

2020 Environmental Innovation Practicum Syllabus

Course description: This Practicum's goal is to help you discover how cleantech and other environmental solutions can and are beginning to address our most pressing issues, and learn how you can be part of those solutions. The Environmental Innovation Practicum is part speaker series, part innovation concept creation. You have brief quizzes on required weekly readings or video viewings and gain points for attending live class sessions or watching the Zoom recordings. We'll have participation polls during class (again available with an after class option for those unable to participate live), daily guest speakers and breakout groups which will transition to concept team time during the class period.

Leveraging the class's cross listing between the Foster School of Business, The College of the Environment and The College of Engineering, you will form cross-discipline teams, identify an environmental problem for which you all want to find/develop a solution and, at the end of the quarter as your final project, create videos to present your solution concept to the class and a panel of expert judges. Student teams interested in developing their concept to compete in the 2021 Alaska Airlines UW Environmental Innovation Challenge will get frequent updates through class announcements on sessions tied to the Challenge. More information on the Challenge is available at: <https://foster.uw.edu/centers/buerk-ctr-entrepreneurship/entrepreneurship-competitions/eic/>

Learning objectives:

- Gain awareness of our most pressing environmental challenges and how businesses large and small are beginning to tackle them.
- Learn from subject matter experts about solutions emerging in various industries.
- Evaluate business opportunities in cleantech and environmental innovation as explored with guest speakers, required readings/viewings and world news
- Gain hands-in experience in developing an innovation concept through the teams project.

NO REQUIRED TEXTBOOKS: All required readings or viewings can be found in each class period's Module and accessed through the links provided here on Canvas. For every class but the first on Oct. 6th, you'll have required readings/viewings to complete before coming to class.

GRADING

This is a credit/no-credit course. This is a credit/no-credit course. To receive credit for the course, students must score a minimum of 850 of the total 1,000 available course points. We'll use polls during the class period and "attendance" (whether that's during the class live stream or by viewing the recorded class) all for course points.

Assignments

Fully half of your available course points come from the team project, which includes two team discussion board assignments and a team video submission. The final 150 available points are awarded by confidential peer evaluations provided by your team members of your contribution to the team project. No matter what time zone you're in as you dial into the live or recorded class, you'll have to find a way to productively contribute to all team assignments to get credit for this course. Peer evaluations will take the form of a quiz developed expressly for your team. Therefore the quiz cannot be published until after teams are formed mid-Oct.

Individual points accumulate through attending/viewing the Zoom class, almost daily short quizzes on assigned readings and viewings and class participation measured through in-class polling. Any student who can't participate in a poll during class time will still have a chance to participate within 24 hours of the live class time.

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](#). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form](#).

Class Plan

We use Pages and Modules to organize the course. Within each Class Page, you'll find all assignments, outlining the day's agenda and providing links speakers or panelist information and to slides instructors or speakers plan to use. You should find everything you need there. Pages will be updated as the quarter progresses.

This is the plan as the quarter begins. Be advised that speakers are subject to change, which may affect dates for topics covered, particularly in the second half of the quarter.

Oct. 6 — Introductions and Overview

We are meeting at the intersection of historic moments -- a global pandemic, an increasingly global push for true equality, the worst U.S. unemployment figures since the Great Recession and of course the existential threat of climate change. As we launch in to this quarter, these realities are the footings of the foundation beneath every new innovation addressing our most pressing environmental challenges.

Class Period Plan

Note that every class period is designed to have 2 short (approx. 3-minute) breaks built in. Every class will have guest speakers and break out group time. Initially those groups will be random and then by areas of interest, but once we form teams all breakout time will be in-class team time to help you with the team project assignments. We'll open the Zoom classroom a bit early so you can get to class and settle in.

Our first class agenda will be:

- Welcome, introductions, overview
- Adjunct Assistant Teaching Professor Deb Hagen-Lukens: Addressing our biggest environmental challenges in this moment
- Breakout group discussion
- Special guest: Heather Trim, Founder and Executive Director, Zero Waste Washington

- Affiliate Instructor in Entrepreneurship Chris Metcalfe: What's expected this week; wrap up

Oct. 13 — Waste Not: The World's Waste Problem and How Entrepreneurs Can Address It

In 2017, the world generated at least 3.5 million tons of plastic and other solid waste a day, 10 times the amount a century ago, according to World Bank researchers. The following year, The World Bank headlined a release with "Global Waste to Grow by 70 Percent by 2050 Unless Urgent Action is Taken." The study the release announced was What A Waste 2.0: A Global Snapshot of Solid Waste Management to 2050.

You're probably aware of the problem. You may even be aware of the magnitude of it. But what about potential solutions? Today's class addresses our global wastefulness.

Pre-class assignments:

Read: Fast Company's "Will compostable packaging ever be able to solve our waste problem?" And take the short essay quiz.

Watch Chris Metcalfe's video lecture on What are you creating? For whom? Then take the short essay quiz.

Class Period Agenda:

- Welcome/check in
- Streaming of "Eliminating the Idea of Waste," featuring TerraCycle CEO and Founder Tom Szaky
- Interest area brainstorming breakout rooms
- Startup perspective: Regenerated-Textiles' Zahlen Titcomb
- Concept pitching
- Wrap up

Oct. 20 — Transforming Food Production

Globally, we produce more than enough food to feed our population. Yet according to the UN, more than 821 million people were undernourished in 2017. Meanwhile, we waste 1.3 billion tons, or around a \$1 trillion worth of food, or at least that's what the UN estimated we would waste in 2020 as it rots in homes or on store shelves as well as in the fields and in transit. Our situation will get worse with climate change as the increased heat saps nutrients from our food and more drastic weather patterns either wash crops away or make produce wither in arid fields. Clearly, we're doing quite a few things wrong.

Today we're going to talk about how to make food production more resilient, more productive and more innovative.

Pre-class Assignments:

Watch Instructor Chris Metcalfe's video on solving customer problems and addressing environmental challenges. Then take a short essay quiz.

Read the assigned brief Anthropocene Magazine article, 75 technological innovations for our future farming toolbox. Then take a short essay quiz on the reading.

Read a brief Modern Farmer article, Climate Change Will Force Farmers to Choose Between Low Yields, Unpredictable Revenue: Study. Then take a short essay quiz on the reading.

Class Period Agenda:

- Check in/plan
- Special sustainable agriculture lecturer: Prof. Eli WheatLinks to an external site.
- Special guest entrepreneur: Virginia Emery, CEO and "Insect Entrepreneur," BetaHatch

- Team formation breakouts plus preferences survey
- Tips for getting started on team project followed by team break out rooms
- Wrap up

Oct. 27 — Customer Discovery

A lot of first-time entrepreneurs confuse their innovation with a business, but a business requires paying customers and that requires addressing a customer problem. Our class today will focus on identifying the potential customers for your concept.

Class Period Agenda:

- Check in/plan
- Special guest: Kevin Green, Center for Behavior and the Environment, on how to change behavior
- Team breakout rooms followed by class discussion of questions and challenges
- Special guest: Eric Berman, E8 and the Decarbon8 Fund
- Wrap up

Assignments Due Before Class Period:

Watch The Principles of Lean with Steve BlankSteve Blank: The Principles of Lean. Then take a short quiz on the video.

Watch What is Customer Discovery with Steve Blank. Then take a short quiz on the video.

Nov. 3 — Concept Development

Entrepreneurs approach problems differently than corporate executives. They have to, of course, because of resource constraints. But it's also because they see the world a bit differently. Developing a concept is one-part vision, one-part

discipline and two parts adapting as you learn more and more about the customer's problem, the industry's realities and your team's strengths. Today's class examines all that.

Pre-class Assignment:

Read: [How Entrepreneurs Solve Problems](#)

Watch: Co-instructor video lecture

Take the short essay quiz on your assigned viewing and reading.

Team Assignment due today: Discussion Board 1

Class Period Agenda:

- Regular check in; review of team assignments
- Analyzing a founder's pitch -- Stacy Flynn of Evrnu
- Featured entrepreneur: Leapfrog Design's Adam DeHeer
- Team breakout time
- Class discussion/Q&A around project, tools we'll create to help
- Wrap up

Nov. 10 — Thinking About Systems and Life Cycles

Innovations don't exist in a vacuum. History provides too many examples of lauded solutions that turned out to be new problems, sometimes bigger than the one they were developed to fix. The classic example, of course, was the replacement of ozone-destroying CFCs for refrigeration with HFCs, which have very high global warming potential. Context is critically

important. You've undoubtedly heard of carbon footprint analyses that dive into a company's (or individual's) environmental impact. It's now standard for most companies working on new products or offerings to conduct life cycle assessments, a cradle-to-grave or cradle-to-cradle analysis technique to assess environmental impacts associated with all the stages of a product's life, from raw material extraction through materials processing, manufacture, distribution, use and disposal or reuse.

You can take entire courses on these subjects. But during today's class, we'll introduce you to some big concepts that will help you think about the many facets of environmental impact: systems thinking and the circular economy.

Pre-class Assignment:

Watch: CNBC Explains “What is the circular economy?”

Read: The Circular Economy Made Real from Anthropocene Magazine

Take the short quiz on these two assignments.

Watch: The Value of System Thinking

Take the short essay quiz on systems thinking.

Class Period Agenda:

- Guest entrepreneur speaker Amy George, Earthly Labs, who'll tell us about a global circular CO2 market
- Team breakout time
- A second special guest speaker
- Wrap up

Nov. 17 — Renewable Energy

Enough solar energy reaches earth every hour to fill our global energy needs for a full year. Think about that. Here in the U.S., the wind energy potential of just three states--Kansas, North Dakota and Texas--would be sufficient to meet electricity demand from coast to coast according to Project Drawdown. Today, we'll talk with clean energy entrepreneurs to learn what's happening in the field including one area you may not have even thought about!

Pre-class Assignments:

Read the World Economic Forum's article, COVID-19 is a game-changer for renewable energy. Here's why.” Then take the brief quiz.

Team Project Assignment due today: Discussion Board 2 on problems addressed

Class Period Agenda:

- Check in/plan
- Featured entrepreneur: Steph Speirs, Solstice
- Team break out rooms
- Special guest: Chris Alemian, CT Fusion
- Wrap up

Nov. 24 — Infrastructure Under Climate Stress

The changing climate will stress essentially every system on the planet, natural and human-made. During this class, we'll focus on the infrastructure we depend upon to shelter us and allow us to get around, stay warm and see after dark. Bridges, roads, buildings, ports and utilities all are vulnerable to heat and moisture extremes, rising seas and an increased threat from fires.

Pre-class Assignments:

Read "Will infrastructure bend or break under climate stress?" from the McKinsey Global Institute

Then take the brief quiz.

Class Period Agenda:

- Check in/plan
- Special guest: TBD
- Team break out rooms
- Special guest speaker: Elizabeth Leavitt, Senior Director, Environment and Sustainability, Port of Seattle
- Wrap up

Dec. 1 — Making Business Sustainable

Whether you start your own business, join a startup or take a position with one of the biggest brands in the world, you can have a role in helping make your business more sustainable. In many ways, corporations are leading the way in greening their supply chains, supporting renewable energy development and making planetary and human health part of their company metrics.

Pre-class Assignments:

You have no reading assignments or quizzes for this class.

That's because your team videos are due on Dec. 4th.

Class Period Agenda:

- Special corporate guest speaker: TBD
- Special guest entrepreneur: Stephen Bay, CEO/Founder, Earthup
- Team breakout rooms
- Wrap up

Dec. 8 — Going Beyond a Class Concept

Today we'll all show our work. We'll open the class showing all team videos and allowing the whole class to chime in with some feedback. Then we'll shift gears toward the Environmental Challenge Competition, hearing from a couple Practicum alums talk about their competition experiences moderated by Buerk Center Associate Director Lauren Brohawn who runs the Challenge. Finally, we'll ask you all to do your course evaluations before we wish you best of luck with finals and the rest of the academic year.

Pre-class Assignments:

Read: Understanding and shaping consumer behavior in the next normal — McKinsey & Co. Insights, 7/24/20. Then take the brief quiz.

Team peer evaluations assignment is due at the end of the week!

Class Period Agenda:

- Video showcase
- Conversation with alums Austin Hirsch and Rob Sinclair
- Prizes!
- Course evaluations and send off