

B8363 CLIMATE FINANCE

Fall 2022 (3.0 Credits)

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Office Hours: e-mail to schedule an appointment.

Communications from professor and teaching assistants about the course will take place through Canvas.

Students should make sure they regularly check for announcements and messaging notifications.

COURSE DESCRIPTION

Climate change may be today's most serious challenge to the future of humanity. Scientists have concluded that avoiding catastrophic climate change will require a reduction in greenhouse gas emissions to zero by 2050 or shortly thereafter, a dramatic reversal after several hundred years of industrial growth. This will require a rapid transformation of the global economy, employing the latest technologies and business strategies, creating new and risks and opportunities for investors to finance the transition. It is profoundly important to get it right – there will be no second chances to avoid catastrophic climate change.

This course begins with an exploration of the science of climate change and its projected impacts, followed by an assessment of the opportunities and risks of investing in climate solutions, including renewable energy, electric vehicles, and other technologies. Climate policy – including markets, risks, and justice issues – will then be studied, to understand the role that government and society plays in addressing climate change.

With an understanding of climate science, solutions, and policy issues, the course then examines investment products and strategies, beginning with venture capital and growth equity, followed by public equities, debt products, and funds. The course focuses primarily on investments in developed countries, but given the importance of a global solution to climate change a class session is then devoted to understanding the challenges to investing in climate solutions in developing countries.

The course wraps-up with a session on how business leaders select from a range of options for reducing greenhouse gas emissions and tackling climate change, and concludes with a discussion of personal responsibility for addressing the climate crisis.

PRE & COREQUISITE COURSES

This course requires the standard pre/co-requisites for elective finance courses:

Prerequisite(s): B6300 Corporate Finance

Corequisite(s): B8306 Capital Markets & Investments

STUDENT LEARNING OUTCOMES

- Understand the scientific issues underlying climate change.
- Analyze the climate solutions currently available and under development, their relative effectiveness in combating climate change, and the implications for businesses and investors.
- Evaluate investor strategies for financing climate solutions in the context of a carbon-constrained global economy, and national and international policy developments.
- Understand the impact of investment decisions on greenhouse gas emissions and climate change.

CLASSROOM NORMS AND EXPECTATIONS

Core Culture

Students are expected to adhere to [CBS Core Culture](#) in this class by being Present, Prepared, Participating.

Inclusion, Accommodation, and Support for Students

At Columbia Business School we believe diversity strengthens any community or business model and brings it greater success. The School is committed to providing all students with equal opportunity to thrive in the classroom by providing a learning, living, and working environment free from discrimination, harassment, and bias on the basis of gender, sexual orientation, race, ethnicity, socioeconomic status, or ability.

Students with documented disabilities may receive reasonable accommodations. Students are encouraged to contact the Columbia University's Office of Disability Services for [information about registration](#).

Columbia Business School adheres to all community, state, and federal regulations as relate to Title IX and student safety. Read more about CBS' policies to support [Inclusion, Accommodations and Support for Students here](#).

Honor Code and Academic Integrity

The [Columbia Business School Honor Code](#) calls on all members of the School community to adhere to and uphold the notions of truth, integrity, and respect both during their time in school, and throughout their careers as productive, moral, and caring participants in their companies and communities around the world. All students are subject to the Honor Code for all of their academic work. Failure to comply with the Honor Code may result in [Dean's Discipline](#). Here you can review [examples of Academic Misconduct](#) which may result in discipline.

Course Attendance Policies

Students from all programs should review and be familiar with the [MBA Core attendance policy here](#). Students are required to attend each class – class attendance and participation will be recorded. Students should reach out to the professors and the CA regarding excused absences (for religious observances; personal, medical, and

family emergencies; military service; court appearances such as jury duty). Unexcused absences will affect your class participation grade and your overall course grade, as follows:

- Students that miss more than 33% of their classes (unexcused absences) will at most receive a P for the course grade.
- Students that miss more than 50% of their classes (unexcused absences) will receive an F for the course grade.

METHOD OF EVALUATION

This course relies predominately on the case method. The focus of most of the classes is on understanding concepts, and the challenges and opportunities of applying those concepts in real-world settings. The chosen cases analyze climate change mitigation and adaptation by businesses, and the strategies used by investors to finance them. This course requires active class participation, and students' grades will be heavily dependent on the quality of class discussion. Students are expected to challenge one another, guests, and the professor.

Students' grades in the course are based on the following metrics:

Class participation (C - individual)	35%
Project finance model (C - individual)	10%
Emissions Trading Model (C - individual)	10%
Disruptors vs Incumbents Project (A – group/group)	10%
Final take-home exam (C - individual)	35%

COURSE ROADMAP/SCHEDULE

Session	Topic(s)	Required Pre-Readings	Assignments Due (Type)
1 9/7/2022	Introduction to Climate Finance	<ul style="list-style-type: none"> Investing in the Era of Climate Change chapters 1-3 Climate Change in 2020: Implications for Business 	
2 9/14/2022	<u>Climate Solutions:</u> Renewable Energy: Wind	<ul style="list-style-type: none"> Investing in the Era of Climate Change chapter 4 The Jersey-Atlantic Wind Farm Orsted's Offshore Wind Farms 	Project finance model (C - individual)

3 9/21/2022	<u>Climate Solutions:</u> Renewable Energy: Solar + Storage	<ul style="list-style-type: none"> o ELP Greenport Solar o From Pioneer to Pariah: SunEdison, Inc 	
4 9/28/2022	<u>Climate Solutions:</u> Electric Vehicles Green Hydrogen Nuclear	<ul style="list-style-type: none"> o Investing in the Era of Climate Change chapters 5-7 o Architects of the Future? Tesla o Why we need green hydrogen o Nuclear Power Has a Second Chance to Prove Itself (WSJ) 	
5 10/5/2022	<u>Climate Solutions:</u> Energy Efficiency and Buildings Negative Emissions	<ul style="list-style-type: none"> o Investing in the Era of Climate Change chapters 8, 16 o Reawakening the World's Most Famous Office Building 	
6 10/12/2022	<u>Markets, Policy, Risk, and Justice:</u> Carbon Markets Getting to Net Zero	<ul style="list-style-type: none"> o Investing in the Era of Climate Change chapter 17 o International Carbon Finance and EcoSecurities o Microsoft will be carbon negative by 2030 	Emissions Trading Model (C - individual)
Midterm Break			
7 10/26/2022	<u>Markets, Policy, Risk, and Justice:</u> Policy Risk Mitigation Climate Justice	<ul style="list-style-type: none"> o Climate Change: Paris, and the Road Ahead o What is the TCFD and Why Is It Important? o Deciphering the Task Force on Climate-related Financial Disclosures 	
8 11/2/2022	<u>Investment Products and Strategies:</u> Venture Capital and Growth Equity	<ul style="list-style-type: none"> o Investing in the Era of Climate Change chapter 18 o Prime Coalition: Catalytic Capital for Climate Innovation o Beyond Meat: Taking on the Beef Industry 	
9 11/9/2022	<u>Investment Products and Strategies:</u> Public Equities	<ul style="list-style-type: none"> o Investing in the Era of Climate Change chapter 20 o Columbia Divestment o Can a Tiny Hedge Fund Push ExxonMobil Towards Sustainability? o Chevron 	Disruptors vs Incumbents Project (A – group/group)

10 11/16/2022	<u>Investment Products and Strategies:</u> Funds Fixed Income	<ul style="list-style-type: none"> Investing in the Era of Climate Change chapters 21 and 22 MSCI Low-Carbon Indices: A Free Option on Carbon Green bond note Muni-bond investors need straight talk about climate-change risk 	
11 11/30/2022	<u>Investment Products and Strategies:</u> Developing Countries	<ul style="list-style-type: none"> Kingo: Growth Opportunities in Off-Grid Solar Making Impact Investing Markets: IFC(A) 	
12 12/7/2022	<u>Course Wrap-Up</u> Corporate investment Course summary	<ul style="list-style-type: none"> Investing in the Era of Climate Change chapters 23-26 Patagonia's Path to Carbon Neutrality by 2025 	
Final Take-Home Exam (C: individual) due 12/14/2022.			