

# “Engineering our Climate Future”

Fall, 2019 Mini-mester

October 28-December 3

TuTh 3-4:15pm

## Lead Instructor:

Kim Cobb

Director, Global Change Program

Professor Earth and Atmospheric Sciences

[kcobb@gatech.edu](mailto:kcobb@gatech.edu)

## Contributing Instructors:

Alice Favero (Instructor, Public Policy)

Zachary Handlos (Academic Professional, Earth and Atmospheric Sciences)

Christopher Jones (Professor, Chemical and Biomolecular Engineering)

Yogendra Joshi (Professor, Mechanical Engineering)

Emanuele Massetti (Assistant Professor, Public Policy)

Matthew Realff (Professor, Chemical and Biomolecular Engineering)

## Synopsis:

Climate change represents one of the defining challenges of the 21<sup>st</sup> century, and it must be solved within the next decades in order to avoid the most damaging effects on society and the natural world. This mini-mester will address how advanced technology can help us address climate change. What technologies might we turn to in the next decades to mitigate the effects of climate change? What solutions lie far beyond the continued acceleration of renewable energy technologies? Beyond EV cars and high-speed trains? We will explore these leading-edge technologies, and discuss the tradeoffs that society will face in weighing their large-scale deployment. The class will feature a slate of expert faculty who will provide background information and guide a discussion during each class period.

Week 1 – Our climate and carbon problem (Kim Cobb)

Week 2 – Solving our carbon problem - emerging technologies

Air capture (Chris Jones)

Carbon recycling (Matthew Realff)

Week 3 – Solving our carbon problem – nature-based solutions

Enhancing natural carbon sinks (Kim Cobb & Alice Favero)

Accelerated weathering (Kim Cobb & guest speaker)

Week 4 – Solar radiation management

Is the medicine worse than the disease? (Kim Cobb & Zach Handlos)

Global governance challenges (Kim Cobb & Emanuele Massetti)

Week 5 – Engineering urban climates

'Hot Cities 2050' (Yogendra Joshi)  
Urban heat islands – citizen science, equity, and science communication ([Dr. Jeremy Hoffman](#), Science Museum of Virginia)

Grading structure:

Written reflection (week 2) – 20%

Carbon footprinting calculation (week 3) – 30%

Team project (week 5) – 50%