Physics 140
The Greenhouse Effect
1/23/2019
Course Website

http://www.physics.rutgers.edu/ugrad/140/

• Syllabus
• Course Notes & Homework Assignments
• Breakdown of Grades
• View Your Grades
• Announcements
• You should expect changes and updates throughout the semester.
Course Website

http://www.physics.rutgers.edu/ugrad/140/

Physics 140
The Greenhouse Effect

Spring 2019
Mondays, Wednesdays 3:20 - 4:40 p.m.
Tillett 204
## Course Website - Syllabus

<table>
<thead>
<tr>
<th>Week of</th>
<th>Monday</th>
<th>Wednesday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 21</td>
<td></td>
<td>Introduction/Overview</td>
</tr>
<tr>
<td>Jan. 28</td>
<td>Energy and Power</td>
<td>Energy and Power</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>Heat and Light</td>
</tr>
<tr>
<td>Feb. 4</td>
<td>Energy and Power</td>
<td>Energy and Power</td>
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<tr>
<td></td>
<td>Energy vs. Power</td>
<td>Light and Blackbody Radiation</td>
</tr>
<tr>
<td>Feb. 11</td>
<td>Energy and Power</td>
<td>Energy and Power</td>
</tr>
<tr>
<td></td>
<td>Chasing Ice</td>
<td>A Simple Climate Model</td>
</tr>
</tbody>
</table>
## Grading Scheme

<table>
<thead>
<tr>
<th>Weight (%)</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>Homework</td>
</tr>
<tr>
<td>12%</td>
<td>In-Class Activities</td>
</tr>
<tr>
<td>12%</td>
<td>I-Clickers</td>
</tr>
<tr>
<td>18%</td>
<td>First Hour Exam</td>
</tr>
<tr>
<td>18%</td>
<td>Second Hour Exam</td>
</tr>
<tr>
<td>30%</td>
<td>Final Exam</td>
</tr>
</tbody>
</table>
Grading Scheme

- There will be approximately 6 homework assignments.
- HW will be posted on the course website.
- Each homework will be weighed equally.
- Late HW carries a penalty of 10% per calendar day.
Grading Scheme

- In-class assignments will be given almost every lecture.
- They involve calculations so always bring a calculator with you.
- Each assignment will be weighed equally.
- In-Class assignments are due at the end of the lecture time. **No late assignments will be accepted.**
Grading Scheme

- Multiple choice clicker questions will be asked during each lecture.
- Questions could be based on material being discussed in lecture or reading assignments.
- Reading assignment questions will be labeled “Clicker Quiz”.
- Clicker Quiz questions will assign credit only if correct while regular lecture questions will give ½ credit if wrong and 1 full point if correct.
- You are responsible for your clicker to be in working order, using the right frequency (AA) and being registered correctly.
Grading Scheme - Exams

• Exams will be multiple-choice.
• During exams, you will be allowed to use:
  - Pencil, eraser and a scientific calculator.
  - No other electronics are allowed.
Grading Scheme
Assignment Drops

➢ iClicker: 3 will be dropped
➢ In-Class Assignments: 2 will be dropped

• Assignment drops (if any) are to account for illness, religious holidays or any other type of excusable absence.
• These WILL NOT be dropped in addition to an excusable absence.
The Greenhouse Effect

Transparent Roof lets Sunlight in and Traps Heat that would otherwise Escape
Global Warming Controversy

• Is the earth warming?
• What is responsible for this warming?
• What should we do about it?
Basic Plots
Temperature and CO2 vs time

Are these correlated?
Is the right one causing the left one?
Course Description

• In this class, we'll discuss the basics of the greenhouse effect for a non-technical audience.

• A key goal of the course is that the students develop the energy literacy and quantitative dexterity necessary to evaluate for themselves arguments presented in public policy discussions of global warming and climate change.
The website you are trying to access is not available at this time due to a lapse in appropriation.

NOAA.gov and specific NOAA websites necessary to protect lives and property are operational and will be maintained during this partial closure of the U.S. Government.

See weather.gov for forecasts and critical weather information.

NOAA Federal Employees: Go to the NOAA Furlough information page for information, forms and other resources related to the shutdown.
More Glaciers in East Antarctica Are Waking Up
What is the main difference between climate and weather?

a) There is no difference.
b) Weather is measured more carefully.
c) We rely on weather forecast to know if we need an umbrella but we can ignore changes in climate.
d) The main difference is a measure of time.
Climate vs Weather

• **Weather** pertains to state of the atmosphere at a place and time (heat, pressure, dryness, sunshine, wind, humidity, rain, etc.)

• **Climate** refers to atmospheric behavior over relatively long periods of time.

• The main difference is a measure of time.

Some scientists define climate as the average weather over a period of 30-years.
What is the main difference between climate and weather?

a) There is no difference.
b) Weather is measured more carefully.
c) We rely on weather forecast to know if we need an umbrella but we can ignore changes in climate.
d) The main difference is a measure of time (a few days vs 30 years).
Next Monday:

• 1st in-class activity. Bring a calculator
• Will start collecting iClicker data. Bring an iClicker Remote