SEMESETR-VII SPECIALIZATION: PHYSICAL GEOGRAPHY

GEOG. 632: THE CLIMATE SYSTEM 3(3-0)

Course Objectives

This course examines the fundamental physical processes that control the primary features and patterns of variability of the Earth's climate system. The goal of the course is to provide students with the opportunity to gain a fundamental understanding of the processes that give rise to observed climate variability at a range of temporal and spatial scales.

Course Outline

1. **Introduction**
   - Components of climate system
   - How does climate system works
2. **Global Energy Balance**
   - Energy balance.
   - Greenhouse effect
   - Milinkovic theory
3. **General Circulation**
   - Atmospheric circulation
   - Ocean circulation
   - Oceans and El Nino
   - Ocean, atmosphere interaction
   - El Nino, La Nina and its effects
4. **Physical and Chemical Composition of Atmosphere**
   - Composition of atmosphere
   - Structure of atmosphere
5. **Climate Change**
   - Evidence of climate change
   - Causes and effects of climate change
   - Mitigation and adaptation

Recommended Books

1. Roger G. Barry (2013) “Essentials of the Earth's Climate System”, Longman
2. Haydn Washington and John Cook; foreword by Naomi Oreskes (2011) “Climate Change Denial: Heads in the Sand Climate change: dangers from Greenhouse Gases from Fossil Fuels”, Rutledge
3. Heidi Cullen (2010) “The Weather of the Future: Heat Waves, Extreme Storms, and Other Scenes From a Climate-Changed Planet”, Routledge.
4. Nigel Lawson (2008) “An Appeal to Reason: A Cool Look at Global Warming”, ISBN 978-0-7156-3786-9 (UK); ISBN 978-1-59020-084-1 (US).
5. AL GORE ((2006) “An Inconvenient Truth: The Planetary Global Warming”, speed and extent documented with textISBN 1-59486-567-1
6. S. Fred Singer and Dennis T. Avery (2006) “EmergeUnstoppable Global Warming: Every 1,500 Yearsncy of Global Warming and What We Can Do About It Global warming: Natural Causes”, Longman, UK.
7. Tim Flannery (2005) “The Weather Makers: The History and Future Impact of Climate Change”, Rutledge.