

Master of Science in Sustainability Management

SUMA PS5220, Sustainable Entrepreneurship

Mondays 6:10pm – 8:00pm, Spring Semester (Jan 16 – Apr 29)

Number of credits: 3

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Office Hours: By appointment

Response Policy: I will respond to emails and text messages within 24 hours. I will be available over the weekends to answer questions, if necessary. My preferred method of discussing substantive issues is a phone call.

Course Overview

Entrepreneurship is all the rage in conversations on Wall Street and Main Street. Everyone and their neighbor seems to want the glitz and glamour of starting a successful company and being their own boss, but few take the plunge because of the inherent risks and tiresome challenges of developing an early-stage company. This course applies entrepreneurial thinking to different business models as seen through a social, environmental, and economic sustainability perspective. The course will explore the relationship between society's need for business development and costs to the environment. You will study ways in which sustainable entrepreneurship can significantly diminish dependency on fossil fuels and toxic substances. The course will challenge you to conceive and pitch a sustainable entrepreneurial or intrapreneurial business concept. Guest lectures, readings, case studies, activities, and group work will support the development of your entrepreneurial venture.

This course is distinctive from others at Columbia in several ways. This course puts sustainability concepts to work by inspiring students to think about value creation through the lens of ecological and social stewardship; then to test market their ideas, evaluate the business landscape, and create a thoughtful business plan and execution strategy. The class is appropriate for those with an interest in the unique challenges of starting a social good or clean technology company.

This course requires business and technical proficiency gained in a competitive undergraduate program or commensurate professional experience. During the course, students will work in teams to formulate a business solution around a sustainability issue. All teammates will need to understand their solution, including technical and scientific aspects, and the mechanisms by which you develop a company and market your solution.

This is an elective course and is approved to satisfy "Area 5 – General and Financial Management" requirement for the M.S. in Sustainability Management curriculum. Registration is open to students from the School of Professional Studies; School of International and Public Affairs; Graduate School of Arts and Sciences; SEAS Graduate Programs; and Graduate School of Architecture, Planning, and Preservation.

Learning Objectives

The course will be divided into three overlapping areas. The first component will examine the elements of entrepreneurial thinking and methodologies used to determine when an idea may be an opportunity. You will explore how sustainable practices can build an economic advantage over competing business models. Secondly, you will work with your classmates to vet a business idea and determine its market opportunity by speaking directly with potential customers. Lastly, you will refine key financial metrics and distill your business plan into a final pitch to a group of invited guests. The goals of your business should be to improve the economy, make money, create jobs, and positively influence environmental and social outcomes.

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By the end of this course, students will:

- L1. Identify new sustainability initiatives with the purpose of leading programmatic change within a company (intrapreneurship) or launching a novel business (entrepreneurship).
- L2. Evaluate the financial, social, and environmental value of a new sustainability initiative (the triple bottom line).
- L3. Assess market size, conditions, and trends to gauge how the application of a new technology or business model will gain share within a defined, serviceable market.
- L4. Organize a business plan by utilizing the business model canvas.
- L5. Interact with potential customers and redesign product to capture the business opportunity available.
- L6. Communicate their business objectives through written and presentation materials.

Readings

There is no textbook. Students will be provided weekly resource packets uploaded to the Course Canvas. These include both required and supplemental readings. Examples of the required readings are as follows, listed by their appearance in the below Course Calendar. This is subject to change in order to keep case studies timely.

1. Chamorro-Premuzic, T. (2013, Oct 25). *The Five Characteristics of Successful Innovators*. Retrieved from <https://hbr.org/2013/10/the-five-characteristics-of-successful-innovators>
2. Bocken, N., et al. (2013). A value mapping tool for sustainable business modelling. *Corporate Governance*, 13, 482-497.
3. Gross, B. (2015). The single biggest reason why start-ups succeed [10 min video file]. *TED Conference*. Retrieved from <https://www.youtube.com/watch?v=bNpx7gpSqBY>
4. Blank, S. (2013). Why the lean start-up changes everything. *Harvard Business Review*. Retrieved from <https://hbr.org/2013/05/why-the-lean-start-up-changes-everything>
5. Hanno. (2019). *The lean validation playbook*. Retrieved from <https://guides.co/g/the-lean-validation-playbook/60783>
6. Pain, R. (2016, Sep 5). *The Business Model Canvas - 9 Steps to Creating a Successful Business Model* [10 min video file]. Retrieved from <https://youtu.be/IP0cUBWTgpY>
7. Godelnik, R., & van der Meer, J. (2019). Sustainable Business Models in an Entrepreneurial Environment. In A. Aagaard (ed.), *Sustainable Business Models* (239-276).
8. Graham, P. (2012, Nov). *How to Get Startup Ideas*. Retrieved from <http://www.paulgraham.com/startupideas.html>
9. Vohra, R. (2019). *How Superhuman Built an Engine to Find Product/Market Fit*. Retrieved from <https://review.firstround.com/how-superhuman-built-an-engine-to-find-product-market-fit>
10. Graham, P. (2006, Oct). *The 18 Mistakes That Kill Startups*. Retrieved from <http://paulgraham.com/startupmistakes.html>
11. Yoon, E. & Stacy, M. (2019). Why Businesses Should Know Where Their Densest Markets Are. *Harvard Business Review*. Retrieved from <https://hbr.org/2019/03/why-businesses-should-know-where-their-densest-markets-are>
12. Hoffman, R. *LinkedIn's Series B Pitch to Greylock*. Retrieved from <https://www.reidhoffman.org/linkedin-pitch-to-greylock/>
13. Cui, A.S., & Xiao, Y. (2019). The Role of Market and Technical Information Generation in New Product Development. *Journal of Product Innovation Management*, 36, 305–330.
14. de Miranda, M., et al. (2015). Social change requires slow entrepreneurship. *THNK School*. Retrieved from <https://www.thnk.org/insights/social-change-requires-slow-entrepreneurship/>
15. Slaper, T., & Hall, T. (2011). The Triple Bottom Line: What Is It and How Does It Work? *Indiana Business Review*, 86, 1.
16. Ogliaro, D. (2023). Founder Education: What is a data room? *Carta*. Retrieved from <https://carta.com/blog/build-an-effective-data-room/>
17. Cast, C., & Jeffers, G. (2020). 5 Tips for Pitching Your Startup to Investors. *Kellogg Insight*. Retrieved from <https://insight.kellogg.northwestern.edu/article/5-tips-pitching-your-startup-investors>
18. Bocken, N., et al. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 65, 42-56.
19. Currier, J. (2021). The 23 Rules of Storytelling For Fundraising. *NfX*. Retrieved from <https://www.nfx.com/post/23-rules-storytelling-fundraising>
20. European Commission Science Communication Unit (2020, Jan). Future Brief: Eco-innovation in SMEs. *Science for Environment Policy*, 22. Retrieved from <https://ec.europa.eu/science-environment-policy>
21. Kaplan, S. (2020). Why Social Responsibility Produces More Resilient Organizations. *MIT Sloan Management Review*. Fall Magazine.

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22. Ramanujam, M. (2022). Monetizing Innovation, How to Price Products [57 min audio file]. *Colossus*. Invest Like the Best, EP.298. Retrieved from <https://www.joincolossus.com/episodes/67388971/ramanujam-how-to-price-products?tab=shownotes>

Suggested podcasts to follow (illuminating, but not required listening):

- *Sustainable: The Podcast*. Earthself. <http://earthself.org/sustainable-the-podcast/>
- *Sustainable Business Fridays*. Bard Center for Environmental Policy. <https://www.bard.edu/cep/publicprograms/sbfridays/>
- *The Sustainability Agenda*. Fergal Byrne. <http://thesustainabilityagenda.com/>

Additional readings, podcasts, and videos may be assigned throughout the course. These will typically take 10-15 minutes to consume.

Resources

Columbia University Library

Columbia's extensive library system ranks in the top five academic libraries in the nation, with many of its services and resources available online: <https://library.columbia.edu/>.

SPS Academic Resources

The Office of Student Affairs provides students with academic counseling and support services such as online tutoring and career coaching: <http://sps.columbia.edu/student-life-and-alumni-relations/academic-resources>.

Course Requirements (Assignments)

You will be evaluated on four elements integral to the course: (1) individual exercises that demonstrate understanding of particular business concepts, (2) a case study paper, (3) team exercises and pitch presentation, and (4) class participation.

Individual exercises: These are limited number of individual assignments that take place toward the beginning and end of the semester. They help aid in the formation and completion of team projects. Additionally, throughout the semester each student is required to post four ~1 pg analyses to the class discussion board. Each post should speak to something happening in the world of sustainable entrepreneurship where the student breaks down the topic and offers their own insight.

Case study paper: Each student is required to complete an analysis of a sustainability focused start-up of their choice (early stage; ideally pre-Series C). Papers are due at class on 15 March and should not exceed 5 written pages. Analyses should reflect concepts from the course readings and other references, including a description of: the product or service offered, market breakdown and customer segments, value proposition with respect to the triple bottom line, competitive landscape, and key risk factors.

Team exercises and pitch presentation: You are responsible for self-organizing into project teams consisting of 3-4 students by the end of class on 5 Feb. As a team, you will explore a novel business idea that produces social or environmental good. Teams are responsible for completing a number of the exercises leading toward your final product: a pitch presentation of your company. The exercises assigned weekly throughout the semester will help you complete each individual component of a consolidated business plan, such as a marketing plan and financial *pro-forma*. In many cases, the deliverable will be approximately one written page of thoughtful analysis complemented by a single slide for your pitch deck that summarizes the key take-aways. The customer discovery exercise will require that your project team conduct a minimum of 10 discussions with prospective customers, which will be documented and analyzed to evaluate your business opportunity.

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Taken together, the various exercises are a written portfolio of work that brings together all of the concepts learned throughout the course for the purpose of validating the team's business idea and demonstrating an action plan for capturing marketable value. The final presentation of your pitch deck will be a 10-minute walk-through of your business plan's main points, geared toward a panel of investors. Presentations will be followed by Q&A on any relevant topic. The pitch presentation will be delivered at the final two classes on 22 and 29 April.

Class participation: You are expected to listen attentively and engage during class. The quality of your participation is judged by whether it breaks new ground or elevates the discussion. You should pull from your personal experience or outside readings. Between classes, you may also participate using the Canvas discussion boards. While regular posts are not required, it can help to demonstrate your participation when in-class opportunities did not present themselves. Because of the importance of class participation, your attendance is required. If the instructor is not informed about the circumstances of an absence, it will be considered unexcused and penalized by 1% of your final grade for each absence.

Evaluation/Grading

In each of the above, you are graded along four dimensions: (1) the creativity of your ideas, (2) the analytical diligence with which you have formulated your ideas, (3) a demonstration of your learning and progress that has occurred throughout the summer, and (4) the quality with which you present your idea both written and oral.

The final grade is weighted as described below:

FINAL GRADING SCALE

ASSIGNMENT	% Weight
Individual exercises (including discussion posts)	17.5%
Case study paper	17.5%
Team exercises and pitch presentation (including team members' evaluation of one another's performance)	60%
Class participation	5%

This course follows a letter grading scheme. Following tabulation of graded assignments, students are graded on a curve with respect to your fellow classmates and those that have taken the class in past semesters. Average performance will typically result in a B+/A- final grade.

Course Policies

Participation and Attendance

You are expected to complete all assigned readings, attend all class sessions, and engage with others in online discussions. Your participation will require that you answer questions, defend your point of view, and challenge the point of view of others. If you need to miss a class for any reason, please discuss the absence with me in advance.

Late work

Work that is not submitted on the due date noted in the course syllabus without advance notice and permission from the instructor will be graded down 1/3 of a grade for every day it is late (e.g., from a B+ to a B). It is important that the workload be appropriately distributed for group assignments. Remember that your best or worst efforts will reflect on the others in your group as they do upon yourself.

Citation & Submission

All written assignments must cite sources and be submitted to the course website (not via email).

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School Policies

Copyright Policy

Please note—Due to copyright restrictions, online access to this material is limited to instructors and students currently registered for this course. Please be advised that by clicking the link to the electronic materials in this course, you have read and accept the following:

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

Academic Integrity

Columbia University expects its students to act with honesty and propriety at all times and to respect the rights of others. It is fundamental University policy that academic dishonesty in any guise or personal conduct of any sort that disrupts the life of the University or denigrates or endangers members of the University community is unacceptable and will be dealt with severely. It is essential to the academic integrity and vitality of this community that individuals do their own work and properly acknowledge the circumstances, ideas, sources, and assistance upon which that work is based. Academic honesty in class assignments and exams is expected of all students at all times.

SPS holds each member of its community responsible for understanding and abiding by the SPS Academic Integrity and Community Standards posted at <http://sps.columbia.edu/student-life-and-alumni-relations/academic-integrity-and-community-standards>. You are required to read these standards within the first few days of class. Ignorance of the School's policy concerning academic dishonesty shall not be a defense in any disciplinary proceedings.

Accessibility

Columbia is committed to providing equal access to qualified students with documented disabilities. A student's disability status and reasonable accommodations are individually determined based upon disability documentation and related information gathered through the intake process. For more information regarding this service, please visit the University's Health Services website: <https://health.columbia.edu/services/ods/support>.

Class Recordings

All or portions of the class may be recorded at the discretion of the Instructor to support your learning. At any point, the Instructor has the right to discontinue the recording if it is deemed to be obstructive to the learning process.

If the recording is posted, it is considered confidential and it is not acceptable to share the recording outside the purview of the faculty member and registered class.

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Course Schedule/Course Calendar

Guest lecturers will join our class periodically throughout the summer. These will include entrepreneurs, service providers, and investors.

Date	Key Theme (Associated Learning Objectives) Addressed Topics and Activities	Readings and Evaluations (due at class date listed)
22 Jan	<i>Principles of sustainable entrepreneurship (L1)</i> Entrepreneurial thinking and motivators; evaluating tolerance for risk; understanding sustainable opportunities; barriers to entry; entrepreneurial vs. intrapreneurial	
29 Jan	<i>Value mapping and the triple bottom line (L2)</i> Triple bottom line accounting; identifying a value proposition; resource management; circular economy; managing change; disruptive technologies; ecological and social stewardship	Reading, [1,2,3] Business idea post (ind.) Predictions exercise (ind.)
5 Feb	<i>Distinguishing your value to customers (L3, L5)</i> Understanding customer need through customer discovery; establishing product-market fit; lean startup – iteration and execution	Reading, [4,5,6] Project group selection (team)
12 Feb	<i>Business models for sustainable startups (L1, L4)</i> The sustainable business model canvas; lean business strategy; minimum viable product; consumers attitudes, evaluation metrics, and acquisition costs; basics of revenue and growth	Reading, [7,8,9] Customer persona exercise (team) Value mapping exercise (team)
19 Feb	<i>Ideation, product design, and community impact (L5, L6)</i> Product (re)design; prototype to deployment, the stages of concept implementation; project management; setting milestones and measuring progress; the founding team and advisors	Reading, [10,11] Customer discovery questionnaire (team) Business model canvas, 1 st round (team)
26 Feb	<i>Scaling your opportunity (L2, L5)</i> Evaluating market size; identifying geographical and customer segmentation; define sustainability in the context of your target market; marketing plan essentials; competitor analysis	Reading, [12] Customer discovery interviews; product-market fit (team)

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4 Mar	<i>The Price is Right – understanding your revenue streams (L3, L5)</i> Monetizing innovation with a go-to-market strategy; creating a pricing strategy that works for your business and delivery channels; breaking down expected costs and revenues	Reading, [13] Market analysis exercise (team) Business model canvas, 2 nd round (team) Case study paper due 15 March (ind., 5 pg. max)
18 Mar	<i>Team project work session</i> Breakout into project teams for a facilitated work session; instructor guidance on approach and results	Unit economics exercise (team)
25 Mar	<i>Business finance & sources of capital (L2, L6)</i> Components of a financial statement; infrastructure and capital expense; working capital and contingency planning; public policy as a driver of innovation; community stakeholders and outreach	Customer discovery interviews; go-to-market strategy (team)
1 Apr	<i>Making your pitch (L6)</i> Selling your product vs selling your company; the pitch: elevator, short-form, long-form; corporate branding; working with strategics: build-borrow-buy	Reading, [14,15,16] Financial <i>pro-forma</i> exercise (team)
8 Apr	<i>Structuring a start-up company & securing IP (L1, L4, L6)</i> Incorporating a legal entity; sole proprietorship, limited liability, corporation; intellectual property; patents, copyrights, trade secrets; forms of investment; pitching your business	Reading, [17,18,19] Pitch deck, draft (team)
15 Apr	<i>Losing sight of sustainability & learning goals review (L1, L3, L5)</i> When profits put pressure on progress: addressing underserved markets and financing social good projects; review sustainable entrepreneurial principles, readings, and discuss any issues related to final presentation	Reading, [20]
22 Apr	Final Presentations (part I) with guest speaker	Reading, [21,22] Pitch deck, final (team)
29 Apr	Final Presentations (part II) with guest speaker	Reflections questionnaire (ind.) Business model canvas, 3 rd round (team)