SIOC 209 - Hacking 4 the Environment: Oceans

Spring 2020

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Class Expectations & Objectives: This course is designed to provide each student an engaging experience working with a high-impact sponsor to tackle real problems facing our oceans. Student teams will evaluate, design, and implement potential solutions to complex environmental issues with the support of their sponsor. Teams will learn and apply principles from the 'start up' business sector.

Teaching Team: In addition to the course instructors and TA, each team will have an external sponsor, an entrepreneurial mentor, and a technical mentor.

Format: This class will use a "reverse classroom" format where the majority of each class will be spent with the instructors listening to team presentations. The presentations will be 10-15 minutes in length followed by 5-10 minutes of class discussion regarding the presented material. The presentations will be thorough updates on what was completed since the previous update, and each team will have a designated lead presenter each week. Each week the general format will be:

- Introductory remarks
- Team presentations with feedback from instructors and other students
- Topical lecture
- Brief discussion about goals and assignments for the next week

Deliverables: Meaningful customer discovery requires the development of a minimum viable product and a detailed log of the development process. Therefore, each team will deliver:

- A minimum viable product (MVP)
  - A bill of materials cost and a prototype design for those building a physical product
  - A site and small user base for those building a web product
  - A software package for those performing a data analysis project
- A weekly blog detailing your team's progress
- Weekly presentations (10 - 15 minutes) detailing your team's progress
- A final presentation highlighting your product and your team's experience developing it
- A technical report documenting the product and development experience

Team-generated materials will be uploaded to Google Drive where they will be shared with external instructors and mentors. They will then be submitted to Canvas via Google Drive for grading. All students should be comfortable sharing these deliverables on Google Drive and with their external instructors / mentors.

Grading Criteria: This course is team-oriented and your grade will be based on your team's progress and final project. Specifically, your grade will be determined as follows:

- 40% - Out-of-the-building project progress and quality of weekly "lessons learned" update presentations; progress will be measured by weekly blog posts, updating of the "Mission Model Canvas", and completion of the required number of interviews
- 30% - Team final presentations
- 30% - Technical report

Course Sites and Texts:

- http://h4oceans.ucsd.edu
- https://www.udacity.com/course/how-to-build-a-startup--ep245
- Startup Owner's Manual (Blank and Dorf)
- Business Model Generation (Osterwalder and Pigneur)
- Value Proposition Design (Osterwalder et al.)
- Talking to Humans (Constable and Rimalovski)
- Thinking in Systems (Donella Meadows)

Background: This class is part of a bigger "Hacking" movement that aims to tackle real, complex problems facing the environment, governments, and NGOs by pairing passionate students with high-impact sponsors. The movement started with Hacking 4 Defense at Stanford, a collaboration with the U.S. Department of Defense. This class served as the prototype for a model that has now been deployed at over 20 colleges and universities, with Hacking 4 Impact, Hacking 4 Diplomacy, and Hacking 4 the Environment all being piloted in recent years. Every Hacking class has its roots in the Lean Startup movement pioneered by Steve Blank, and this class will be exploring the application of these methodologies to ocean-minded problems facing various communities (management, societal, conservation, technical, scientific).

Open Work & Startup Agreement: This is an open class. The instructor may videotape and share the class sessions; submitted work product may be shared. All submitted coursework (presentations, submitted notes, business model canvas, blogs, slides, and other work product developed during the class) and ideas discussed during the course are considered to have been publicly disclosed. Work products that are not submitted nor presented are not considered publicly disclosed (by virtue of said submission or presentation).

If you are bringing any sensitive information such as unpublished/confidential research products into your coursework or have questions about intellectual property (IP) and IP rights, please consult with Gwen Nero (gnero@ucsd.edu, 858-822-4121) prior to use in class; otherwise submitted work product will be considered publicly disclosed.

Finally, given the amount of work this class entails, you must agree that your team will be the only startup in which you are working during the quarter.

For more information on IP please visit https://innovation.ucsd.edu/patent-your-research/

Final Presentations: The final presentations will be open to the public. The event will be an opportunity to demonstrate your team's development process and the impact of your solution to a diverse set of industry experts and academics. A panel discussion with cross-discipline subject matter experts will follow team presentations.

Tentative class schedule:

Week	Team Presentation	Lecture Topics
1	Initial ideas on problem and solution	MMC, Customer Development, Beneficiaries *Ocean-Specific Problems and Funding Models*
2	Mission Model Canvas MVP Plan	Beneficiary Discovery *Ocean Observing and Emerging Technology*
3	Summary of Beneficiary Discovery First MVP	Value Proposition *Lessons from Ocean Startups*
4	Summary of Value Proposition MVP update	Product/Mission Fit *Data Science for Ocean Applications*
5	Summary of Product/Mission Fit Product Report Outline	Mission Achievement *Industry Experience: Guest*
6	Summary of Mission Achievement MVP update	Deployment, Buy-in and Support *Industry Experience: Guest*
7	Summary of Deployment, Buy-in and Support MVP update	Activities, Resources
8	Summary of Activities and Resources Product Report Draft	Partners and Mission Costs
9	Summary of Partners and Missions Costs Final MVP	Reflections
10	Final presentations	Panel discussion

Italicized Lecture Topics are ocean specific, but note that the ordering may change. Guest lectures will be listed as schedule is finalized.

Acronyms:

- MVP = Minimum Viable Product
- MMC = Mission Model Canvas
- BMC = Business Model Canvas