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Sample Syllabi

SYLLABUS #1

FY1100 C04 Great Problems Seminar: Power the World
Worcester Polytechnic Institute
Course Syllabus - C and D terms

Course Goals and Learning Objectives (Student Learning Outcomes)

Overview and Course Goals

Every generation in every community has experienced an "energy crisis." People have found ways to proceed, but solutions have always involved positive and negative consequences. This course investigates the depth and breadth of awareness of these issues. It explores the challenges and effects of power generation from technical, philosophical, ethical, social, political, and ecological perspectives. This is the key to becoming not only effective engineers, but also effective citizens of the 21st century.

In this class, students will work to accomplish the following:

a. Identify critical energy issues of local, regional, and/or global importance
b. Understand the opportunities and risks of energy production, transmission and use
c. Understand and be aware of critical energy issues.
d. Know the key energy stakeholders including scientists, political leaders, business leaders, government officials, philanthropists, and citizens.

Learning Objectives (Student Learning Outcomes)

While energy is the content focus of this Great Problems Seminar our learning objectives are as follows:

1. TEAM WORK Collaborate effectively on a team.
2. RESEARCH Find varied, credible sources, assess their claims and relevance, and use them appropriately.
3. WRITING Produce clear, effective, evidence-based writing.
4. PRESENTING Prepare and confidently deliver engaging and effective presentations.
5. APPROACH TO PROBLEMS When confronted with complex, open-ended problems, be able to identify answerable questions, and select and evaluate suitable solutions through the application of multiple perspectives and disciplines.
6. CULTURAL AWARENESS Articulate the differences in experiences of the “great problem” for stakeholders essential to development and acceptance of the proposed solution.
7. VALUES: Describe your values and those of others as they relate to addressing the great problem.
By the end of this course you are required to demonstrate the ability to work effectively on a group project aimed at identifying, understanding, and proposing strategies for tackling a critical energy challenge. To do well in this course you will need to develop and display the above learning objectives.

Information on Readings and Required Course Materials

Required Course Textbook

2. Supplemental readings will be posted on the course myWPI page

B-Term Course Schedule

Session 1 (Friday, Jan 16) Course Overview and Introductions
  Video: [http://www.pbs.org/america-revealed/episode/3/](http://www.pbs.org/america-revealed/episode/3/)
  Assign: A1 Personal Energy Use Log
  Teams for Energy Source Types Project (details on myWPI)
  Course Wiki Page

Session 2 (Tuesday, Jan 20) Research Workshop with Class Librarian - *bring laptops!*
  Reading: Posted on myWPI
    ● *Team Writing* Chapter 1 and 2
  Wiki video [https://www.youtube.com/watch?v=-dnL00TdmLY](https://www.youtube.com/watch?v=-dnL00TdmLY)
  Assign: Energy Source (ES) Project
    A2 Research Notebook

*Session 3 (Friday, Jan 23) Sustainability in Action
  Reading: Posted on MyWPI
  Assign: A3 Energy Log Analysis and A4 Reflection
  Wiki Entry
  **A1: Personal Energy Log Due**

Session 4 (Tuesday Jan 27) Energy Source Presentations (with peer feedback)
  Reading: None
  Assign: A5 Energy Source Reflection
  **Energy Source Wiki Pages and Presentations Due**
  **A2: ES Research Notebook Entry Due**

Session 5 (Friday, Jan 30) Energy, Society, and Technology (EST)
  Reading: Posted on MyWPI
  Assign: A6 ES Essay
  Wiki Entry
  **A3: Energy Log Analysis (team) DUE**
A4: Energy Log Reflection (individual) DUE
Session 6 (Tuesday, Feb 3) Energy, Society, and Technology
Readings: posted on MyWPI
Assign: Energy Issues (EI) Project teams/topics
    A7 EI Research Notebook Entry
    Wiki Entry

A5: Energy Source Reflection Due

Session 7 (Friday Feb 6) Energy, Society, and Technology
Readings: posted on MyWPI
Assign: Wiki Entry

A6: Energy Society and Technology Essay Due

Session 8 (Tuesday Feb 10) Energy, Society, and Technology/Begin Energy Issues Presentations
Readings: posted on MyWPI
Assign: Wiki Entry
EI Wiki Entries/Presentations Due

Session 9 (Friday, Feb 13) Energy Issues Presentations
Readings: posted on myWPI
Assign: Wiki Entry
EI Wiki Entries/Presentations Due

Session 10 (Tuesday, Feb 17) Energy Issues Presentations (problems that exist and those that are caused by technology)
Readings: posted on myWPI
EI Wiki Entries/Presentations Due
A7: EI Research Notebook Entry Due

*Session 11(Friday, Feb 20) Team/Project Selection - Guest Speakers
Readings Posted on myWPI
Assign: PTW Project Proposal Presentations
    A8 PP Research Notebook Entry

Session 12 (Tuesday, Feb 24) Team/Project Selection - Guest Speakers
Readings: posted to myWPI

Session 13 (Friday, Feb 27) Project Work Day
A8: PP Research Notebook Entry Due

Session 14 (Tuesday, March 3) PTW Project Proposal Presentations

Written Proposal Due March 4th

D-Term Course Schedule
Session 1 (T 3-18)
Readings: *The Upcycle* (All)
**Assignment:** Upcycle Reflection paper

Session 2 (F 3-21)– Project Process p.68
**Assignment:** First Journal Entry of Research Notebook
First Entry DUE by end of day

Session 3 (T 3-25) Workday – Consult with each group
Readings: On myWPI
**Assignment:** Project Plan assignment p. 68
*The Upcycle* Reflection paper due.

Session 4 (F 3-28) Teamwork/group problem solving
**Assignment:**
2nd Research Notebook Entry DUE

Session 5 (T 4-1) Project Progress Presentation
**Assignment:** Revised Proposal Due. In addition to this, you should turn in a separate document that includes:
1. Problem statement including Proposed Solution
2. Group Presentation: *Each group will present an update on their research progress, any challenges they have encountered and questions they are exploring along with their problem statement, proposed solution, commentary on how their team is functioning*

Session 6 (F 4-4) Technology and Society Discussion
Readings: On myWPI
**Assignment:** Discussion Board
3rd Research Notebook Entry DUE

Session 7 (T 4-8) Solutions (assessment) Work on projects
Readings: on myWPI
**Assignment:** Discussion Board - *Post questions and responses before class*
4th Research Notebook Entry DUE

Session 8 (F 4-11) Project Progress Presentation
Readings: None
**Assignment:** Group Presentation: *Each group will present an update on their research progress, any challenges they have encountered and questions they are exploring along with their problem statement, proposed solution, commentary on how their team is functioning.*

Session 9 (T- 4-15) ATC Talk on Posters/Work on Projects
Readings: None.

Session 10 (F 4-18) *Work on Projects*
Readings: None
5th Research Notebook Entry DUE
(Draft poster DUE)

Session 11 (F 4-25) Present Draft Poster (Derren Away)
  Assignment: Present poster to class

  **Research Notebook Due**
  Session 12 (T 4-29) Poster Practice Session
  (T 4-29) Submit final poster to ATC by noon

Session 13 (F 5-02) Poster Session

Session 14 (T 5-6) Last day of class - Awards and feedback session
  **Final Project Report Due by 5pm**

**Teaching Methodology**

This course is hands-on and application oriented. By its design, you will have the opportunity to explore, clarify and strengthen your problem solving skills and group interpersonal dynamics. Please be aware that it is expected that you will experience a certain level of ambiguity and perhaps even a feeling of being overwhelmed at times in this Great Problem Seminar. We will explore things that will be unclear and unchartered. You will be expected to deal with the ambiguity and have the courage to explore different ideas without knowing the answers. This course will be presented through a combination of chapter materials, structured group discussions and activities, self-reflection assignments, and group presentations/projects.

Please be aware that it is strongly expected that each student will invest a minimum average of 12 hours per week engaged in outside work for this GPS course. This is consistent with the standard of working three (3) hours outside of class for every one (1) hour of classroom time. You will need to work in groups so you must make yourself available to your group members outside of the scheduled classroom time. To be successful in this GPS course, you must use effective time management tools and project planning tools.

**Grading Policy**

**Grading Summary D term**

1. 8 weekly assignments- 40% (5% each)
2. Energy Sources (ES) Project- 5%
3. Energy Issues (EI) Project- 10%
4. Blog- 10%
5. Wiki- 5%
6. PTW Project Proposal- 15%
7. PTW Project Proposal Presentation- 15%

**Grading Summary D term**
1. Poster and Presentations -35%
2. Research Notebook - 25%
3. Discussion boards (x3) - 15%
4. Final Written Report - 10%
5. ePortfolio - 5%
6. Revised Proposal - 5%
7. Proposed Solution - 5%

*Weekly Assignments:* These assignments will occur throughout the term. Although we may spend some time working or presenting results of the assignments in class, much of the work needed to complete each assignment will be expected outside of class. Assignments are typically an extension of class discussion or reading material that was covered recently.

*PTW Project Proposal:* This will be due at the end of A term and will consist of a statement of the problem your project group will seek to address, background research of the problem, and initial thoughts on few possible ways you might seek to address the problem as well as avenues for future research (the proposal is typically 9-11 pages in length). More info will be given about this once you begin working on it.

*PTW Project Proposal Presentation:* This will consist of a formal 10 minute group presentation wherein your group will introduce your proposed project to the class. More information will be given about this as we get closer to the due date.

*Attendance and Participation:* Your individual participation consists of your effort in the classroom and your effort in your group work outside of the classroom. We expect that you will be prepared for every class. At the beginning of each class session, we may start by asking someone to summarize parts of the readings or group assignments. With a reading, you should be able to outline the key points and offer your view. If you miss more than 1 class you will lose 5% of your final grade per each class missed.

*Blog:* You will be required to write at least four blog entries based on energy related activities that you will engage in outside of class time throughout the term. These entries must be spaced at least a week apart (so only one per week) and should describe the activity that you engaged in, why it is related to the course, and how it helped inform your understanding of the issues/ideas that arise in the class. You will also have to comment on at least four blog posts that your colleagues make throughout the term (again, spaced a week apart and each comment must be on different student blogs). You must choose at least one activity from each of these categories as a part of this:

- Go to an energy related talk on campus or in the Worcester community.
- Watch an energy related documentary/movie
- Read three short or two long form energy related articles from current news sources

Wiki: Each student will be responsible for researching and adding one topic to the class wiki and also acting as a reviewer for another topic (more specific information on this will be given in class)
SYLLABUS #2

FY1100 Great Problems Seminar: The World’s Water
Worcester Polytechnic Institute
Course Syllabus - A and B terms

1. Instructor Information

2. Information about Course Support Staff

3. Course Goals and Learning Objectives
We are in the midst of a global water crisis. The quantity of freshwater on earth is declining, and much of the freshwater that is available is threatened by pollution. With a changing climate and growing global population, the rising global demand for water has led to higher water costs. This has made the global water crisis an issue of affordability for some. Others lack access to water due to absent or failing water infrastructure due to poverty, mismanagement, and/or devastating wars. This class examines the depth and breadth of these water issues from technical, ethical, political, economic, social, and ecological perspectives. Understanding the diversity and complexity of water issues is the key to becoming effective engineers and effective global citizens of the 21st century.

In this class, students will work to accomplish the following:

a. Identify and critically analyze local, regional, and global water problems
b. Identify and analyze established and innovative water technologies
c. Identify and analyze different approaches to solving water problems via water governance, market-based solutions, and technological-based solutions.
d. Identify and critically analyze your own role as a water user, polluter, and sustainer; and examine your ability to make positive changes as an individual and as an engineer.
e. Identify and critically analyze the key stakeholders involved in water, including citizens, business owners, policy makers, non-profit organizations, scientists, plants, and animals.

Learning Objectives (Student Learning Outcomes)
While water is the content focus on this Great Problem Seminar, our learning objectives are as follows:

1. TEAM WORK: Collaborate effectively on a team
2. RESEARCH: Find a diversity of credible sources, assess their claims and relevance, and use them appropriately
3. WRITING: Produce clear, effective, evidence-based writing
4. PRESENTING: Prepare and confidently deliver engaging and effective presentations
5. APPROACH TO PROBLEMS: When working on complex, open-ended problems, be able to identify answerable questions, and select and evaluate suitable solutions through the application of multiple perspectives and disciplines.

6. CULTURAL AWARENESS: Articulate the differences in experiences of the “great problem” for various stakeholders. This is essential to the development and acceptance of the proposed solution.

7. VALUES: Describe your values and those of others as they relate to addressing the great problem.

4. Information on Readings and Required Course Materials

Required Course Textbooks

1. Wolfe, Joanna. 2010. Team Writing: a Guide to Working in Groups. Boston: Bedford/St. Martin’s. You can find this at the bookstore, on Amazon for $18 (used are cheaper), and it is available at the library on reserve.

2. The rest of the texts for the class will be available on our MyWPI page.

5. Teaching Methodology

This course is hands-on and application oriented. By its design, you will have the opportunity to explore, clarify, and strengthen your problem solving skills and group interpersonal dynamics. Please be aware that it is expected that you will experience a certain level of ambiguity and, perhaps, even a feeling of being overwhelmed at times in this Great Problem Seminar. You will be expected to deal with the ambiguity and explore different ideas without knowing the answers. This, according to poet and environmental activist Wendell Berry, is when we get real work done -- when we struggle to find answers. Challenges and frustration can lead to innovation and discovery.

This course will be presented through a combination of articles, structured group discussions and activities, self-reflection assignments, and group presentations and projects. Please be aware that it is strongly expected that each student will invest a minimum average of 12 hours per week engaged in outside work for this GPS course. This is consistent with the standard of working three hours outside of class for every one hour of classroom time. You will need to work in groups, so you must make yourself available to your group members outside of the scheduled classroom time. To be successful in this GPS course, you must use effective time management and planning tools.

6. Grading Summary

1. Controversial Water Use Essay (5%)
2. Personal Water Use Log Part and Analysis (10%)
3. Water Infrastructure Micro Project Presentation (10%)
4. Annotated Bibliographies for Three Projects (15%)
5. Two Peer Review Assignments (10%)
6. Water Problems Micro Project Presentation (15%)
7. Water Ethics Documentary Reflection (5%)
8. Problem Proposal Presentation (15%)
9. Problem Proposal (15%)

7. Course Schedule
The schedule is subject to change. Our MyWPI page will have the most up to date daily assignments, readings, and announcements. Students will submit assignments via MyWPI. The specific time and date each assignment is due will be noted on MyWPI under the “Daily Course Schedule”.

### Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings/Assignments DUE</th>
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<tbody>
<tr>
<td>Thurs 8/27</td>
<td>1. Course Introduction 2. Water security and Sustainability</td>
<td>None</td>
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<tr>
<td>Session 1: What is water security?</td>
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</table>
| Thurs 9/3  | 1. Students present Water Infrastructure Micro Projects in class 2. Water Sources and Ecosystems          | 1. Annotated Bibliographies from Water Infrastructure Project Due Wednesday, 9/2 by 11pm  
2. Water Infrastructure Micro Projects due in class.                                                                                                  |
| Session 2 & 3: Where does our water come from and where does it go?                                                                                       |
2. Controversial Water Use Essay due                                                                                                                     |
| Session 4: How do we use water, and why is water scarce?                                                                                                       |
| Mon 9/7   | No class                                                              | 1. Read Wolfe, 2010, Ch. 1,2, and 3 in Team Writing: a Guide to Working in Groups  
2. Team Charter, Task Schedule and Team manager Due Tuesday 9/8 by 11pm. Use instructions from chapters 1,2, and 3 to choose a team manager and to construct a team charter and task schedule. |
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<tr>
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<th>Session 5 &amp; 6: How do we use water, and why is water scarce?</th>
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</table>
| Mon 9/14 | 1. Water scarcity and climate change  
2. **Water Problems Micro Projects for ½ the class** |
| Thurs 9/17 | 1. Water, food, energy nexus  
2. **Water Problems Micro Projects for ½ the class** |

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<th>Session 7&amp;8: How do we use water, and why is water scarce?</th>
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| Mon 9/21 | 1. Water conflicts, ethics, and environmental justice  
2. Ethical case study in class |
| Thurs 9/24 | 1. Water pollution and Environmental justice  
2. Visit to Coe’s Pond |

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<tr>
<th></th>
<th>Session 9&amp;10: How is water managed?</th>
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| Mon 9/28 | Water equity and water governance  
Readings TBA (will be posted on MyWPI) |
| Thurs 10/1 | 1. Group Project Selection  
2. Diagramming successful project proposals  
3. Visit from project sponsors  
Read and evaluate previous problem proposal (will be posted on MyWPI) |

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<th>Sessions 11&amp;12: Group Project Selection and Work Day</th>
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| Mon 10/5 | 1. Library Session  
2. Work Day |
| Thurs 10/8 | 1. Problem Proposal first draft due Friday, 10/9, at 11pm.  
2. Annotated bibliographies for Problem proposal first draft due Friday, 10/9, by 11:59pm. |
Sessions 13&14: Work Day and Project Problem Proposal Presentations

| Mon 10/12 | 1. Peer Discussion of Problem Proposal Peer Reviews  
2. Group Discussion of Problem Proposal Peer Reviews |
|-----------|-----------------------------------------------------|
|           | 1. Peer review due Sunday, 10/11, by 11pm  
2. Wolfe, 2010, Ch. 6 Revising with Others, in Team Writing: a Guide to Working in Groups |

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<thead>
<tr>
<th>Thurs 10/15</th>
<th>Project Problem Proposal Presentations</th>
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|            | 1. Project Proposal Presentations due in class.  
2. Project Proposals due Friday, 10/16, by 11pm. |

**B Term**

<table>
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<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings/Assignments DUE</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Sessions 1&amp;2: Introduction to B term &amp; Market and Policy Based Solutions to Water Problems</td>
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</table>
| Tues 10/27 | 1) Introduction to B Term  
2) Go over assignments due  
3) Market based solutions to water problems | None |
| Fri 10/30 | 1) Policy solutions to water problems  
2) Project goals and objectives (SMART goals)  
3) Workshop on Interviews | 

**Interview Contact Assignment PART 1 due Thursday,10/29, by 11pm:** List of three potential interview participants, with a rationale of why an interview with them will benefit your project. Speculate about how they might help you think about the problem or potential solutions? SPONSORS DO NOT COUNT. Post list and rationale to MyWPI.

**Problem and Goal Statement Assignment due Thursday 10/29 by 11pm**

**Second Interview Contact Assignment PART 2:** Based on our feedback, send an introductory email to two people your group would like to interview. You must cc Prof. Stoddard and Rosbach on the emails in order to get credit for the assignment. Send by 11pm on Friday, 10/30. A sample email has been posted to “Course Resources” on our MyWPI page.

Sessions 3&4: Technology Presentations, Data collection and Analysis

<table>
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<tr>
<th>Tues 11/3</th>
<th>Technology and Policy Solutions Presentations</th>
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<tbody>
<tr>
<td></td>
<td>Research Notebook Entry #1 due Sunday, 11/1, by 11pm</td>
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<tr>
<td></td>
<td>Technology and Policy Solutions Presentations due in class</td>
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<p>| Fri 11/6 | |</p>
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<th>Sessions 5&amp;6: Project Progress and Team Conflict</th>
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<td><strong>Tues 11/10</strong></td>
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<td><strong>Fri 11/13</strong></td>
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<th>Sessions 7&amp;8: Ethics in research and progress presentations</th>
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<td><strong>Tues 11/17</strong></td>
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<td><strong>Fri 11/20</strong></td>
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<th>Sessions 9&amp;10: Poster Design and Revised Report sections</th>
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<td><strong>Tues 11/24</strong></td>
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### Sessions 11&12: Working and Drafting Poster

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<tr>
<th>Fri 11/27</th>
<th>No class!</th>
<th>None</th>
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### Tues 12/1

Project Work Day

### Fri 12/4

Present Draft Poster

### Sessions 13&14: Mock Poster Presentations

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<tr>
<th>Tues 12/8</th>
<th>Work Day</th>
<th>Tuesday, 12/9 submit final poster to ATC. Your poster should be in PowerPoint, and it should be saved to a thumb drive/USB and delivered to the main office at Fuller Labs. You must drop off the USB in person before 12pm. The ATC staff will review the poster with you before you go.</th>
</tr>
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<tbody>
<tr>
<td>Fri 12/11</td>
<td>Mock Poster Presentations</td>
<td>Prepare for Mock Poster Presentation</td>
</tr>
</tbody>
</table>

### Poster Day, Session 15, and Final Report Due

<table>
<thead>
<tr>
<th>Mon 12/14</th>
<th>Poster Day</th>
<th>Poster Day</th>
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<tbody>
<tr>
<td>Tue 12/15</td>
<td>1) Last day of class: awards and feedback session</td>
<td>Work on Final Report</td>
</tr>
<tr>
<td>Fri 12/17</td>
<td><strong>Final Project Report due by 11:59pm</strong></td>
<td><strong>Final Project Report due by 11:59pm</strong></td>
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</tbody>
</table>
Assignment Examples

#1 Energy Sources project and Research Notebook Assignments

For this assignment you have been split up into teams. Each team will research one of the types of energy on the list below (your group number corresponds to the number next to the energy type) and then you will share what you learn with your classmates in a short (5 minute) presentation. You will also submit a written response to the research questions as a team. In addition to this you will also create and turn in an individually produced research notebook entry. All of this will be due on Tuesday January 26th (which will also be the day that you present your work to others in the class). You will need to find at least two legitimate sources (at least one from each category of legitimate sources listed below) PER PERSON in your group; these will be included with your written response for the WIKI and will help inform your knowledge of the energy type that you have been assigned.

You will turn in a hardcopy of the assignment on the 26th (both the team written essay and the individual research notebook).

Legitimate sources include the following:
1. Scholarly Journal Articles
2. Books
3. Technical or professional reports
4. Government/University/Professional Association websites

Research questions to be answered both in writing and when in presentation:

1. Where is this energy source produced (both where geographically, in general and where is the majority of it produced)?
2. How is this energy extracted, manufactured, and/or produced?
3. How is it used?
4. What percentage of the total energy used in the U.S. comes from this source?
5. What percentage of the total energy used in the world comes from it?
6. What are its advantages (economic, social, environmental, and/or political)?
7. What are some of the drawbacks in using this energy source (are there, identifiable economic, environmental, social, and/or political impacts that are negative- if yes to any of these, what are some of these negative impacts)?

Instructions for the written portion of this assignment:
1. Your responses to the questions should take the form of a short essay.
2. You should make sure that your team’s answers to the questions are written in a uniform style.
3. You should make sure that you have edited your response, that it is grammatically correct and free of spelling errors.
4. All citations should be done in APA style.
5. You should be sure to cite (in text) anything that you use directly from your sources or that you paraphrase.
6. Your bibliography should include all references used in gathering your information.
7. When complete, you should create a WIKI entry for this on our WIKI and upload your text/citations to that page.

Guidelines for the Research Notebook entry:

Overview of Research Notebook

Scientists commonly use research notebooks to record, organize and analyze information and data. For this part of the assignment you will create the first entry to your course research notebook. Your first entry will consist of 3 sections: Research Log, Reading Notes, and Research Reflection.

1) Research log: Record your weekly research activities. Include the date, time, and details about the activity. Primarily this will include what type of information you were looking for, what search terms you used, where you were looking, and what you found. For example, Google Scholar, Science Direct, WPI Library, etc.

2) Reading notes: Provide a citation for each of the sources you read in APA format. Summarize each article.
   - You must summarize at least 1 articles from peer reviewed scholarly journals
   - You must summarize at least 1 technical or professional report, or “legitimate” newspaper, magazine, or website. We will discuss in class what constitutes a “legitimate” source. If in doubt, ask your PLAs, Professors, or class Librarian.

3) Research Reflection: Reflect on your research activities to explain why did you do what you did, and what you accomplished.
   1. What questions led you to these sources and which were answered?
   2. How did your research activities shape your understanding of the issue you are interested in?
   3. In what ways is the information you read related to your topic?
   4. What did you learn that was new, surprising, or contradicted your previous thoughts or knowledge?
   5. What new questions were raised?

Energy Source Types by Team Number:

Team 1: Biomass/Biofuels/biogas
Team 2: Hydropower (Including Wave and Tidal)
Team 3: Wind (onshore and offshore)
Team 4: Solar (passive and photovoltaic)
Team 5: Storage
Team 6: Nuclear
Team 7: Natural Gas
Team 8: Oil
Team 9: Coal
Assigned: Week 4/14, given 1.5 weeks to complete

Goals of this assignment:
1) To continue to build research, teamwork, and presentation skills.
2) To become knowledgeable about some of the most significant, contemporary issues surrounding water scarcity, use, and pollution.

Instructions
For this assignment you will be placed on a team of three or four students (we will have six teams total). You will then, as a team, choose a first, second, and third choice topic from the list below.
In this project, you and your team will:
1) Define, explain, and discuss the particular water issue that your team is focused on.
2) Discuss the context in which this problem exists. For example:
   a. Where does this problem exist? Is it a local, regional, or global water problem?
   b. Who or what is causing this issue?
3) Who does this problem impact? Consider both humans and nonhumans (plants, animals).
4) Discuss at least 3 of the following dimensions of the problem: technological, social, economic, and environmental.
5) Discuss how this problem is connected to at least one of the root causes of sustainability (see MyWPI resources page for access to the sustainability videos from the first day of class).
6) Conclusion: identify 1-2 potential solutions. You will not analyze these solutions this point. This will be your focus in B term.
7) Present your problem analysis to the class in an exciting and captivating 8-minute presentation.

Student Teams
Your teams will be posted to MyWPI on September 3.

Topics and Due Dates
Three teams will present on the following topics on Monday, 9/14
1) Ocean acidification (some of the focus should be on the impacts to humans and nonhumans)
2) Drought in California (some of the focus should be on the impacts on agriculture and fish loss)
3) Sea level rise (some of the focus should be on the impacts for global cities, see:
Three teams will present on the following topics on Thursday, 9/17

1) Dams (some of the focus should be on mass relocation and pollution)
2) Agricultural water pollution (some of the focus should be on large scale industrial livestock production and/or crop production in developed countries)
3) Industrial water pollution (some of the focus should be on health impacts in less developed countries)

Presentation Requirements

1) Length of Presentation and Number of Slides
   - The presentation should be 8 minutes long (2 minutes per team member). Presentations that are significantly shorter will have points deducted. Presentations that are longer will be stopped and points will be deducted. **Practice, practice, practice.** Presentations that have not been practiced at least once are ALWAYS disjointed, poorly timed, and have clearly not been practiced. Don’t make this mistake.
   - You must have at least 7 slides and no more than 12 slides in your presentation. The general rule in good presentations is no more than one slide per minute.
   - Your slides should be primarily images and graphics. It should not be all words (makes presentations boring).

2) Presentation Components
   - Your presentation must have the following components
     i. Introduction: walk us through, in brief bullet points, what you are going to talk about.
     ii. Define and Describe the problem: Discuss the context in which this problem exists. Where does this problem exist? Is it a local, regional, or global water problem? Who or what is causing this issue? Discuss at least three of the following dimensions of the problem: technological, social, economic, and environmental.
     iii. Identify the stakeholders in the case: Who does this problem impact? Consider both human and nonhuman (plants, animals). Are particular groups of people more affected by this water problem than others (e.g. low income, ethnic minorities, certain genders or ages, etc.)? Does anyone benefit from this problem?
     iv. Discuss how this problem is connected to at least one of the root causes of sustainability (see MyWPI resources page for access to the sustainability videos from the first day of class).
     v. Conclusion: identify 1-2 potential solutions. **You will not analyze these solutions this point. This will be your focus in B term.**
     vi. References: at least 12 (3 per team member); APA Style

3) Presentation Style
   - Be persuasive! Use clear reason and evidence to explain the problem and make your case. These are problems that currently impact people’s and animals lives! Help us to see what life is like from their point of view.
   - Try to discuss the issue with us, instead of reading off of cards. However, if you feel most comfortable reading off of cards, make sure to read with a lively voice and make eye contact.
• YOU MUST practice your presentation as a group at least once before your presentation. We are here to learn from you. Give yourselves and us the respect of doing a great job presenting your problem and pleading your case on issues that impact people’s lives from around the world.

4) Sources
• You must have at least 12 different reliable sources: 3 sources per team member (for what are reliable sources, refer to your notes from the library tutorial).
• These sources must be listed on the last page of your presentation. They must be cited properly. Please use the APA style. For image sources, please provide links only.

5) Work must be Shared Equally by Group Members
• Divide tasks and follow the task schedule
• Make time to work together as a group
• Make time to practice at least once together

Questions
• Contact your professors any time via email with questions or concerns: eastodard@wpi.edu and drosbach@wpi.edu
• Make an appointment to meet with your professors during office hours or by appointment.

Presentation Rubric

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Needs Substantial Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness</td>
<td>Required Components</td>
<td>Missing one required component</td>
<td>Missing two required components</td>
<td>Missing three or more required components</td>
</tr>
<tr>
<td></td>
<td>• All six presentation components are covered</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Sources</td>
<td>• There are at least 3 cited sources in the presentation PER TEAM MEMBER</td>
<td>• Missing one source</td>
<td>• Missing two sources</td>
<td>• Missing three or more sources</td>
</tr>
<tr>
<td></td>
<td>• Sources are cited properly</td>
<td>• Some citation errors; moderate need for editing</td>
<td>• Citation errors distract readers; significant need for editing</td>
<td>• Citation errors interfere with readability</td>
</tr>
<tr>
<td>Group Presentation</td>
<td>• There are between 7 and 12 slides</td>
<td>• There are 6 or 13 slides</td>
<td>• There are 5 or 14 slides</td>
<td>• There are 4 or 15 slides</td>
</tr>
<tr>
<td>Style</td>
<td>• Slides are primarily images and graphics, not words</td>
<td>• Slides have equal amounts of graphics and words</td>
<td>• Slides have more words than graphics</td>
<td>• Slides are primarily words</td>
</tr>
<tr>
<td></td>
<td>• Group presents information with smooth transitions</td>
<td>• Group transitions generally well, a few stumbles; still</td>
<td>• Group transitions are distracting;</td>
<td>• Group presentation and transitions</td>
</tr>
</tbody>
</table>
from one team member to the next
- Presentation seems well practiced

able to follow case study
- Presentation seems moderately practiced, but still a little bit rough

hard to follow case study
- Presentation seems barely practiced and quite rough

are disjointed; difficult to impossible to follow case study
- Presentation seems unpracticed and is disjointed

<table>
<thead>
<tr>
<th>Individual Presentation Style</th>
<th>Ideas and Content</th>
</tr>
</thead>
</table>
| ● Presenter discusses case with us in a clear and compelling manner. OR if presenter is using cards, she or he reads in a clear and lively voice and makes eye contact during natural pauses
● Presenter presents for at about 2 minutes | ● Ideas and themes are generally clear and straight-forward
● Ideas are well elaborated
● Details are effective, specific, and relevant |
| ● Presenter is generally clear, but could be more compelling and lively
● Presenter makes moderate eye contact, but tends to look at cards
● Presenter presents for 1 or 3 minutes | ● Ideas and themes are generally clear and straight-forward
● Ideas and details usually effective, specific, and relevant but may be limited in depth |
| ● Presenter is often unclear, and lacks a compelling presentation style
● Presenter only makes eye contact occasionally
● Presenter presents for less than 1 minute or for 4 minutes | ● Ideas and themes are vague
● Ideas are thinly developed; details, when provided, may be irrelevant, unfocused, or too general |

Comments and Grade:

C

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#3 Land Use Change Assignment
FY1100 Biosphere, Atmosphere, and Human Fears
Learning Outcomes: research, writing, presenting, team work, cultural awareness
Assigned week 1 of 14 and given 1 week to complete

This assignment involves conducting research on a location, the land changes occurring at that location, and a species of interest in/near that location. This assignment will have 2 components: an individual component where each student completes their own, unique work, and a group component where group members work together to complete one product.

Individual Component: Annotated Bibliography
It is expected that you use scholarly sources of information to research your topic, and you must cite your sources. You will need to find and annotate at least three (3) legitimate sources PER PERSON in your group. You must use APA citation format and you must BE CONSISTENT when citing sources. The Research Librarian will come to class and provide assistance but you are STRONGLY ENCOURAGED to meet with or contact her for this and future assignments.
Legitimate sources include the following:
1. Scholarly Journal Articles
2. Books
3. Government/University/Professional Association websites
4. Popular press such as newspapers or magazines

Guidelines for annotated bibliography:
1. Proper Article Citation: At the top of each entry, you should cite the article according to proper APA style.
2. Annotation: The annotation should be given in paragraph form and should do three things. First, it should summarize the main point or argument that the source offers (and briefly discuss the support offered for it). Second it should assess/evaluate the source (How useful/important do you think the source is? Is it biased? How strong is the evidence presented for the main point? Does it seem objective or biased?). Finally, you should say something about how this source does or would fit in to a research project on the topic you have chosen- in what way is it helpful? Does it lend support to your own view of the topic? Does it challenge or change your view? How and why?
For further instructions/information on writing annotated bibliographies (including examples) take a look at http://owl.english.purdue.edu/owl/resource/614/01/

Group Component: You will submit a written response to the research questions as a group (one response per team) and then you will share what you learn with your classmates through a class presentation. Each group will have about 5 minutes to highlight some of their most interesting findings.
Instructions for the written portion of this assignment:

1. Your responses to the questions should take the form of a short essay.
2. You should make sure that your team’s answers to the questions are written in a uniform style.
3. You should make sure that you have edited your response, that it is grammatically correct and free of spelling errors.
4. All citations should be done in APA style.
5. You should cite (in text) anything that you use directly from your sources or that you paraphrase.
6. Your bibliography should include all references used in gathering your information.
7. In addition to your regular bibliography, each individual must turn in an annotated bibliography (that is the individual component of the assignment).

Instructions: Using an Internet browser, go to http://changematters.esri.com and click on the Viewer tab. Now you will see three images next to one another. Enter the location of your site and compare the images from 1975 to 2010. You can see what land uses are represented by the different thumbnails in the Legend under the first two images. Also, under the right image you can click on how to interpret a change image.

Hint: Don’t try to study all of the two images at one time. Choose one small geographic area to look at, and compare it with the same area in the more current image. Then choose another area and continue to compare.

Assignment Questions:
1. Provide some basic information about the location. For example: Where is it located? How many people live there? What is the biological/environmental significance of your general location? You need to cite your sources.
2. How would you quantify changes in land cover between the time periods? Give a specific methodology to do this.
3. What are the top two land cover types? What uses might be associated with the dominant land cover types? Which land cover/land use types have increased? Which have decreased?
4. Predict how and why land use/land cover will change in the future at this location.
5. List and explain 3 potential causes of the land use/land cover change at this location.
6. List and explain 3 specific ecological effects or problems associated with the land use/land cover change in this location. What data would we need to investigate these specific ecological effects?
7. Based on previous readings or other sources, explain how 2 solutions could be used to mitigate land change in your location.
8. With the species we gave you, research how the change in land cover in the area may be affecting that species. Explain.
#4 Ethnic Markets Food Budget Assignment

FY1100 Food Sustainability
Part A
Assigned week 2.
Time to complete: 1 week
70 pts.

**Purpose:** By the end of the assignment you will know several people in the class, a bit more about Worcester and you will have a broader awareness of the constraints on food choices imposed by budgets, geographic location and cultural preferences, as well as the impact on nutrition. (Plus you might have a greater appreciation for whomever it was in your family that did the shopping and meal prep in your household!)

**Learning Outcomes Involved:** Teamwork, Problem solving, cultural awareness, nutrition

**Part 1: 40 pts**
You have been divided into groups and assigned 2 amounts of money, either $80 and $100, or $80 and $150. Each group has also been assigned a local market. Go to your assigned market and determine what you would buy to feed a family of four for a week if you only had $80. Then decide what you would do differently if you could spend the larger amount of money (either $100 or $150 depending on your group). Assume your cupboards and fridge are empty. You must buy *everything* they are going to eat or drink (except water) for that entire week and you may spend no more than the amounts of money that you were assigned. **Your primary consideration is to keep your family from being hungry;** this means meeting the caloric needs of the family for the week. Do the best you can to include a variety of foods; an all ice cream diet is not acceptable.

1. Make a list of each item that you would buy, the amount and the price. Try to keep this on one page.

2. You also need to calculate for both shopping lists (the $80 and greater amount) using either labels or your other resources, the totals for the number of calories and % calories from each category: fat, protein and carbohydrates. Create a summary table that compares the daily per person averages of these for both the lesser and greater amounts of money. Only turn in the summary table! Use the layout below:

<table>
<thead>
<tr>
<th></th>
<th>$80 Budget</th>
<th>Bigger Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cal/person</td>
<td>% Calories</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td></td>
<td></td>
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<tr>
<td>Protein</td>
<td></td>
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<tr>
<td>Fat</td>
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<tr>
<td>Total</td>
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<td></td>
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</tbody>
</table>

3. Be prepared to give this information to the class on Thursday, September 12.

4. Write a one page (max) description of the process, answering the following questions.
   1. How did you decide what to select?
   2. How well did you do in meeting the family’s caloric needs? How nutritious is this diet?
   3. What effect did the larger budget have on the nutritional value of the foods you selected?
Grading for Part 1:
Items that will be turned in (40 pts): NOTE: One per group!
1. List (10 pts): Food items should total required amount of money. It should be clear how many of each item would have been purchased. There should be a reasonable variety of food items.
2. Table of total per person average calories, calories and % calories from fat, protein and carbohydrates for each diet:
   Layout (5 pts): 5 columns, appearance, labels
   Content (10 pts): required nutrients listed, all data present
3. Description (15 pts): Questions answered clearly, appropriate mechanics, demonstration of some creativity in approach to solving the problem

Part B:
You will be using the book What I Eat by Menzel and D’Aluisia (on reserve at the library). This book has pictures and short descriptions of one day’s food intake of individuals around the world. There is also an associated website but it has only a few of the individuals in the book. For your country (assigned in class) compare the diets of two individuals. Many of you have only two people representing that country; others have more. For those of you with more, select the two most different (and be prepared to tell us why these were the most different).

The caloric intake is listed for each individual. Please break down the total calories into amount and % of calories in each of the following categories: protein, carbohydrate and fat, as you did above. Put the overall calories, and the calories and % calories from fat, carbs and protein for both individuals into a single table, modifying the layout on the previous page appropriately. Add a column with the adult RDA in terms of % calories that will allow comparisons.

Answer the following questions about each of these diets.
1. Does the diet follow USDA guidelines for total calories and for the major categories of foods (fat, protein, carbohydrate)? If not, where and how does it differ?
2. Is this individual in danger of being malnourished if this diet is truly representative of her/his daily intake? Justify your answer. Note that malnourished describes both excessive intake of nutrients as well as deficiencies in nutrients.

In comparing the two diets:
3. Can you identify any differences in life circumstances that might play a big role in the types and amounts of food eaten by your two individuals? Please describe what these differences in circumstances might be and hypothesize why they have the impact you suspect.

Grading for Part 2: 30 total points. Note: One per group
1. Table: Layout (5 pts): appearance, labels
   Content (10 pts): required nutrients listed, all data present, RDAs present
2. Answers to questions – fully explained. 5 pts each.
#5 Peer Review Assignment: Annotated Bibliography
The World’s Water
GPS: A 2015

Assigned: Week 8/14, given 0.5 weeks to complete, finish completion in class

Instructions
Email your annotated bibliography to your assigned partner. Review your partner’s annotated bibliography based on the criteria below.

Goal of the Assignment

The goal of this assignment is to help you practice evaluating the quality of research practices. This annotated bibliography will be reviewed by us, your professors, as well as by one of your peers. The goal of the peer review is to get you all used to providing productive feedback to your peers and for you to develop your skills as editors. This is a skill you will need when writing your proposal and major report together for your term project.

Review Criteria

Use these criteria to comment on your partners Annotated bibliography. Make note of what aspects of the assignment are done well and what aspects could be done more effectively.

1. Research Activities: Are the research activities described in enough detail that you could follow the instructions and get the same results? Is the logic clear as to why certain sources were chosen and others were discarded?

2. Citations: Are the citations properly cited in APA format? Is at least one source from a peer reviewed scholarly journal or academic book?

3. Annotations:
   a.) Does the summary of the article identify the authors main point or main argument? Does the summary facts and information from the source?
   b.) Did the student evaluate the evidence provided by the author? Did the student evaluate the source for its credibility (Currency, Reliability/Evidence, Authority, Potential bias)?
   c.) Is it clear how the source relates to the research topic?
#6 Project Proposal Peer Review

The World’s Water
GPS: A 2015

Assigned: Week 13/14, given 0.5 weeks to complete, finish completion in class

Goal of the Assignment
The goal of this assignment is to help you
1) practice evaluating the quality of evidence based writing,
2) for you to continue developing your skills as editors, and
3) to identify what was done well and what needs work in other team’s writing in order to identify similar issues in your own report.

Instructions
Download your partner’s team’s project proposal from your group site on MyWPI. Review the proposal based on the criteria below. Submit your comments to the “10-11 Peer Review of Proposal” assignment and email it to your individual partner (see the table on MyWPI).

Review Criteria
Use these criteria to comment on the proposal. Make note of what aspects of the assignment are done well and what aspects could be done more effectively.

There are different types of comments one can give as an editor. One can give EVALUATIVE comments (e.g. "I like this first paragraph"; "You did a really good job describing the problem"; "the writing is really good"; "I didn't like the part where you talk about stakeholders) or one can give DESCRIPTIVE comments ("I was confused in the first paragraph"; "After reading your account of the problem, I don't feel convinced that it's that big of a problem"; “One suggestion would be to discuss how the problem specifically impacts people’s lives”). Descriptive comments are more effective in pointing out parts that need revision. Evaluative comments--both positive and negative--tend not to contribute much to a writer's specific sense of what to do. So, do your best to give your partner as many descriptive comments as possible.

Introduction
1. Does the introduction summarize the problem by clearly identifying what the problem is, where it is taking place, and why it is important?
2. Do they indicate what we can expect to read in the rest of the paper, similar to the way you introduce your presentations?
3. Are you convinced that this is indeed a serious problem that needs to be addressed?

Define and Describe the problem
4. Is it clear exactly what the problem is and where it exists? Are other examples provided from places where this problem has been studied more thoroughly and is better understood? (For example, runoff and pollution from Higher Ground Farm has not yet been studied but the problem of agricultural pollution and runoff at other farms is well documented. These other studies provide information that can help better understand Higher Ground Farm’s situation.)
5. Is the context of the problem well established, including the history of the place or type of problem, the people involved, the technology, land use or human behaviors that are causing the problem.
6. Are the following dimensions addressed: social, economic, technical, and environmental?

Stakeholders
7. Are the stakeholders identified?
8. Are the impacts on stakeholders explained? Including who may be impacted more or who may benefit from current conditions?

Two Concepts
9. Are two concepts from different categories defined and used accurately? Was the concept used in a way that helped you better understand the problem?

Conclusion
10. Does the conclusion clearly and concisely summarize the problem?
11. Is a primary cause of the problem identified and explained?

Citations
12. Are the facts and claims about the problem and stakeholders backed up with properly cited evidence?
#7 Contact assignment
Power the World
D term 2015

Individual Part
1. Strategically choose and contact at one organization that could give you information about your project topic. List the name of the organization and your contact’s information. Give a brief description of why and how you chose this contact.

2. Generate and provide several questions that will help you understand the problem you are attempting to address. Make an appointment to ask these questions on the phone, through Skype (or similar media), or in person (preferred method) that works both for the organization and your other team members.

Team Part
1. Take detailed notes about the answers you get as well as any questions that arise as a result of your conversation.

2. Write up a short summary of the information gained from the interview and a reflection. In the reflection answers these questions:
   - What did you learn from the interview?
   - How does what you learned affect your project?
   - How does it reshape or refocus the project?
   - What areas for further research did the interview give you?
#8 Written Project Report

Written Project Report  **Format:** 15 - 25 pages double spaced, 12 pt. Times New Roman font, 1” margins.

**Title Page:** This includes: title of the report, your names, date, course name and institutional affiliation. Also, indicate the format you use (e.g., APA format) and follow it consistently throughout the report.

**Project Summary:** The summary begins with introductory material including the problem or issues your project addresses, your project goal, objectives, and approach to problem. The bulk of this section should be Findings, Conclusions, and Recommendations.

**Problem Statement:** State the problem your project addresses. Provide the primary question that guides your research about the problem.

**Background:** This section should clearly describe the problem and the underlying causes of the problem. It should be fully referenced (that means that every statement of fact should have a citation associated with it. No making stuff up, or producing broad proclamations with no evidence to support them.)

**Methodology:** Short section that describes your problem solving approach. Did you collect and analyze data, design a prototype, compare previous studies etc.?

**Proposed Solution(s):** Here is where you state your proposed solutions to the problem (at least two). You need to fully address how the solution you chose will either remove the underlying cause, or ameliorate the effects of the problem (and why it is better than the one you decided to reject). Again, statements of fact need citations.

**Results/Mechanism for Implementation:** In this section you will need to provide the details of how the solution would be implemented. You should be as specific as possible. Try and address issues such as much will it cost, who will do the work, what barriers might be encountered.

**Assessment Plans:** Explain how success will be determined. Who, how, when, what? These all need to be addressed.

**Conclusion/Summary:** One or two paragraphs, recapping the problem, solution, and measures of success.

**Ethical Considerations:** You were tasked with identifying a particular problem and proposing a potential solution. While doing so, what ethical considerations guided your choices? Write a short reflection about the ethical issues of both the problem you identified and potential impacts of your solution. Will your solution favor some people over other? Were there potential negative outcomes that you attempted to avoid?

**Statement of Learning:** Summarize the key learning obtained while working on this project and connections between your project and coursework. This is not just content knowledge, but rather what
you learned about yourself and your capacity to do quality work (i.e. dealing with ambiguity, working as a team, identifying goals and objectives, time management, critical thinking, dealing with conflict, leadership etc.

**Citations:** As many as necessary and should include a good balance between the differing types of legitimate sources. Be consistent in the formatting that you identified on the title page.

**Appendices:** Any supporting evidence that you produced (data, charts or designs) and are referenced in your report