GEOGRAPHY 1900
Extreme Weather and Climate
Fall Semester 2017

Instructor: Jim DeGrand
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Phone: 292-3133
Email: degrand.1@osu.edu - preferred
Office Hours: Mondays and Wednesdays, 2:00-3:00 PM OR by appointment

Teaching Assistants:

Emily Sambuco
Office: 1155 Derby Hall (DB)
Email: Sambuco.8@buckeyemail.osu.edu
Office Hours: Monday, 11:00 am -12:00 pm and 4:00 pm – 5:00 pm OR by appointment

Mary Grace Thibault
Office: 1131 Derby Hall (DB)
Email: Thibault.15@buckeyemail.osu.edu
Office Hours: Wednesday, 11:00 am -12:00 pm and 4:00 pm – 5:00 pm OR by appointment

Jerry Zou
Office: 1155 Derby Hall (DB)
Email: Zou.219@buckeyemail.osu.edu
Office Hours: Fridays, 12:00 – 2:00 pm OR by appointment

Course Details
Lecture: Monday, Wednesday, Friday; 12:40 PM to 1:35 PM; Jennings Hall (JE) 001

Labs:
Section 0020 (15843) - Monday, 9:35 – 10:55 AM in Derby Hall (DB) 0070 (Emily Sambuco)
Section 0030 (15844) - Monday, 2:20 – 3:40 PM in Derby Hall (DB) 0070 (Emily Sambuco)
Section 0040 (15845) - Wednesday, 9:35 – 10:55 PM in Derby Hall (DB) 0070 (Mary Grace Thibault)
Section 0050 (15846) - Wednesday, 2:20 – 3:40 PM in Derby Hall (DB) 0070 (Mary Grace Thibault)
Section 0060 (15847) - Friday, 9:35 – 10:55 PM in Derby Hall (DB) 0070 (Jerry Zou)
Section 0070 (20883) - Friday, 2:20 – 3:40 PM in Derby Hall (DB) 0070 (Jerry Zou)
Course Materials

Lab Manual: Course packet distributed by UniPrint at http://uniprint.osu.edu, available at OSU Bookstores (at Central Classroom and South Campus Gateway Barnes & Noble) (Required)

The Carmen course management system http://carmen.osu.edu

Course Description
This course will serve as an introduction to the study of the atmosphere. The primary objective of this course is to provide students with a comprehensive understanding of the atmosphere and the processes that govern its behavior. In this course students will be exposed to various aspects of meteorology, including the structure and behavior of the atmosphere, global energy balance and transfer, atmospheric circulation, precipitation processes, weather systems and severe weather. This course will emphasize the inter-relationship existing between the atmosphere, hydrosphere, biosphere and lithosphere and will illustrate how the movement of matter and energy between these “spheres” is responsible for the weather, climate and environments we experience on Earth.

Science GEC Course
Natural Science coursework fosters students’ understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.
1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

Student Evaluation
Labs: Laboratory exercises will be conducted during the lab periods. Attendance is required. Students should read through each lab and be prepared PRIOR to the lab session. It is the responsibility of each student to turn in the required laboratory exercise at the beginning of class on the due date. All lab exercises must be completed INDIVIDUALLY, although working in groups is encouraged.
Exams: There will be three exams (two midterms and a final). Material presented in lecture and/or lab is fair game for the exams. Exams, including the final, are mostly non-cumulative but questions about some important themes/concepts will present in more than one exam. These themes/concepts will be clearly communicated to the class prior to exams. Make-up exams are only allowed in the event of a documented emergency or through PRIOR consent of the instructor. All exams will take place at the regular lecture room. Midterm exams occur during
regular lecture hours and the final exam will take place in the regular lecture room on Thursday, December 14, from 2:00 to 3:45 PM.

**Final grade determined as follows:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab</td>
<td>35%</td>
</tr>
<tr>
<td>Midterm Exam 1</td>
<td>21%</td>
</tr>
<tr>
<td>Midterm Exam 2</td>
<td>22%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>22%</td>
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</tbody>
</table>

**Extra Credit**

Normally I don’t offer extra credit in courses I teach. I will make an exception in this course for students who regularly participate in atmospheric science related citizen science programs throughout the semester. I am prepared to award up to 7% of total points to students who participate in approved (by me) programs. Extra credit points awarded will be pro-rated by student participation in the program. For example, a student who participates regularly in a program for 9 of the 18 weeks in the semester would receive an extra 5% of the total points available in the course added to their final score. Two programs that I would be willing to give credit for are:

1. “CoCoRaHS”: The Community Collaborative Rain, Hail and Snow network ([www.cocorahs.org](http://www.cocorahs.org)). In this program volunteers setup a rain gauge on their property and post daily observations of precipitation receipts.
2. “S’Cool”: Students’ Cloud Observations On-line ([http://scool.larc.nasa.gov/rover.html](http://scool.larc.nasa.gov/rover.html)). In this project volunteers make daily observations of clouds which are uploaded to a NASA website and used in ground validation of satellite based estimations of cloud type and cloud coverage.

There are probably other programs I would consider if they are related to atmospheric science and require regular volunteer participation. However, under no circumstances will I award extra credit for participation in a program without my prior approval of the program.

**Academic Misconduct**

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct webpage ([https://trustees.osu.edu/index.php?q=rules/code-of-student-conduct/](https://trustees.osu.edu/index.php?q=rules/code-of-student-conduct/)).

**Disability Services**

Students with disabilities that have been certified by the Office for Disability Services (098 Baker Hall 113 W, 12th Ave, telephone 292-3307) will be appropriately accommodated, and should inform the instructor of their needs at the **beginning of the term.**
Classroom etiquette
Without exception, we will observe the following policies which are designed to maximize learning opportunities for all students:

1. The use of cell phones, smart phones and other mobile devices during class is prohibited. Please turn them off before class begins. If I perceive that you are using a cell phone during class or if your cell phone rings, I will ask you to leave the class for the remainder of the period.

2. Laptops or tablet computers are permitted in class solely for the purpose of taking notes. If I perceive that you are using your device to surf the web, check your email, etc during class I will ask you to leave the room for the remainder of the class period.

3. I welcome your participation during class in the form of questions regarding the course material. I insist that all such interactions be conducted in a manner that is not disrupting to the class and is respectful to me and to your peers. If your conduct in class is disrupting or disrespectful I will ask you to leave the class and we will have a conference about your continued enrollment in the course.

4. We will honor the posted signs outside the auditorium prohibiting food and drink in the classroom.

Schedule*

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23-Aug 25-Aug</td>
<td>Atmospheric Composition</td>
<td>Chap 1</td>
</tr>
<tr>
<td>2</td>
<td>28-Aug 1-Sep</td>
<td>Energy, Radiation and Seasons</td>
<td>Chap 2</td>
</tr>
<tr>
<td>3</td>
<td>4-Sep 8-Sep</td>
<td>Energy Balance, Temperature</td>
<td>Chap 3</td>
</tr>
<tr>
<td>4</td>
<td>11-Sep 15-Sep</td>
<td>Pressure and Wind</td>
<td>Chap 4</td>
</tr>
<tr>
<td>5</td>
<td>18-Sep 22-Sep</td>
<td>Review; Exam I</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>25-Sep 29-Sep</td>
<td>Atmospheric Moisture</td>
<td>Chap 5</td>
</tr>
<tr>
<td>7</td>
<td>2-Oct 6-Oct</td>
<td>Cloud formation, Precipitation</td>
<td>Chap 6, 7</td>
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<tr>
<td>8</td>
<td>9-Oct 13-Oct</td>
<td>Atmospheric Circulation</td>
<td>Chap 8</td>
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<tr>
<td>9</td>
<td>16-Oct 20-Oct</td>
<td>Air Masses and Fronts</td>
<td>Chap 9</td>
</tr>
<tr>
<td>10</td>
<td>23-Oct 27-Oct</td>
<td>Review; Exam II</td>
<td></td>
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<tr>
<td>11</td>
<td>30-Oct 3-Nov</td>
<td>Midlatitude Cyclones</td>
<td>Chap 10</td>
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<tr>
<td>12</td>
<td>6-Nov 10-Nov</td>
<td>Severe Thunderstorms</td>
<td>Chap 11</td>
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<tr>
<td>13</td>
<td>13-Nov 17-Nov</td>
<td>Severe Tropical Storms</td>
<td>Chap 12</td>
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<tr>
<td>14</td>
<td>20-Nov 24-Nov</td>
<td>Climate and climate change</td>
<td>Chap 15, 16</td>
</tr>
<tr>
<td>15</td>
<td>27-Nov 1-Dec</td>
<td>Air Pollution</td>
<td>Chap 14</td>
</tr>
<tr>
<td>16</td>
<td>4-Dec 6-Dec</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>14-Dec</td>
<td>Exam III</td>
<td></td>
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*This is a tentative schedule. While exam dates will not change, the actual material presented in lectures at the time of any exam might not mirror the schedule precisely. The material covered in each exam will be clearly defined and communicated to the class by the instructor.