ATM/MSC 220: Climate and Global Change

RECOMMENDED TEXTBOOKS:
“Atmospheric Science: An introductory survey” by J.M. Wallace and P.V. Hobbs
“Earth’s Climate: Past and Future” by W.F. Ruddiman

COURSE OUTLINE

Introduction:
The meaning and importance of Global Climate Change

Components of the Climate System:
Atmosphere: Composition, Structure and Circulation (2 lectures)
Oceans: Circulation and Sea Level (2 lectures)
Land and Sea Ice (1 lecture)

How the Climate System Operates:
Radiation and Energy Balance (2 lectures)
Carbon Cycle (1 lecture)
Water Cycle, Aerosols and Pollutants (1 lecture)
Climate Sensitivity and Feedbacks (1 lecture)

Lessons from the Past:
Slow Climate Changes and Ice Ages (2 lectures)
Abrupt Climate Change and the Role of Ocean Circulation (1 lecture)

Changes of the Present:
Anthropogenic Influence on the Energy Balance and Carbon Cycle (1 lecture)
Observations of Climate Change and Sea Level Rise (2 lectures)
Attribution of Climate Change (1 lecture)

Looking into the Future:
Climate Modeling and Future Projections (2 lectures)
Regional Climate Impacts (2 lectures)
Climate Impacts on the Rise and Fall of Civilizations (1 lecture)
Sea Level Rise: A global threat and lessons from South Florida (2 lectures)
Solutions: Mitigation and Adaptation (2 lectures)