

## Syllabus

### **SCIE 4701.03 &**

### **SCIE 4702.03**

## Science and Technology Innovation, Commercialization, and Entrepreneurship

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**DRAFT: subject to change prior to start of the term**

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### **Course Description**

Capstone course providing an introduction to the processes and mindsets around innovation and commercialization of science and technology, including entrepreneurship. Experiential learning format; teams work to develop and pitch a viable business model for a scientific solution to a real-world problem. Complemented by lectures, case studies, and guest presentations.

### **Prerequisites**

Registration is by permission of the instructor only. There are no specific prerequisite classes; however, undergraduates should have completed at least three full years (90 credit hours) of university study. As well, students are strongly encouraged to participate in workshops and weekend events offered by the SURGE Sandbox, or have other exposure to innovation and entrepreneurship, before committing to this full-year class. Because this class is based around team projects, it is valuable to have some exposure to the topics before committing to a full-year class. Please note that SCIE 4701.03 and SCIE 4702.03 must be taken in the same year, and that a grade will be given for SCIE 4701.03 only after SCIE 4702.03 is completed.

Prospective students should email the instructor for permission. Admission decisions will be made by the instructor.

### **Background and Rationale**

This class departs from traditional science training by emphasizing the processes of **innovation** and **commercialization**: identifying problems that represent real needs in society and/or the world, and creating novel solutions that not only work, but are supported by a viable business model. Students will develop an understanding of how to design solutions that meet a real need, and have the potential to be commercialized or otherwise make it into the hands of people who can benefit from the solutions.

Students will find that the core principles taught in the class can be applied in a wide range of scientific and technological applications. This class will provide a unique perspective and new skills that are not typically offered in undergraduate or graduate programs in science or engineering.

## Learning Management System

We will primarily use a LMS called LaunchPad Central. You will be provided with an account at the start of the term. We will also use Slack for communication. You will be provided with a Slack invitation at the start of term. You are required to use both of these services as part of the class. Details and help resources will be provided in class.

## Learning Objectives

At the end of this class, students should be able to:

- Understand and explain the differences between discovery-based research and commercialization-focused research and development
- Identify opportunities for novel, science and/or technology-based solutions to problems, and assess the commercial feasibility of those solutions
- Use the Business Model Canvas to develop, justify, and pitch a business model for such a solution
- Identify and explain each component of the Business Model Canvas, including value propositions, customer segments, and revenue streams
- Explain different business models, and rationalize decisions concerning the choice of a business model for a given solution, product, or service
- Understand and implement an iterative cycle of “customer discovery” (Build, Measure, and Learn)
- Understand and apply the fundamentals of human-centred design in finding solutions to human problems
- Understand the different types of prototypes, explain their purposes, and develop and demonstrate appropriate prototypes
- Explain technology readiness levels (TRL) and be able to assess products in terms of TRL
- Define the basic stages of a product lifecycle
- Define and explain core principles of intellectual property and how it can be protected, including patents and trademarks in the Canadian, U.S., and other systems, and how intellectual property may be licensed
- Identify multiple options for funding commercial and not-for-profit ventures, and characterize these in terms of appropriate stages of enterprise growth, as well as benefits and costs of different options
- Stand up in front of strangers and effectively introduce themselves and pitch an idea in 2 minutes or less, in a manner appropriate for the audience
- Work productively with multidisciplinary teams
- Explain roles and responsibilities of senior organizational leadership, and strategies for allocating rewards (compensation and ownership) to founders and executives

## Class Format

This course uses an **experiential, team-based** format and relies heavily on a **flipped classroom** approach in which students assume responsibility for learning material (via readings and videos) and conducting activities outside of class time. Class time is then productively spent in discussing and interpreting content from the readings, presenting updates on project progress, and receiving feedback from other students and the instructor and mentors on these progress reports.

The central learning activity of the class is teams engaging in developing a business model for a science-based solution to a need in society or the world. Teams will form in the second week of classes and work together

closely over the rest of the term to iteratively develop, test, and refine hypotheses about their business model. The business model is represented visually as a structured diagram describing critical facets of the model; this is called the *Business Model Canvas*. Critical to the process of developing the business model is **customer discovery**, which involves conducting interviews with potential customers and other stakeholders in order to test hypotheses about the proposed business model. This means that significant time outside of class is required for this class.

In general, Tuesday classes will focus on student teams presenting updates and receiving feedback (10 min total per team per week). These updates will be in the form of short slide presentations. The structure of these presentations will be a bit different each week, and will be specified on the course website. These classes will occasionally feature guests from the business community who will both talk a bit about their own experiences, and provide feedback to teams on their progress reports.

This pair of courses operates over two terms. Across both terms, students will build their understanding of the processes of innovation, commercialization, and entrepreneurship through team-based development of an innovative solution to a real problem, developing a business model for this innovation, and pitching their ideas to various audiences.

In the **Fall** term (SCIE 4701.03), teams will define a specific unmet need, and invent a solution to this need. They will then engage in iterative customer discovery to validate and refine their invention, and begin planning for prototyping, including developing a project timeline and associated milestones.

In the **Winter** term (SCIE 4702.03), students will focus on further developing their invention, continuing to validate with customer discovery, iteratively developing and testing prototypes, and assessing intellectual property developed, with careful attention to defining key metrics and actionable results at each stage of testing.

### Workload

This is an intensive, honours-level course. Expectations are high. It may be the most demanding course you have ever taken. Teams have reported up to 20 hours of work each per week. Getting out of the classroom is what the effort is about. If you can't commit the time to talk to customers, this class is not for you. **Teams are expected to have completed at least 10 in-person or Skype interviews each week** focused in the Business Model Canvas area of emphasis for that week.

In addition to interviews, you are expected to do the assigned readings and viewings for the week.

### Radical Candour

This class employs a method of giving feedback known as 'radical candour'. This is a method of providing direct, frank, and unapologetic feedback to students, particularly during the weekly business model updates. The two principles of radical candour are **care personally** and **challenge directly**. The goals of radical candour are to improve the quality of your business model, and ultimately your critical thinking abilities, through honest and constructive feedback. Most people find radical candour unsettling at first, because it dispenses with norms of politeness, to the extent that these interfere with getting a point across clearly and effectively. With this said, radical candour is *not* intended to be aggressive or hurtful, or to criticize you as a person. If you have concerns about the feedback you are being given, please raise these with the instructor, TAs, and mentors. Please also remember that radical candour is meant to work both ways—you should feel free to raise issues about the instructor(s) directly to them, in a way that is clear and direct but without criticizing them. The instructor, TAs, and mentors will not penalize you for raising issues about your instruction.

This class pushes many people past their comfort zone. If you believe that the role of your instructors is to praise in public and criticize in private (or not at all), you're in the wrong class – **do not take this class**. If receiving critiques that may feel abrupt and brusque in front of your peers—weekly—embarrasses you, you should be prepared to work through your embarrassment, or not take the class. It's not personal, but it is by design a part of the class to emulate the pace, uncertainty, and pressures of a startup. In return, we also expect you to question us, challenge our point of view if you disagree, and engage in a real dialog with the teaching team.

Please note: **this is not intended to present a barrier** to anyone on the basis of personality or background. If you find the radical candour approach uncomfortable, but want to try it out anyway, then we will support you 100% and will be happy to talk with you privately or publicly about how to make it work for you.

## Course Materials

### Required Readings

- Osterwalder, A. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. John Wiley and Sons.
- Wasserman, N. (2013). *The Founder's Dilemmas: Anticipating and Avoiding the Pitfalls That Can Sink a Startup*. Princeton University Press.
- Constable, G. (2014). *Talking to Humans*. <https://www.talkingtohumans.com/>
- Steve Blank's instructional videos: <https://www.udacity.com/course/how-to-build-a-startup-ep245> (free signup required)
- There is a course pack of required readings available for purchase from Harvard Business publishing. Specific selections will vary from year to year.
- Other material may be posted on the course web site and will be announced there.

### Optional Readings

These are not required but students may find them useful in the context of the class, and certainly if they pursue the topics of this class in the future.

- Blank, S., & Dorf, B. (2012). *The startup owner's manual: The step-by-step guide for building a great company*. K & S Ranch.
- Ingle, B. R. (2013). *Introduction to design thinking*. doi:10.1007/978-1-4302-6182-7\_1
- Kelley, T. (2001). *The art of Innovation: Lessons in creativity from IDEO, America's leading design firm*. New York.
- Maurya, A. (2012). *Running Lean*. Sebastapol, CA: O'Reilly Media.
- Osterwalder, A., Pigneur, Y., Bernarda, G., and Smith, A., (2014). *Value Proposition Design*. Hoboken, NJ: Wiley.
- Ries, E. (2011). *The Lean Startup*. Crown Business.
- Zenios, S., Makower, J., & Brinton, T. J. (2015). *Biodesign: The process of innovating medical technologies*, 2nd edition. Cambridge University Press.

## Assessment/Evaluation

Evaluation of performance in this class is not based on how well you can memorize material. Rather, it is focused on how well you can apply the principles you learn in the lectures and workshops to a real-world problem, in the context of your proposed business model. As well, you will be assessed on how well you are able to communicate your ideas orally, including your ability to defend decisions you have made and explain the processes by which you came to make critical decisions in designing your business model.

Much of the work in this class, and correspondingly the assessments, is done in teams. Students will form into teams near the beginning of the course, with each team containing a mix of education levels and backgrounds. Each team will work to create a business venture proposal, using the information from the presentations and workshops in this course. The instructor will meet on a daily basis with each team to review progress, address any problems, and ensure that all students are contributing constructively to their teams. If there are concerns with any student's progress the instructor will raise these as soon as possible with the student(s) in question to mediate a solution.

The evaluation components and weighting will be the same for each term, however the criteria for evaluating the pitches are different for each term (see Rubrics at the end of this syllabus). Note that a grade will be given for SCIE 4701.03 only after SCIE 4702.03 is completed. However, a grade will be assigned separately for each class, based on performance in that term.

Grading will be according to the Dalhousie University [standard grading scale](#):

0-49	50-54	55-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100
F	D	C-	C	C+	B-	B	B+	A-	A	A+

## Grade Breakdown

This applies to each term. Mid-way through each term you will receive written, personalized feedback from the teaching team identifying your strengths and weaknesses, and what your grade would be based on your performance to that point. This is meant to provide constructive feedback that you can use to focus on your weaknesses and improve your final grade.

### Attendance (10%)

Attendance at all class meetings is mandatory. Attendance will be taken at the start of each class; if you arrive after attendance is taken, you will get half points for attendance for that day. Your attendance grade will be calculated as the proportion of classes that you attended (e.g., if you attend 95% of class meetings you will get 95% of the 10 possible attendance points, (i.e., 9.5 points).

### Discussion Contributions (25%)

Students are expected to participate in *all* class discussions, including case studies and Wasserman chapters. Each student is expected to be able to make productive and substantive contributions to every discussion. It is recognized that not everyone is equally comfortable speaking in class, and the instructor(s) will call on or otherwise encourage those who seem to need it. Feel free to raise any concerns with the instructor about this. Grading will be based on the Participation Rubric at the end of this document.

### Weekly Update Presentations (30%)

Each week (typically Tuesdays), every team must make a **10 minute presentation** to the class an update of their customer discovery progress, including reporting on the number of interviews conducted that week, progress the team has made (including changes to the canvas), and addressing the assigned topic if the week with reference to their canvas. Each presentation will be graded on a 10 point scale. The instructor(s) will hopefully provide clear feedback during or after your presentation to support their grade; if you have questions about your grade, please raise these with the instructors as soon as possible so we can help clarify how you can improve.

### Feedback on Other Teams' Presentations (10%)

You are required to provide written feedback to other teams each week during their presentations. The mechanism for doing this will be described in class.

### Final "Lessons Learned" Presentation (25%)

At the end of the course, each team will describe their final business model and summarize the lessons they have learned along the way. This is not a pitch – it is recognized that not every effort will result in a viable business model. Rather, you will be graded on how deeply and thoroughly you pursued the development of the model, and how you reflect on all of the learning that has occurred throughout the course. **This will occur publicly in a 10 minute team presentation.**

## Class Format and Schedule

The class format is one 3 hour session each week (scheduled class time), which all students are required to attend.

In addition, each team is required to meet with their assigned TA/mentor for a 1-hour tutorial/coaching session each week. The scheduling of this can be made around the TA/mentor and team's schedules.

**In addition to class time, significant time outside of scheduled classes will be required for group work and assignments.**

While the overall curriculum is described below, the schedule and assigned readings will vary somewhat from year to year according to availability and schedules of invited speakers. This course will place a heavy emphasis on recruiting high-profile guest speakers.

Topics to be covered will include:

### 1. Innovation

- Needs finding
- Needs screening and market analysis
- Measuring outcomes and efficacy
- Principles of design thinking, human-centred design, and industrial design
- Concept generation and concept screening
- Brainstorming
- Concept selection

### 2. Prototyping

- Levels of prototypes
- Purposes of prototyping
- Developing a test plan with milestones
- Clearly defining test metrics and associating them with key assumptions in the business model

### 3. Commercialization

- Regulatory environments
- Personnel management
- Branding and marketing
- Business development and strategy
- Technology readiness levels

### 4. Entrepreneurship

- The nature of the entrepreneur
- Customer discovery
- Business Model Canvas
- "Lean" startup methodology

### 5. Founding a Business

- Legal aspects
- Founders and founding teams
- Roles, responsibilities, and rewards
- Shareholder agreements
- Vesting

### 6. Financing a venture

- Sources of financing
- Equity and dilution

### 7. Intellectual property

- Understanding, protecting, and respecting IP in academia and industry

- Forms of IP protection
- IP strategies

#### 8. Ethics

- Ethical implications of technology
- Business ethics

#### 9. Communication

- Designing and delivering effective presentations
- Graphic design for scientific communication
- Communicating with non-scientific audiences
- Pitching

#### 10. Professional Skills

- Time management
- Career development
- Professional networking

## Policies

### Attendance

Attendance at all classes is mandatory. You may use the Student Declaration of Absence form (submitted via Brightspace) two times over the term to avoid penalty for lateness/non-attendance. If you need to miss more classes than this, please discuss your needs with the instructor before you have to miss the class(es). Requests will require additional, official documentation and will be granted after the absence only in exceptional circumstances.

### Class Disruptions

Respect for others extends to consideration of the fact that we come together in this class to learn. Behaviours that get in the way of this will not be tolerated. These include annoyances such as talking during lectures or when others are talking, cell phones ringing, wearing heavily scented products, surfing the net, watching movies, or doing something else not class-related on your laptop, and other such things. If you find the actions of someone else in the class distracting or otherwise disruptive of the goals of the class, you may bring it to the instructor's attention and it will be dealt with anonymously.

### Academic Freedom

Freedom of speech and of thought are cornerstones of academic institutions such as Dalhousie. Our goal in science is to observe and characterize the world accurately and objectively. However, we must realize that our perceptions of reality are often coloured by our beliefs and assumptions, some of which we may not be aware of. Academic freedom includes not only your freedom to think as you please, but others' freedom to express their beliefs as well. Please do not hesitate to express your ideas, but do so in a way that is respectful of others. This is the only avenue for the free expression and exchange of ideas.

### Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. For more details please see: [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

### Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of: a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (NS, NB, PEI, NFLD). For more information see [https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.html)

### Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. For more information please see [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/student-lifepolicies/code-of-student-conduct.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/student-lifepolicies/code-of-student-conduct.html)

### Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our



Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). For more information please see <http://www.dal.ca/cultureofrespect.html>)

### **Recognition of Mi'kmaq Territory**

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit the office in the McCain Building (room 3037) or contact the programs at [elders@dal.ca](mailto:elders@dal.ca) or 902-494-6803.

### **University Policies and Programs**

Important Dates in the Academic Year (including add/drop dates) [http://www.dal.ca/academics/important\\_dates.html](http://www.dal.ca/academics/important_dates.html)

University Grading Practices: Statement of Principles and Procedures [https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)

Scent-Free Program <http://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

### **Learning and Support Resources**

General Academic Support – Advising [https://www.dal.ca/campus\\_life/academic-support/advising.html](https://www.dal.ca/campus_life/academic-support/advising.html)

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/guidelines/fair-dealing-guidelines.html>

Dalhousie University Library <http://libraries.dal.ca>

Indigenous Students [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

Black Students [https://www.dal.ca/campus\\_life/communities/black-student-advising.html](https://www.dal.ca/campus_life/communities/black-student-advising.html)

International Students [https://www.dal.ca/campus\\_life/international-centre.html](https://www.dal.ca/campus_life/international-centre.html)

Student Health Services [https://www.dal.ca/campus\\_life/health-and-wellness.html](https://www.dal.ca/campus_life/health-and-wellness.html)

Counselling [https://www.dal.ca/campus\\_life/health-and-wellness/frequently-asked-questions-august-2017.html](https://www.dal.ca/campus_life/health-and-wellness/frequently-asked-questions-august-2017.html)

Copyright Office <https://libraries.dal.ca/services/copyright-office.html>

E-Learning website <http://www.dal.ca/dept/elearning.html>

Dalhousie Student Advocacy Services <http://dsu.ca/dsas>

Dalhousie Ombudsperson [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html)

Writing Centre [https://www.dal.ca/campus\\_life/academic-support/writing-and-study-skills.html](https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html)

Faculty or Departmental Advising Support: Studying for Success Program [http://www.dal.ca/campus\\_life/academic-support/study-skills-and-tutoring.html](http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html)

## Rubric for grading of discussion contributions and presentation feedback

3 points ("A" range)	2 points ("B" – "C" range)	1 point ("D" range)
<p>Demonstrates excellent preparation: has analyzed case exceptionally well, relating it to readings and other material (e.g., readings, course material, discussions, experiences, etc.).</p> <p>Offers analysis, synthesis, and evaluation of material, e.g., puts together pieces of the discussion to develop new approaches that take the class further.</p> <p>Contributes in a very significant way to ongoing discussion: keeps analysis focused, responds very thoughtfully to other students' comments, contributes to the cooperative argument-building, suggests alternative ways of approaching material and helps class analyze which approaches are appropriate, etc.</p> <p>Demonstrates ongoing very active involvement.</p>	<p>Demonstrates good preparation: knows case or reading facts well, has thought through implications of them.</p> <p>Offers interpretations and analysis of case material (more than just facts) to class.</p> <p>Contributes well to discussion in an ongoing way: responds to other students' points, thinks through own points, questions others in a constructive way, offers and supports suggestions that may be counter to the majority opinion.</p> <p>Demonstrates consistent ongoing involvement.</p>	<p>Demonstrates adequate preparation: knows basic case or reading facts, but does not show evidence of trying to interpret or analyze them.</p> <p>Offers straightforward information (e.g., straight from the case or reading), without elaboration or very infrequently (perhaps once a class). Does not offer to contribute to discussion, but contributes to a moderate degree when called on.</p> <p>Demonstrates sporadic involvement.</p>

## Rubric for Weekly Team and Final Lessons Learned Presentations

### Team Capabilities

3 points ("A" range)	2 points ("B"–"C" range)	1 point ("D" range)
Team demonstrates high cohesiveness and cooperation. Members show respect and work off of each other.	Team demonstrates adequate cohesiveness and cooperation. Members frequently show respect and work off of each other.	Team demonstrates low cohesiveness and cooperation. Members infrequently show respect and work off of each other.
Team demonstrates clear ability to communicate with potential customers and partners, by having done so.	Team demonstrates adequate ability to communicate with potential customers and partners, by having done so.	Team demonstrates low ability to communicate with potential customers and partners, and/or has not engaged in this process sufficiently.
Team evidences clear division of labour and leverages individuals' strengths	Team evidences some division of labour and adequate leveraging of individuals' strengths.	Team evidences little to no division of labour and /or does not leverage individuals' strengths.
Roles of team members are clear	Roles of team members are mostly clear.	Roles of team members are unclear.
Contributions of each team member to the presentation are very clear.	Contributions of each team member to the presentation are mostly clear.	Contributions of each team member to the presentation are not clear.
Team recognizes gaps in their expertise and clearly identifies feasible ways of addressing these	Team recognizes some gaps in their expertise and identifies possible ways of addressing these.	Team fails to adequately recognize gaps in their expertise and/or inadequately identifies possible ways of addressing these.

## Technology Assessment

3 points ("A" range)	2 points ("B"–"C" range)	1 point ("D" range)
Demonstrates clear and detailed understanding of current technologies related to their problem space.	Demonstrates basic understanding of current technologies related to their problem space but gaps in knowledge are evident.	Demonstrates limited understanding of current technologies related to their problem space but gaps in knowledge are evident.
Demonstrates detailed scientific understanding of their topic area, and is able to accurately cite most relevant background literature.	Demonstrates basic scientific understanding of their topic area, and is able to cite some relevant background literature.	Demonstrates limited scientific understanding of their topic area, and demonstrates evidence of relevant literature search.
Able to clearly articulate technical feasibility of their proposed solution.	Shows evidence of having considered the technical feasibility of their proposed solution.	Demonstrates limited understanding of the technical feasibility of their proposed solution, or is proposing something infeasible.
Clearly identifies both expertise and gaps in their capabilities with regard to the scientific and technological knowledge and skills required to develop their solution, and proposes ways of addressing these gaps.	Evidences some awareness of gaps in their capabilities with regard to the scientific and technological knowledge and skills required to develop their solution.	Evidences little awareness of gaps in their capabilities with regard to the scientific and technological knowledge and skills required to develop their solution.

## Market Need

3 points ("A" range)	2 points ("B"–"C" range)	1 point ("D" range)
Is able to succinctly and convincingly articulate unique value proposition and target customer segment.	Is able to articulate value proposition and customer segment, but may not be succinct, or may require questions to clarify.	Struggles to clearly articulate value proposition or customer segment, even with questioning.
Clear evidence of market research, including total estimated market size and total addressable market, and is able to provide data to support these numbers.	Evidence of some market research, including total estimated market size and total addressable market, and can articulate the source of these estimates.	Limited awareness of market size or "funnel"; unclear what size estimates are based on.
Presents clear competitive analysis of market space, including identity, size, and target markets of key competitors, and detailed understandings of competitors' products and/or services.	Can identify a number of competitors, and shows some understanding of competitors' offerings.	Shows limited evidence of having investigated competitive offerings.
Has conducted minimum 10 interviews per week, including at least ½ with potential customers as well as technical/domain experts.	Has conducted minimum 8 interviews per week, including at least ½ with potential customers as well as technical/domain experts.	Has conducted minimum 6 interviews per week, including at least ½ with potential customers as well as technical/domain experts.
Clearly articulates key findings from interviews, and ties these to actionable hypotheses/decision points in their BMC.	Articulates findings from interviews, can connect these to BMC, and in some cases use these to inform changes to BMC.	Is able to articulate details from interviews, but may have trouble identifying key findings or using the data to inform changes in BMC.
If multiple target markets are identified, clear prioritization of order in which markets will be targeted, with strong supporting evidence/justification.	If multiple target markets are identified, some ability to articulate prioritization of order in which markets will be targeted, and why.	Demonstrates limited awareness of dangers of addressing multiple markets at once, and/or is not able to identify an initial target market and justify this decision based on evidence.

**Commercialization Concept/Business Model Canvas**

<b>3 points ("A" range)</b>	<b>2 points ("B"–"C" range)</b>	<b>1 point ("D" range)</b>
Demonstrates deep understanding of each cell of the BMC, and how cells relate to each other.	Demonstrates some understanding of each cell of the BMC, and how cells relate to each other.	Demonstrates limited understanding of each cell of the BMC, and how cells relate to each other.
BMC contents are framed in terms of hypotheses or evidence, as appropriate.	BMC contents are appropriate for the cells they are in, and hypotheses can be distinguished from evidence.	BMC contents are appropriate to the cells they are in, but hypotheses and evidence are not clearly distinguished.
Hypotheses/validated statements in each cell are clearly linked to a particular customer segment.	Hypotheses/statements in each cell can be linked to a particular customer segment.	Some Hypotheses/statements in each cell can be linked to a particular customer segment.
Is able to explain contents of each cell of their BMC, present evidence in support of the contents, and defend these contents on the basis of evidence and logic.	Is able to explain contents of each cell of their BMC, but may have limited evidence in support of contents and/or be unable to convincingly defend these contents.	Demonstrates limited ability to explain the contents of their BMC, and/or defend these contents.
Shows strong and clear evidence of having integrated information from assigned videos and readings into BMC.	Show limited evidence of having integrated information from assigned videos and readings into BMC.	Shows little or no evidence of having integrated information from assigned videos and readings into BMC, and/or information is not used appropriately.