SYLLABUS

Duke University
ENERGY 579: Climate Tech Startups and Investors

Dr. Chris Wedding
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Class Logistics:

- Wednesdays 4:40 to 5:55pm
- R.J. Reynolds Auditorium at Fuqua School of Business
- Full credit = 1.5 for graduate students; 0.5 for undergraduates
- Office hours: By appointment. Email me with the topics you'd like to discuss.
- TA office hours with Alayna Burns. By appointment: alayna.burns@duke.edu

Course Overview

The climate tech sector includes climate change solutions such as renewable energy, batteries, electric vehicles, carbon capture, hydrogen, food tech, smart agriculture, green real estate, and advanced materials. These sectors represent considerable growth opportunities in the coming decades, which means job opportunities and meaningful career paths for students.

For example, Bloomberg projects that $10 trillion will be invested in solar, wind, and batteries by 2050, and the World Economic Forum estimates a need for over $5 trillion invested per year to avoid the worst climate change scenarios.

For startups and investors in the climate tech sector, the goal of their work is twofold: (1) address climate mitigation or climate adaptation, and (2) generate attractive market-rate financial returns. But in the early 2000s during the first cleantech wave, many investors and founders made grave mistakes in their cleantech companies, leading to a high failure rate.

Today, lessons learned from that period are leading to smarter founder and investor approaches in the climate tech sector. Angellist now tracks over 10,000 climate startups, and investors such as Breakthrough Energy Ventures, Amazon, Microsoft, General Atlantic, Brookfield, ArcTern Ventures, and Clean Energy Venture Group have raised billions of dollars in recent years to invest in climate solutions.

Through “in the trenches” input from guest speakers (founders and investors across the US) and practice-oriented assignments, students will become more fluent with certain skills and tools, such as the following: (1) sizing markets, (2) doing competitor analysis, (3) preparing to raise investor capital, (4) using investor databases, and (5) negotiating term sheets.

Course Schedule, Readings, Guest Speakers:
This Google Sheet contains links to all course materials.

Class Meetings and Attendance:
You should attend all classes regularly and on time, having prepared beforehand all assignments and readings. If you are unable to attend class on a given day (and this should not be a regular occurrence), you will not be permitted to make up that participation in some other way.

Assignments and grading:
Your assignments include the following:

Guest speaker engagement (7 of these) - Individual assignment

- In this Google Sheet, you will add:
    - 2 questions for speakers by Friday night before the week before our class; I’ll share these with the speakers so please check grammar and spelling
    - 2 comments about the guest speaker’s content by Monday night the week after they speak; these will not be shared with speakers
- You will be graded on the timeliness of completion as well as the quality of your questions and comments.

Q&A submissions (4 of these) - Individual assignment

- Via an inline text submission on Sakai, provide answers to the questions I send to you the week before the class when these are due.

Participation - Individual assignment

- Attend all classes, show up on time, be prepared, and speak up.

You’re the CEO - Team assignment

- Pick an existing climate tech startup -- e.g., Global Cleantech 100, 50 to Watch, Diane Cozian’s maps, Sakai > Resources > Pitchbook lists, etc.
- Estimate the market size for 2-3 of their products and services.
- Conduct a competitive analysis. Here is a sample template you could download and use. Or you can create other variations such as those shown here.
- Conduct a premortem analysis on the top 5-7 reasons the company could fail and suggest ways to mitigate those risks. See CB Insights article and SkillPacks article for more guidance.
- Create a list of all their existing investors by stage (e.g., Series A, B, C), and suggest 5-7 future investor prospects from CB Insights or Pitchbook and your rationale.

- Submit your work in a PPT. Feel free to add comments in the notes section beneath each slide to further explain your thinking.

Your course grade will be based on a final exam, individual and team assignments, and class participation. The following weights will be used in calculating your final grade:

Guest speaker engagement	20%
Q&A submissions	20%
Participation	20%
You're the CEO	20%
Final Exam	20%

Grading is based on the following:

- Accuracy - e.g., the correct answer
- Insight - e.g., original commentary, breadth of perspectives, correct logic
- Rigor - e.g., depth of arguments, excellence compared to peers
- Polish - e.g., formatting, typos, writing quality
- Structure - e.g., followed directions

After each team assignment, you will grade your fellow group members as follows, and take into consideration the timeliness, quantity, and quality of work. If you provide a 1, then you should also provide a one-sentence explanation. Otherwise, just list a number. See separate Sakai assignment for this.

- 3 = exceeded expectations
- 2 = met expectations
- 1 = did not meet expectations

I want you to strive for excellence in my class, where the goal is to learn as much as you can. This should be based on your desire to maximize the investment in your education, to show excitement for this opportunity to learn something new and important, and to best prepare yourself for a meaningful and impactful career. In contrast, I am not especially focused on your grades. I do not expect you to worry unnecessarily about grades, and I do not plan on debating grades with students.

Timely Feedback:

My goal is to be one of the best professors you have ever had. My goal is to constantly improve and create a fantastic learning experience for you all. If you have concerns, questions, or suggestions on how to improve student learning, please tell me immediately. I will also reach out to you as a group or individually to better understand what teaching methods are working and which should be changed. This feedback will NOT affect your grade. I may be able to adjust class structure along the way. In contrast, if you wait to provide feedback when the class is over, then I am unable to help you or fellow students who may share similar thoughts on ways I can help you learn better.

Duke University Honor Code:
The Duke University Honor Code applies to all aspects of this course. We will not tolerate any infraction of the Honor Code. The nature of each assignment indicates the type of communication and consultation that is permitted. Work that is described as an individual effort is to be your work alone, without consultation or assistance from any other person. Work that is described as a team effort is to be your team's effort alone, again without consultation or assistance from anyone else. If you are uncertain about the nature of collaboration for any assignment, please ask us.

Disclaimer:
Content, schedules, and assignments in the syllabus may change slightly during the semester.

My background:

Dr. Chris Wedding

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Dr. Chris Wedding's professional focus is private equity, venture capital, impact investing, corporate sustainability, renewable energy project finance, green building strategy, climate tech innovation, entrepreneurship, and teaching, with 25 years of experience, 80,000 students taught, and $1B+ in investment experience.

In addition to his work at Duke, Dr. Wedding is also a Professor of the Practice with the University of North Carolina at Chapel Hill (UNC) Kenan-Flagler Business School; the Managing Director of IronOak Energy Capital, a strategy consulting firm focused on renewable energy finance; the Founder of Entrepreneurs for Impact, which provides executive coaching for dozens of climate CEOs and investors; and one of the earliest LEED Accredited Professionals with the US Green Building Council. He was also a Director and Senior Advisor at Cherokee Investment Partners, a private equity firm that raised over $2 billion in private equity funds and, separately, founded or invested in 150 startups and venture funds.

He brings a global perspective, with experience in 23 countries and language abilities in Spanish, Japanese, and Creole. He is a connector, catalyst, and frequent speaker at national and global energy and finance conferences.

Dr. Wedding received a BS summa cum laude in Environmental Science from Western Kentucky University, where he was a national Goldwater Scholar in Math and Science. At UNC, he earned an MS and PhD focused on business and strategy in real estate and energy. You can learn more about climate finance and startups via his newsletter and his podcast.