

Demystifying Climate Change

OLLI Illinois Spring 2021, Tuesdays 9:00 AM

Syllabus:

1. Building Blocks: Nine key concepts for Climate Change.
 - Two of the most important: Blackbody Radiation and Chaos
2. Our Goldilocks Earth: a Radiative Balancing Act
 - Why is the Earth's temperature just right for us?
 - How does the Greenhouse Effect work?
3. The Role of the Atmosphere: Greenhouse Gases & Clouds
 - Important Greenhouse gases, including CO₂, and how they work.
 - The complex role of clouds.
4. Dynamics of the Earth System affecting Climate:
 - Oceans, Atmosphere, Biosphere, Cryosphere, People, Plate Tectonics
5. Natural Variability of the Climate, short and long term.
 - The instrumental record in modern times
 - Variability over geologic time and the Ice Ages
 - Causes of natural variability
6. Carbon Dioxide and other Greenhouse Gases:
 - Where do they come from?
 - Where do they go?
 - How are they naturally regulated?
7. Impacts and Future Projections of Global Warming
 - Implications for Climate Change going forward
 - Uncertainties due to both scientific issues and societal responses
8. Adaptation and Amelioration Strategies.
 - The Climate debate
 - Possible fixes
 - Policy options