Global warming. Climate change. Ozone Layer. Carbon Footprint. Ocean Acidification. Pollution. The Greenhouse Gas Effect. The ramifications of these issues, for the environment you live in are debated in such venues as the living (and dorm) room, the news, the halls of Congress, and the United Nations. The primary objective of this course is to pull back the veil on the scientific aspects of these topics while giving you the scientific background so that you can better understand and evaluate the potential impact of these significant environmental topics.

On an introductory level, this course will address:
- How is science used to study nature?
- The basic fundamentals of chemistry and chemical structure
- The scientific method; the relationship between proof and evidence
- What scientific evidence prompts debate in environmental chemistry?
- How can we understand environmental problems through chemistry?
- What is renewable energy and why do people think that it’s important?
- Critical analysis of popular media
- Accessing peer-reviewed literature/proper acknowledgment/avoiding plagiarism

In this class we will have traditional lectures but there are two other important components:

Assessing Sources: A learning goal of this course involves the ability to critically evaluate sources. Students will read newspaper articles, magazine articles, scientific papers, and/or blog posts, and then discuss in class whether the sources present information accurately or inaccurately, present information with or without bias, and if enough evidence is presented to draw conclusions.

Laboratory: Hands-on laboratory exercises will be employed to reinforce concepts from lecture and provide a tangibility that can't be achieved through words and pictures. By performing experiments, students will be able to appreciate the process by which scientists draw evidence. Many lectures will be accompanied by practical demonstrations for the same purpose.

Instructor: Elizabeth B. Cerkez, Ph.D.
email: cerkeze1@temple.edu  office: Beury 448  phone: 1-7821

Class Meetings: Mondays, Wednesdays, Fridays  9-9:50 am  Beury 415

Office Hours: Monday & Wednesday 10 – 11:30 am, Thursday 9-11 am, and by appointment.

Required Materials
Books: (1) ACS: Chemistry in Context; Customized Version of 9th edition ($55.57)
(2) OpenStax General Chemistry, Atoms First (FREE)
Calculator: A non-programmable, non-graphing calculator is required for the course.
Goggles: This course has a laboratory component, you are required to bring safety goggles with you to all lab days.

Canvas: Canvas is our main form of communication. All files, grades, and other important information will be uploaded to Canvas. Please use traditional email over Canvas mail to contact me.
Point Breakdown and Approximate Grades:

Three Exams (150 pts each)  450 pts
Homework/Labs  150 pts
Lecture Participation  25 pts
“Assessing Sources” Preparation/Participation  175 pts
Team Presentation  200 pts
TOTAL  1000 pts

Approximate grades (as a percent) as are follows:

A or A-:  100 – 90  B+ or B or B-:  89 – 80  C+ or C or C-:  79 – 70  D:  69 – 60  F:  59 – 0

Unless otherwise noted, all work is to be completed individually.

Assessments:

Any work to be turned in that contains multiple pages should be stapled.

Exams (450 pts): Three exams will assess knowledge students have gained over the course of each Module (see due dates on Page 6). The final exam (non-cumulative) will test on Module 3. Each exam is worth 150 points and will be a combination of multiple choice and open answer questions.

Homework/Labs (150 pts): Short homework assignments (20 pts each) will ask students to review the material learned during lecture based classes. Assigned questions will come from the textbook or on worksheets provided by the lecturer. Laboratory assignments (20 pts each) will be a combination of pre-, during-, and post-lab questions and observations. A total of 160 points are available in this category, so it’s possible to earn 10 bonus points. Any homework or lab questions requiring calculations must have work shown to receive full credit.

Lecture Participation (25 pts): During lecture-based classes we will use a “clicker” system by Poll Everywhere. The system is free for us to use and all you need is your cell phone (any make or model). The system will take attendance and will give me (and you) information about how well we as a class are understanding the material. Points will be assigned based on percentages, for example if you participate in 80% of the lecture questions you will earn 20 points in this category. The link for registration is provided on Canvas.

“Assessing Sources” Preparation/Participation (175 pts): There are five “Assessing Sources (AS)” discussion days over the course of the semester. Students will be asked to read assigned articles and answer short questions prior to the AS day. Preparation will count for a total of 75 points, while participation in the discussion during class will count for a total of 100 points.

Team Presentations (200 pts): At the end of the semester, students will participate in team presentations which will result in whole-class discussions based on skills learned during “Assessing Sources” classes. Each assigned topic will have two teams, each on a different side of the issue. After the presentations, the whole class will discuss the topic and determine which team presented more convincing scientific based evidence. Grades will not be determined by “who won”, but by the content and style of presentation. All members of a team are expected to participate equally, and different grades may be assigned if students do not pull their own weight.
**Extra Credit (Max 12 pts):** As this course studies topics affecting our environment, staying up to date with current events is important, as is assessing whether the reports are presented fairly and without bias. Students can earn 1 point per acceptable article they upload to the Canvas site (max of 6 points) and can earn 1 point per substantive comment they make on a classmate’s article (max of 6 points).

**Other Important Information**

**Chemistry Department Calculator Policy:**
The use of programmable and/or graphing calculators on examinations or quizzes is strictly prohibited. The use of simple calculators (i.e. those without keyboards) is allowed only with the permission of the Instructor. The use of PDAs, cell phones, and electronic or paper dictionaries is strictly prohibited.

**Disability disclosure statement:**
Any student who has a need for accommodations based on the impact of a documented disability or medical condition should contact Disability Resources and Services (DRS) in 100 Ritter Annex (drs@temple.edu; 215-204-1280) to request accommodations and learn more about the resources available to you. If you have a DRS accommodation letter to share with me, or you would like to discuss your accommodations, please contact me as soon as practical. I will work with you and with DRS to coordinate reasonable accommodations for all students with documented disabilities. All discussions related to your accommodations will be confidential.

**Temple Policy on Student and Faculty Academic Rights and Responsibilities:**
Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has a policy on Student and Faculty Academic Rights and Responsibilities (Policy #03.70.02) which can be accessed at policies.temple.edu.

**Important Registration Dates:**
- **Drop/Add:** Without special approval from the instructor as long as the desired section(s) are open. Students should check the Diamond Line (215-204-2525) phone registration system frequently or Temple’s On-line Course Schedule. Both systems allow students to determine which sections are currently open. Note that a section that was closed in the early morning may have opened up by the afternoon, so check frequently. Last day to drop a course **Monday, September 9th**.

- **Withdrawal:** Students may withdraw from the course without penalty (Grade of "W") any time up to Drop/Add deadline. After that grace period the "W" grade is only given in accordance with institutional procedure. The procedure to obtain a "W" grade after 12 September is governed by the Temple University Policy (#03.12.12) on Withdrawal. Last day to withdraw from graduate and undergraduate courses **Tuesday, October 22nd**.

**Incomplete:**
Incomplete ("I") Grades will only be given in accord with Temple procedures. The "I" grade cannot be given until the specific requirements have been met and forms filled out, signed and submitted. This course is governed by the Temple University Policy (#03.12.13) on Incompletes. http://policies.temple.edu/getdoc.asp?policy_no=02.10.13

**Make-up Exams:**
A makeup exam is at the digression of the instructor. If you miss an exam, you must contact me within 24 hours.
Laboratory Safety

Students are expected to conduct themselves as adults who are cognizant of their safety and the safety of those around them. Unauthorized experiments utilizing equipment and/or chemicals are not permitted. Participants in this course who are behaving inappropriately or unsafely will not be permitted to continue in the laboratory. Make-up of missed laboratory work will not be permitted. Although most of the chemicals used in this course are no more dangerous than those used in your home, students are required to come to class dressed properly.

- Eating and/or drinking in the laboratory is not permitted.
- If you have read this far, please send me an email with your favorite meme (keep it appropriate). The first 5 students to do so will earn a bonus point.
- Long pants or full-length skirts should be worn. Short pants, short skirts, and kilts are not permitted in the lab at any time. Arms should be covered to the elbow and midriffs should not be exposed. Clothing serves to provide an additional barrier which is important in a laboratory environment.
- Shoes/sneakers that cover the entire foot should be worn. Sandals, clogs, flats, or open-toe shoes are not permitted in the lab at any time.
- Laboratory participants must wear safety glasses or safety goggles as soon as they enter the laboratory. We do not keep spare goggles to lend to students. It is the students’ responsibility to bring their goggles with them to the lab meeting. The wearing of contact lenses is not recommended. Contact lenses should, if possible, be replaced with eye-glasses worn behind safety goggles.
- Long hair must be tied back.

**Improperly dressed students will not be permitted to work in the lab.**
## General Schedule

*Tentative* General Schedule – Final Schedule will be provided by end of Week 1 (8/30/19)

<table>
<thead>
<tr>
<th>Date</th>
<th>Semester Overview</th>
<th>Important Events</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Syllabus + Science Buzz Words + The Scientific Method</td>
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<tr>
<td>Week 2</td>
<td><strong>Module 1 - Air</strong> What is Air? How do we keep it clean? What’s the ozone layer?</td>
<td>Assessing Sources 1</td>
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<tr>
<td>Week 3</td>
<td>Air Pollution. Smog. CFCs.</td>
<td>Lab 1 – Temperature + CO₂</td>
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<td>Week 4</td>
<td>Is carbon dioxide a problem? The greenhouse gas effect.</td>
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<td>Week 5</td>
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<td>Assessing Sources 2</td>
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<td>Week 6</td>
<td>Could Global Warming be natural?</td>
<td>Lab 2 – Spartan Exam 1</td>
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<td><strong>Module 2 - Earth</strong></td>
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<tr>
<td>Week 7</td>
<td>Why do we burn things? Fossil Fuels, Combustion, and Combustion Analysis</td>
<td>Lab 3 – Calorimetry Assessing Sources 3</td>
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<td>Week 8</td>
<td>What is Energy? Understanding Thermochemistry</td>
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<td>Week 9</td>
<td>Alternative Energy Sources. Solar, Nuclear, and other possibilities</td>
<td>Assessing Sources 4</td>
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<tr>
<td>Week 10</td>
<td>Energy from water?</td>
<td>Exam 2</td>
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<td><strong>Module 3 - Water</strong></td>
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<td>Week 11</td>
<td>All about water. What is it? Why is it important? Why is it unique?</td>
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<td>Week 12</td>
<td>Water Pollution.</td>
<td>Lab 4 - CO₂ in water</td>
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<td>Week 13</td>
<td>Ocean Acidification + Dissolution of Coral</td>
<td>Assessing Sources 5</td>
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<tr>
<td>Week 14</td>
<td>NO CLASS - Fall Break</td>
<td>Fall Break</td>
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<tr>
<td>Week 15</td>
<td>Team Presentations</td>
<td>Presentations</td>
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<td>Week 16</td>
<td>Last Day of Class - Exam 3 Review</td>
<td>Exam 3</td>
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<tr>
<td>Finals</td>
<td>Exam 3 - Water</td>
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</tbody>
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Assessment Material Due Dates:

Students are responsible for staying up to date with the schedule. You should not expect reminder announcements of impending due dates.

**September**
- 9/6  – Assessing Sources 1 Preparation
- 9/9  – Homework Set 1
- 9/11 – Prelab 1 Questions
- 9/16 – Lab 1 Due
- 9/23 – Homework Set 2
- 9/27 – Assessing Sources 2 Preparation
- 9/30 – Prelab 2 Questions

**October**
- 10/4 – Exam 1
- 10/7 – Lab 2 Due
- 10/11 – Assessing Sources 3 Preparation
- 10/16 – Prelab 3 Question
- 10/18 – Homework Set 3
- 10/21 – Lab 3 Due
- 10/25 – Assessing Sources 4 Preparation

**November**
- 11/1 – Exam 2
- 11/11 – Homework Set 4
- 11/13 – Prelab 4 Questions
- 11/18 – Lab 4 Due
- 11/22 – Assessing Sources 5 Preparation

**December**
- 12/2 – Team Presentations
- 12/4 – Team Presentations
- 12/6 – Team Presentations
- 12/16 – Exam 3

An effort will be made to abide by the schedule as laid out above. If changes to this schedule are needed (inclement weather, etc.), they will be announced in lecture and posted on Canvas.