

# GEOL 335, PROCESSES OF GLOBAL ENVIRONMENTAL CHANGE



**Fall 2011**

## **Lecture**

Lecture: Tuesday, Thursday, 9:30-10:45AM CLS 104

## **Laboratory**

SECTION 001: Thursday, 1230-330PM EWSC 209

SECTION 510: Wednesday, 2:30-5:30PM SUM 241

Final Exam: Tuesday, December 6 - 2:00PM

## **INSTRUCTOR**

Venkat Lakshmi, Professor, Department of Earth and Ocean Sciences

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## **TEACHING ASSISTANT AND LABORATORY INSTRUCTOR**

Ben Oliver, Department of Earth and Ocean Sciences, University of South Carolina

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## **PRINCIPAL TEXTS**

- Red Sky in the Morning: America and the crisis of the global environment, James Gustave Speth, Yale University Press; ISBN 0-300-10232-1
- Is the Temperature Rising?, S George Philander, Princeton University Press; ISBN 0-691-05775-3
- REFERENCE BOOK: The Earth System, Second edition; Kump, Kasting and Crane, Pearson Prentice Hall; ISBN 0-13-142059-3

## **TOPICS TO BE COVERED AND DESCRIPTION**

The science of global change and its relation to the hydrosphere, atmosphere, biosphere and lithosphere will be studied in part one of the course. In part two, we will study the policy ramifications of climate change and its implementation.

## **GRADING** (see class attendance policy below):

|   |     |
|---|-----|
| Class participation and (surprise) quizzes            | 10% |
| Book Report (October 18)                              | 10% |
| Mid-term exam (October 6 2011)                        | 15% |
| Semester-long Project – written and oral presentation | 20% |
| Final exam* (December 6 2011)                         | 15% |
| <i>*to include material from the class reports</i>    |     |
| Lab reports and assignments                           | 30% |

### **CLASS ATTENDANCE POLICY**

Only three absences due to sickness or extreme extenuating circumstances will be allowed with one letter grade taken off for each additional unexcused absence. Surprise quizzes will help determine “regular” students.

*Reading assignments are extremely important and class discussion on these readings will form the basis for the 20% grade (listed first above)*

### **BOOK REPORT**

During the semester, you will be required to read a book on global change. The book can be on the scientific, social, economic aspect of climate change. After reading the book, you will be required to write a short and concise 3-page book report. This book report is due October 18.

### **SEMESTER-LONG PROJECT**

A semester-long project will be a central part of this course. The project will consist of two parts, a written research report based on your research, complete with illustrations and references, and PowerPoint oral report presented to the entire class.

**The written report is due on December 1, 2011.** The report must be at least 5 pages long, typed, double spaced, 12-pt font; not included in this length are illustrations and references (important parts of the report). Internet references may be used but must be valid sources and complete Web addresses must be given.

A 15-minute oral presentation will be done by each student based on the project topic that will be decided on the basis of consultation with the instructor and this is used as the basis for the written research paper. The topics may include scientific, economic, political and social aspects of global change. More details will be made available at a later time in the semester including help with learning power point.

### **LEARNING OUTCOMES**

- (1) Basic understanding of weather and climate.
- (2) Understanding and appreciation of the integrated nature of the earth system.
- (3) Introduction to issues – scientific and societal in the climate change context.
- (4) Keys for a sustainable future: understanding the global climate related problems and searching for solutions.

## **LABORATORY SESSIONS**

The laboratory periods will be used both as laboratory sessions for either hands-on or computer-based projects to expand upon topics being covered in the class periods or as question-answer periods (recitation sessions) during which students will have an opportunity to ask the lab instructor, for help with material covered during the class or labs.

**Please bring your laptop (wireless capable) to the Laboratory class.**

| <b>LAB</b> | <b>DATE</b>     | <b>TOPIC</b>   |
|------------|-----------------|--|
| 1          | Aug. 24, 25     | Introduction to the laboratory classes                           |
| 2          | Aug. 31, Sep. 1 | Introduction to Microsoft Excel                                  |
| 3          | Sept. 7, 8      | Long-term climate change   |
| 4          | Sept. 14, 15    | Earth's magnetic field, continental drift and Seafloor spreading |
| 5          | Sept. 21, 22    | The greenhouse effect  |
| 6          | Sept. 28, 29    | Global warming and the greenhouse effect:<br>Proposed solutions  |
| 7          | Oct. 5, 6       | Q and A session for Midterm Exam                                 |
| 8          | Oct. 12, 13     | Progress reports on class research projects                      |
| 9          | Oct. 19, 20     | Hurricanes   |
| 10         | Oct. 26, 27     | Great Sumatra earthquake and tsunami                             |
| 11         | Nov. 2, 3       | Atmospheric and ocean circulation                                |
| 12         | Nov. 9, 10      | Make up class  |
| 13         | Nov. 16, 17     | Project presentations  |
|            | Nov. 23, 24     | Thanksgiving recess – no lab/class                               |
| 14         | Nov. 30, Dec. 1 | Project presentations  |