IDIS 160: Science, Technology, & Society: 
WHAT ON EARTH!? Scientific Reasoning and the Environment

Catalog Description
An interdisciplinary course which examines the models of research, the development of science and technology, and the application and subsequent impact of the developments on society and the environment.

Course Description
One might say that the main goal of science is the expansion of knowledge, whereas technology is geared toward the useful application of that knowledge. This course introduces students to the philosophy and practice of scientific reasoning, covering some of the ways in which science has led to advances in the understanding of matter, motion, energy, and of the dynamic nature of the Earth and its atmosphere. The course will also examine the development of a variety of technologies, all in the context of how these technological advances are based upon science and how they have influenced the development of human civilization.

The interaction of humans with the Earth will be considered in a variety of ways. Students will examine the science and technology associated with energy production and consumption, and the impacts of technology on the long-term sustainability of the life support systems necessary for human societies. Students will study and discuss topics related to the Earth’s material cycles, pollution of the air and water, energy policy, soil depletion, deforestation, as well as other issues.

Class Meetings
Tuesday & Thursday: 3:30 – 4:45, Room 208 Gunter Hall (occasionally class may meet in another location, to be announced ahead of time)

Instructor
Dr. Matthew E. Ramspott; meramspott@frostburg.edu
Office: 207 Gunter Hall; 301-687-4412. Department Office (Gale Yutzy): 301-687-4369

Office Hours
• Monday & Wednesday 10:00-11:00 AM; Tuesday & Thursday 9:00-10:30 AM
• Other times are available by appointment, or usually whenever my door is open!

Required Text

Other Materials
You will also need a calculator.

Course Logistics
This course is designed to give students a variety of means to access the subject matter. Concepts and ideas will be presented and explored through lectures, class discussions, out-of-class readings, in-class videos, web activities, demonstrations, hands-on activities, and occasional field trips.

NOTE: The schedule will be followed as closely as possible, but some specific activities and assignments may change during the course of the semester. Please consult Blackboard frequently for announcements and updates about the course.

Course Web Page
My faculty web page, http://faculty.frostburg.edu/geog/meramspott/, contains a link for IDIS 160 which connects to a variety of web-based materials relevant to your study of Science & Technology. I will refer to this web page occasionally throughout the semester to direct you to materials of interest.

I will also maintain a Blackboard page for IDIS 160; look there for postings of exam study guides, exam grades, and important class announcements.
Collaboration & Group Discussions
A considerable component of the course will consist of group work and group/class discussions. Respectful collaboration and discussion is one important cornerstone of the scientific enterprise. Maintaining an atmosphere of respect for others, even when their opinions differ from yours, is crucial. By listening to how others voice their thoughts and opinions, you will be better able to understand and articulate your own.

Course Grading
Your grade in the course will consist of exams, assignments and activities, and a group research project.

Exams: Three exams will be taken during the semester. The exam format will consist of multiple choice, matching, essay, problem solving, and short answer questions. The exams will cover material from class lectures and discussions, activities & assignments, and reading assignments. Each exam is worth 80 points.

Assignments and Activities: You will complete various assignments and activities during the semester. Activities will be completed during class time, meaning that you must be present to participate and receive credit! There will be no make-ups of missed activities! Assignments will need to be completed outside of class. They will be distributed during lecture and turned in at a later date. You will be given ample notice of due dates for class assignments. The total point value for assignments and activities is 100 points.

Team Research Project: You will be responsible for the completion and presentation of a team research project. The project will focus on an area of science and technology covered in the course and its impact on society and the environment. Final choice of topics is subject to the approval of the instructor. At the appropriate time, guidelines will be distributed concerning choice of a topic, establishment of groups, and the requirements and timeline for completion of this project. All team members will be expected to participate in the preparation of a written report and in preparation and delivery of a PowerPoint presentation of the team’s findings. The total point value for this assignment is 100 points: 60 total points for the written report and 40 points for the presentation. The same score for the project will normally be assigned to all members of a group. However, unsatisfactory participation in the group effort (as measured partly by peer evaluation at the completion of the project) may result in a deduction from your personal score for the project up to the full value of the project (100 points).

Deadlines: You will be expected to adhere to the deadlines for all Assignments and project work. Late Assignments will not be accepted. Team Project components that are turned in late will be docked 20% per day late. The Final Team Project Report will be docked 10% per day late. Team presentations must take place during the scheduled final exam period. NOTE: your team cannot receive credit for the presentation unless you have turned in a finished report!

Class Participation: You are expected to attend every class and participate in all class discussions and group activities. You are granted two absences without penalty, after which any unexcused class absences will result in a deduction of four (4) points per absence. Additionally, you are penalized for unexcused class absences in that you will not be able to make up any Activities that you miss.

Grading Scale
Distribution of Points:       Letter Grade Assignment:
Exam 1                       A   (90% - 100%)  396 – 440 points
Exam 2                       B   (80% - 89%)   352 – 395 points
Exam 3                       C   (70% - 79%)   308 – 351 points
Activities & Assignments    D   (60% - 69%)   264 – 307 points
Team Research Project        F   (<60%)       <264 points
-----------------------------------------------
Total                         440 Points

Grades of NC, CS, or I are not available in this course.
Extra credit is NOT available in this course.
Make-Up Exams
Absolutely NO MAKE-UP EXAMS will be given. If an exam is missed, the student MUST present a verifiable (through the Student and Education Services Office, x4311) and valid excuse (medical or family emergency) to the instructor by the end of the third (3rd) working day after the scheduled exam date. If a valid/verifiable excuse is provided, the weight of that test will be assigned to the final exam without penalty. Warning: Brady Health Center DOES NOT issue excuses.

Procedures for University Closings
If the University postpones or cancels classes because of the weather or other reason, material scheduled for that day will be covered in the next scheduled class meeting. If class is canceled on a day with a scheduled exam, the exam will be given on the next scheduled class lecture meeting.

Policy on Attendance
Regular attendance will reflect on your ability to perform well on the exams and get the most out class assignments and activities. If you regularly miss class, your success in the course is extremely unlikely. Ultimately, the responsibility for learning the information and skills required to succeed rests with the student. Chronic absence does not relieve you of this responsibility. Attendance will be taken during each lecture period. Please see the above section on Course Grading for an explanation of how attendance and class participation will affect your grade. Students arriving late assume responsibility for verifying attendance with the instructor.

Policy on Disruptive Behavior
Disruptive behavior is defined as behavior that interferes with the learning environment of your fellow students. Disruptive students will be ejected from the class at the discretion of the instructor, according to University policy. Chronic interruptions or tardiness will be considered disruptive behavior.

Cell phones and similar communication devices MUST be SWITCHED OFF during class! Please be considerate in your adherence to this policy! I will be forced to regard repeated interruptions as flagrantly disruptive behavior.

Policy on Academic Dishonesty
Academic dishonesty includes any form of cheating or plagiarism. The University policy on this matter, which can be found in the Pathfinder, is very clear and very unforgiving.

I will adhere to a zero-tolerance policy regarding cheating or plagiarism. Faculty members in the Department of Geography may refer cases of intentional plagiarism to the Judicial Board. The Board has the authority to impose sanctions as severe as expulsion.
<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Assignment/Activity</th>
<th>Team Project Deadlines</th>
<th>Reading Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-Jan</td>
<td>T Science, Technology, &amp; Pseudoscience</td>
<td></td>
<td></td>
<td>Ch. 1</td>
</tr>
<tr>
<td>29-Jan</td>
<td>T Practice Science: Measurements, Units, &amp; Formulas</td>
<td>In-Class Activity</td>
<td></td>
<td>Ch 1; Appendix A</td>
</tr>
<tr>
<td>3-Feb</td>
<td>T Science of Motion: Aristotle, Galileo, and Newton</td>
<td>Web Assignment: Galileo</td>
<td></td>
<td>Ch 2</td>
</tr>
<tr>
<td>5-Feb</td>
<td>T Newtonian Physics &amp; Applications</td>
<td></td>
<td></td>
<td>Ch 2</td>
</tr>
<tr>
<td>10-Feb</td>
<td>T The Science of Matter &amp; Energy</td>
<td></td>
<td></td>
<td>Ch 3; Online: <em>What's Eating America</em></td>
</tr>
<tr>
<td>12-Feb</td>
<td>T The Science of Life; Technology of Food</td>
<td>In-Class Activity</td>
<td></td>
<td>Ch 20; Ch 23; Online: <em>The Good Earth</em></td>
</tr>
<tr>
<td>17-Feb</td>
<td>T Video -- World in the Balance: China Revs Up</td>
<td>China Video Questions</td>
<td></td>
<td>Ch 22</td>
</tr>
<tr>
<td>19-Feb</td>
<td>T Environment &amp; China</td>
<td></td>
<td></td>
<td>Ch 23</td>
</tr>
<tr>
<td>24-Feb</td>
<td>T Demographic Transition; Population Pyramids</td>
<td>Project Handout</td>
<td></td>
<td>Ch 23; Handout: <em>The Persian Chessboard</em></td>
</tr>
<tr>
<td>26-Feb</td>
<td>Th Catch-up &amp; Review; Library Basics</td>
<td></td>
<td></td>
<td>Ch 22</td>
</tr>
<tr>
<td>3-Mar</td>
<td>T Exam 1</td>
<td></td>
<td></td>
<td>Ch 6</td>
</tr>
<tr>
<td>5-Mar</td>
<td>Th Understanding Electricity &amp; Magnetism</td>
<td>Web Assignment: PPRP</td>
<td></td>
<td>Ch 23</td>
</tr>
<tr>
<td>10-Mar</td>
<td>T The History &amp; Geography of Energy and Electricity</td>
<td>In-Class Activity</td>
<td>Project Prospectus Due</td>
<td>Handout: <em>Infinite Needs</em></td>
</tr>
<tr>
<td>12-Mar</td>
<td>Th Video -- Alaska Pipeline</td>
<td>Alaska Video Questions</td>
<td></td>
<td>Ch 12</td>
</tr>
<tr>
<td>17-Mar</td>
<td>T NO CLASS: SPRING BREAK!</td>
<td></td>
<td></td>
<td>Ch 11</td>
</tr>
<tr>
<td>19-Mar</td>
<td>Th</td>
<td></td>
<td></td>
<td>Ch 12</td>
</tr>
<tr>
<td>24-Mar</td>
<td>T Heat &amp; Temperature; Thermodynamics</td>
<td></td>
<td></td>
<td>Ch 10; Ch 18</td>
</tr>
<tr>
<td>26-Mar</td>
<td>Th Energy Production &amp; Consumption; Earth Materials</td>
<td></td>
<td></td>
<td>Ch 3; Ch 15; Handout: McNeill</td>
</tr>
<tr>
<td>31-Mar</td>
<td>T Earth’s Changing Atmosphere; Material Cycles</td>
<td>Michael Holdren questions</td>
<td>Outline Due</td>
<td>Ch 23; Ch 17; Online: Michael Holdren</td>
</tr>
<tr>
<td>2-Apr</td>
<td>Th Water, Water Everywhere</td>
<td></td>
<td></td>
<td>Ch 10; Ch 18</td>
</tr>
<tr>
<td>7-Apr</td>
<td>T Atomic Energy: The Nuclear Option</td>
<td></td>
<td></td>
<td>Ch 11</td>
</tr>
<tr>
<td>9-Apr</td>
<td>T Exam 2</td>
<td></td>
<td></td>
<td>Ch 3, 4, and 6</td>
</tr>
<tr>
<td>14-Apr</td>
<td>T Renewable Energy Options</td>
<td>Work on Team Projects!</td>
<td></td>
<td>Ch 6</td>
</tr>
<tr>
<td>16-Apr</td>
<td>T Meet Independently with your Team</td>
<td>In-Class Activity</td>
<td>Report First Draft Due</td>
<td></td>
</tr>
<tr>
<td>21-Apr</td>
<td>T Analyzing Renewable Energy Data (Pullen 107)</td>
<td></td>
<td>Feedback on Report Draft</td>
<td></td>
</tr>
<tr>
<td>23-Apr</td>
<td>T AES Warrior Run field trip: 2PM to 5PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28-Apr</td>
<td>T Warrior Run Trip Recap, Energy Discussion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-Apr</td>
<td>T Warnings from Past Civilizations</td>
<td>Jared Diamond questions</td>
<td></td>
<td>Online: Jared Diamond</td>
</tr>
<tr>
<td>5-May</td>
<td>T Looking Towards Sustainable Societies</td>
<td></td>
<td>Final Report Due</td>
<td></td>
</tr>
<tr>
<td>15-May</td>
<td>T Exam Period: 11:15 - 1:45 – Team Project Presentations</td>
<td>Presentations Due</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


*NOTE: Read the assigned material BEFORE the indicated class period; information will be given in class about which specific textbook sections on which to focus

*This schedule is subject to change. Ample notice will be given when changes occur.

*The last day to withdraw with a "W" is Friday, March 27
Course Objectives
To gain an appreciation of science and technology and their impact on society and the environment

Learning Outcomes:
Upon completion of this course, a student should be able to:

• Use the interdisciplinary nature of science and technology in solving contemporary problems
• Apply the scientific method to solve problems
• Distinguish the difference between science and technology and their interaction
• Discuss the impact of science and technology on society
• Demonstrate the major concepts of science behind technological innovations
• Discuss a current issue involving science and technology

Course content will:
• Develop the concept of science
• Develop the concept of technology vs. science
• Introduce the basic concept of energy
• Introduce the basic concept of matter
• Introduce the basic concept of matter and energy interactions/reactions
• Introduce the basic concept of living matter
• Introduce the basic concept of the environment

This course will address current issues in science, technology, and society. The course will address the following premises:
• Issues expanding on the clear relationship between science and technology
• Issues about the relationship between science and technology that are international in scope, influence, or impact
• Inclusion of hands-on activities, assignments, projects, etc. that emphasize scientific inquiry
• Topics that reflect current issues and, particularly, have relevance to students’ lives