MSC 220: Climate and Global Change
FALL Semester 2014
Tuesday and Thursday
Time: 11:00 – 12:15pm
Room: Whitten LC 190

INSTRUCTOR:

Professor Igor Kamenkovich
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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 WEBSITES: http://www.courses.miami.edu

COURSE POLICIES:

Grading: midterm and final written exams – 30% (each), short quizzes/home assignments – 20% and the term project – 20%.

Attendance: Attendance is strongly recommended. Students who miss regularly rarely do well in the course.

Honor Code: You are expected to follow it. Cheating and improperly referencing published written or electronic material will not be tolerated.

OCTOBER 9: MIDTERM EXAM
COURSE OUTLINE AND SCHEDULE

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 (guest lecture: Larry Peterson)
Sea Level Rise: A global threat and lessons from South Florida (1 lecture + guest lecture)
Solutions: Mitigation and Adaptation (2 lectures)