to 3 days and provides the ability to request accommodation for any missed academic work. Please note this tool cannot be used during any final examination period.
2. You may submit a maximum of 1 Academic Work Missed request per term. It is YOUR responsibility to follow up with your Instructor immediately (NORMALLY WITHIN TWO WORKING DAYS) regarding the nature of the accommodation. Relief for missed academic work is not guaranteed.
3. If you are absent for reasons other than medical reasons, for more than 3 days, or exceed 1 request per term you MUST visit the Associate Dean's Office (JHE/A214). You may be required to provide supporting documentation.
4. This form must be submitted during the period of absence or the following day, and is only valid for academic work missed during this period of absence.
5. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in his/her course.
6. You should expect to have academic commitments Monday through Saturday but not on Sunday or statutory holidays. If you require an accommodation to meet a religious obligation or to celebrate an important religious holiday, you may submit the Academic Accommodation for Religious, Indigenous and Spiritual Observances (RISO) Form to the Associate Dean’s Office. You can find all paperwork needed here: http://www.eng.mcmaster.ca/current/documents.html

**NOTICE REGARDING POSSIBLE COURSE MODIFICATION**
The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

**TURNITIN.COM STATEMENT**

In this course we will be using a web-based service (Turnitin.com) to reveal plagiarism. Students will be expected to submit their work electronically to Turnitin.com and in hard copy so that it can be checked for academic dishonesty. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to [http://www.mcmaster.ca/academicintegrity/](http://www.mcmaster.ca/academicintegrity/).

**ON-LINE STATEMENT FOR COURSES REQUIRING ONLINE ACCESS OR WORK**

In this course, we will be using Avenue to Learn, email and Slack. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

**REFERENCE TO RESEARCH ETHICS**

The two principles underlying integrity in research in a university setting are these: a researcher must be honest in proposing, seeking support for, conducting, and reporting research; a researcher must respect the rights of others in these activities. Any departure from these principles will diminish the integrity of the research enterprise. This policy applies to all those conducting research at or under the aegis of McMaster University. It is incumbent upon all members of the university community to practice and to promote ethical behaviour. To see the Policy on Research Ethics at McMaster University, please go to [https://reo.mcmaster.ca/](https://reo.mcmaster.ca/).

**PEDAGOGICAL STUDY**

For the study of engineering education, you may be asked to provide information or feedback about course components. When possible, the instructor will share these results with participants.