IBEHS 2EE3
From Idea to Innovation
Winter 2026 Course Outline

INSTRUCTOR CONTACT INFORMATION

Course Instructor

Dr. Kenneth Owen
owenkd@mcmaster.ca

Course TAs

Rory Sucharov-Gluck
sucharor@mcmaster.ca
Olivia Parpura
parpurao@mcmaster.ca

CLASS MEETING TIMES AND LOCATIONS

	Day	Time	Location
Lecture	Tue & Wed	15:30-16:20	BSB B156
Tutorial	Tuesday	10:30-11:20	ABB 163

COURSE DESCRIPTION

This course introduces the entrepreneurial process with a focus on how to start new health technology and life sciences companies. Through this course students will learn to assess the commercial potential of an idea, and to create a viable business offering. The course leads students through problem identification, solution determination, and establishing product and market fit. By focusing on discovering, validating, and articulating real human needs as the foundation of innovation. Students will learn to move from assumptions to evidence-based needs, and from needs to compelling value propositions.

LEARNING OUTCOMES

Upon completion of this course, students will be able to complete the following key tasks:

1. Identify and articulate unmet biomedical needs by distinguishing needs from diseases, technologies, and proposed solutions.
2. Formulate clear, testable needs hypotheses that specify users, contexts, consequences, and underlying assumptions.
3. Frame biomedical innovation challenges in terms of venture risk, including desirability, adoption, feasibility, and evidence gaps.
4. Use secondary research strategically to validate or challenge needs before engaging in primary data collection.
5. Design ethical and appropriate research questions that respect biomedical contexts, stakeholder roles, and power dynamics.

6. Select and design quantitative research instruments (e.g., closed-ended surveys) that reduce specific, high-impact risks.
7. Apply evidence thresholds and sample size reasoning to make justified go / no-go decisions under uncertainty.
8. Design qualitative research approaches (open-ended surveys, interviews, focus groups) to explain behaviors, constraints, and adoption barriers.
9. Analyze and synthesize mixed evidence to assess need strength, remaining risks, and decision readiness.
10. Communicate evidence-based judgments clearly and responsibly, including the ability to recommend stopping when evidence does not support proceeding.

LEARNING EXPERIENCE

You have heard the expression "you can lead a horse to water, but you can't make it drink", Learning follows the same principle, as a student you must be engaged and motivated to learn something, it cannot be forced upon you. In this course resources lectures and exercises are design to put learning opportunities in front of you. It is your choice whether you take advantage of these opportunities.
Each module is broken into three parts, theory, practical application and practice. To get the most out of this course, you need to prepare yourself prior to class time. To assist you, each week you will be given a slide deck that contains your learning objectives as well as a summary of the key points for that week's experience. Additionally, you will be given a reading list of web pages journal articles and some videos that will help elaborate on that week's topic. in addition to the resources provided each week, the deck will also include list of prompts that will be used in our lecture time to explore that week's material. Use these prompts to guide your reading. Create notes on how you intend to respond to the prompts when the class comes together. Class time is built around the Socratic Method. To be successful you must come to class having reviewed all the assigned material and be prepared to both answer and ask questions.

REQUIRED COURSE MATERIALS AND READINGS

There are no textbooks required

EVALUATION

Individual Assessments (5 assignment)	**50%**
Group Project (3 Milestones)	**50%**
Course Total	**100%**

COMMUNICATION AND FEEDBACK

Only contact your professor and TA's through your McMaster email. This reasonably insures your identity for us. E-mails from other sources will be ignored. Expect up to 48hrs delay for a response.

NEVER USE Avenue to Learn's E-mail system it will be overlooked and will not be responded to.

Office Hours: TA's and the Professor will be available during Lab time. If you wish to speak to a TA at another time you must e-mail them to make arrangements.
If you wish to speak to the professor. You may contact him through MS Teams or E-mail.

During the duration of this class YOU MAY NOT contact your TA's through any other form of social media. This can get them in trouble. So respect their personal lives.

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 www.mcmaster.ca/academicintegrity.

Academic dishonesty includes but is not limited to:

- Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- Improper collaboration in group work.
- Copying or using unauthorized aids in tests and examinations.
- Taking credit for group work you did not contribute to.
- Lending your work to a friend that then copies your work. You are responsible for anywhere your work is used.
- Submitting work already submitted for evaluation in another class.

AUTHENTICITY / PLAGIARISM DETECTION

In this course we will be using a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. Students will be expected to submit their work electronically either directly to Turnitin.com or via Avenue to Learn (A2L) plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish to submit their work through A2L and/or Turnitin.com must still submit an electronic and/or hardcopy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com or A2L. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). To see the Turnitin.com Policy, please go to www.mcmaster.ca/academicintegrity.

ON-LINE ELEMENT

In this course we will be using Avenue to Learn (A2L), Zoom, Webex, Macvideo, Echo360. 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.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

LATE SUBMISSIONS AND REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK MCMASTER STUDENT ABSENCE FORM (MSAF)

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

All assignments are subject to a 10% penalty for each day late. If you are 1 minute late you will loose 10% of your assignment.

MSAFs will be given a 72 hour extension of the original assignment due date. Only individual work is eligible for a MSAF extension, group work will not be considered. If you try to MSAF group work you will be denied and your MSAF will be deemed as used.

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students requiring a RISO accommodation should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

MCMASTER UNIVERSITY GRADING SCALE

Grade	Equivalent Grade Point	Equivalent Percentages
A+	12	90-100
A	11	85-89
A-	10	80-84
B+	9	77-79
B	8	73-76
B-	7	70-72
C+	6	67-69
C	5	63-66
C-	4	60-62
D+	3	57-59
D	2	53-56
D-	1	50-52
F	0	0-49

COURSE SCHEDULE

The course is broken into 4 phases:

Phase 1 — Framing the Problem (Weeks 1–3)
Breaking solution-first thinking and defining defensible biomedical needs.

Phase 2 — Evidence Before Engineering (Weeks 4–7)
Replacing intuition with credible, ethical evidence.

Phase 3 — Sensemaking & Judgment (Weeks 8–10)
Interpreting data to make disciplined go / no-go decisions.

Phase 4 — Translating Needs into Value (Weeks 11–12)
Earning the right to propose solutions through evidence-led value creation.

SCHEDULES

Weekly Topics

Week	Week of	Topic
1	06-JAN	Welcome Why biomedical ideas fail
2	13-JAN	What is a biomedical need?
3	20-JAN	Needs hypotheses, risk framing, and evidence gaps
4	27-JAN	Secondary research as need validation
5	03-Feb	Stakeholders, constraints, and adoption pressure
6	10-Feb	Asking questions ethically in biomedical contexts
7	17-Feb	Survey design for needs validation
8	24-Feb	Evidence thresholds and go/no-go decisions
9	03-Mar	Survey data analysis for risk and need strength
10	10- Mar	Interviews and focus groups for qualitative insight
11	17- Mar	Thematic analysis and design inputs
12	24- Mar	Presentations

Assignment Schedule

Assignment	Title	Due Week
A1	Needs Observation & Framing	Week 3
A2	Needs Hypothesis & Risk Framing	Week 5
A3	Secondary Evidence Brief	Week 7
A4	Evidence Threshold & Sample Size	Week 9
A5	Evidence Synthesis & Decision Memo	Week 11

Milestone Timeline

Milestone	Title	Due
M1	Need Framing & Risk Snapshot	End of Week 3
M2	Research Plan & Evidence Checkpoint	End of Week 6
M3	Evidence Synthesis & Decision	Week 12