

**Science, Technology and Society course on Solar Energy**  
**Syllabus**  
**Spring 2010**

*Note: The Instructor reserves the right to update this syllabus. If he does so, he will post the changed syllabus to Course Information on Blackboard and will notify you via email of the changes.*

**Instructor Information**

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**Course Description:** This online course is meant to serve as an upper level in-depth study of the use of solar energy in our global society. I predict that, in the future, people will look back at the first decade of the 21<sup>st</sup> century as a time when Web 2.0 (social computing) played a key role in the transformation of consciousness to support global sustainability.

Studying the role of solar energy in our society is a challenge. Important advancements in solar energy adoption will not be confined to the past but will be occurring as we are studying the subject. By actively using Google Alerts, Google Sites, YouTube, Blackboard, Twitter, and other newly emerging social media to explore what is happening around the world, we will hope to rapidly build our collective knowledge base about solar energy.

**Learning Outcomes**

- Students will have a good grasp of how existing solar energy technologies work.
- Students will be cognizant of current R&D in the field and cutting edge technologies.
- Students will become aware of the interaction between public policy and the economic options that drive the development and adoption of solar energy.
- Students will develop a better understanding of how they can leverage their expertise with solar energy to prepare for careers in the field of their choice.
- Students will feel comfortable using some of the latest social media (Multi-agent simulations, Google Alerts, Google Search, You Tube, Blackboard, Twitter and other Internet applications) to understand and participate in the global dialogue about solar energy.
- Students will begin to hone their ability to do research around the world and will develop the ability to deal with the immense amount of video and text information that is available.
- Students will be able to work in online teams.

## About the Instructor

William Abbott Foster, PhD has worked at the intersection of information technology and governance for 25 years. He is a Research Fellow with the University of Arizona's Research Institute for Solar Energy (<http://www.AzRISE.org>). He has a Bachelors degree in Religion with a minor in Economics from Williams College in Massachusetts. He has a PhD in Management from the University of Arizona and a minor in Chinese studies. His dissertation on the *Diffusion of the Internet in China* was published by CISAC at Stanford University in 2001. His books and articles are available at <http://www.FosterandBrahm.com>. He has been interviewed on NPR and quoted in the New York Times, the Arizona Republic, the Washington Post and other print media. His research team, the MOSAIC Group (<http://MOSAIC.UNOmaha.edu/gdi.html>) has studied Internet diffusion in 40 countries. The members of the MOSAIC Group are known as the “Sociologists of the Internet”.

## Course D2L Site

There will be a D2L. It includes course documents (such as this syllabus (available under course documents)), a course grade book, PDFs of articles to read, links to sites with information relating to course concepts and topics, and discussion areas.

## Required Course Textbook

- Miriam Horn and Fred Krupp, *Earth, the Sequel: The Race to Reinvent Energy and Stop Global Warming*, Norton, 2008.

Required reports and book chapters (available as .PDF files on Blackboard under Course Documents)

- G. N. Tiwari, “Introduction,” *Solar Energy Technology Advances*, Nova Science Publishers, 2005. It is recommended that engineering students read the whole book. Available as [TiwariIntroduction.pdf](#)
- Larry Copenhaver, “Going Solar & Beyond,” *BizTucson*, Summer 2009. available as [Copenhaver.pdf](#).
- *Greater Tucson Solar Development Plan: Strategies for Sustainable Power Development in the Tucson Region*, Jan. 2009. available at <http://www.pagnet.org/documents/solar/SolarDevPlan2009-01.pdf>
- Lon Huber, *The Solar Investment: A Financial Analysis of Residential Photovoltaic Systems in Arizona*. Available at <http://www.azrise.org/sites/azrise.org/files/The%20Solar%20Investment.pdf>
- Thomas L. Friedman, “Can Red China Become Green China?”, *Hot, Flat, and Crowded, Why we need a Green Revolution – And How it Can Renew America*, Farrar, Straus, and Girou, 2008. available as [Friedman.pdf](#).
- IPCC , 4th Assessment, 2007, summary for policymakers, available at [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf)

## Graded Work

### *Discussion Board*

You are expected to actively participate on the class discussion board. The weeks when a discussion question is due, I will create on Sunday a forum and assign a reading and or video for that week.

I will ask a specific question for you to address on the discussion board. I will also email you the reading assignment and the question. By Thursday, I would like you to provide a substantive response to the question. You should point the class to at least one website, video, book or article quote that backs up your answer. You will have until Sat. midnight to post a minimum of two responses to your classmates posts.

I will assign a maximum of 15 points to your participation in each forum.

1. You will get **5 points** for participating.
2. You will get up to **5 points** for the quality of your response.
3. You will get **1 point** for posting your first post by Thursday. I don't want to see you wait until Saturday to make your first post to the discussion board. If you post by Thursday, your classmates will have time to respond to your posts.
4. You will get up to **2 points** for your responses to two of your classmates posts.
5. You will get up to **2 points** for your links to other sources these can be:
  - A link to a website or video. Please provide the URL. Also, give the class a brief explanation of why they should view the video or site. Plus, if you think that only parts of a video are relevant, let us know the minutes we should fast forward to.
  - You can provide a link to a video or site that one of your classmates posted. Please provide the name of the classmate who first posted it and give your comments. I think it really improves discussion if the class collectively view the same videos.
  - Quote from either the book or the chapter assigned for the week or from any other chapter or book.

You will be able to check the points assigned on your grade book on Blackboard.

### **Country or Continent Teams**

I will break the class into groups of three. Each group will be responsible for building the class knowledge base through the class Wiki and Twitter accounts. If you have any preference on which geographic area you want to focus on, please say so during the first discussion forum (Introductions).

I envision teams for:

- USA
- Europe
- Asia
- Australia
- Africa
- Middle East
- South America

### ***Twitter***

You will create an account on Twitter if you don't already have one. Go to <http://www.Twitter.com> and click on sign-up button.

I have set up a Twitter account for the class. Once you have created your Twitter account please choose to follow the class Twitter Account.

When you find something that you think the class or the instructor will find interesting send a Tweet to @STSCClass. If I find it relevant I will forward the Tweet to the STSCClass Twitter account so that everyone in the class will view it.

To keep me from being overloaded, please do not send more than five Tweets to @STSCClass a day.

Remember you have only 144 characters to explain why Tweet is important for the instructor and the class to view. This is quite a valuable skill.

I will divide the class into teams to follow what is happening with solar in different parts of the world. Twitter has a feature that allows you to get all Tweets that mention certain words. For example if you are following the Internet in Africa you would want to enter the Tweet: "Follow Africa + Solar" and you will receive all Tweets mentioning Solar and Africa. Clearly you want to narrow your focus to get a rich feed without being overloaded.

As you use Tweet you will find Tweeters (people on Twitter) who are worth following. Some people will want to follow you. Use your judgment as to whether you want them to follow you.

The instructor is still learning about Twitter, so this will be a learning experience for all of us.

### ***Wiki Project and Diary***

The class will design a wiki for what is happening around the world with Solar Energy. The class will be broken up into teams that will take responsibility for building the wiki for one continent. You will also contribute to the section on solar energy technologies and economics.

The wiki site is <http://sites.google.com/site/STSCourse>

Things you might want to use your wiki to cover what is happening in your designated area regarding:

- Technology advances
- Policy initiatives regarding solar
- Concerns about Global Warming
- Big Projects
- Links to Conferences
- Links to lists of Manufacturers and Installers
- Which solar technologies are “hot”
- Jobs (career opportunities)
- Videos
- Tweeters that are worth following.
- Anything that you find relevant.

As a way of scoping the project, I am interested in a minimum of 3500 words of text and at least 30 links. You can create multiple pages on the wiki.

The Wiki can be viewed but not edited by the world. Be careful about copying material from other sites in violation of copyright law.

You are encouraged to integrate self-generated videos into your site.

You will use the format of Wikipedia, including their citations format.

You are also encouraged to take what you are learning and post it to Wikipedia and see whether it “sticks.”

You will keep a daily journal of your experience with the group and the whole group project. You will submit the diary through Safe Assignment. This diary will be between about 500 or more words. It can be in the form of an essay or a more traditional diary.

You will receive 200 points for the Wiki and Daily Journal. Team members may receive different scores based on contributions. I will receive automatic reports from Google of who did what to the Wiki. I will keep track of who is participating on each team.

I want each team to work on the wiki throughout the whole semester and will take points off for groups who do not do anything until the last week of class.

To learn how to use Google Sites you will be required to set up a personal wiki site using Google sites the first week of class. Go to <http://sites.google.com/>

It would be great if you would include a picture and a 1 page bio so that the instructor can have more of a better idea of who you are.

If you have privacy concerns you can delete your website after it has been graded.

## Mid-Term

There will be a mid-term that will cover the concepts introduced to the class.

## Grading

As the following table suggests, all of the work in the course is important because all of it is designed to help you achieve the general learning goals.

Assignment	Points
Personal Website	15
Blackboard Discussions (15 points per forum)	210
Mid-term	100
Group Wiki and Diary	200
Classroom Participation on Twitter	25
Total	550

Discussion Forum: Introduction Personal Google Site website		
Introduction to Solar Technologies – Photovoltaic The evolution of the industry. Is thin film the answer?	Reading and Videos along with discussion question Posted	
Introduction to Solar – Thermal. Solar towers vs. solar troughs.		
Introduction to Storage Government funding to promote R&D in storage.		
The Economics of Residential Solar adoption in Arizona		
Utilities and Solar (case study of TEP) The Smart Grid and Solar.		
Will solar create manufacturing jobs in the US? (a case study of the manufacturers in Tucson.) Include a site visit to a manufacturer		
On-line Mid-term		

Feed and Tariffs in Germany		
The Cap and Trade legislation in the US Congress. What will be the impact of this legislation on solar energy adoption if passed?		
Copenhagen and addressing global climate change		
Will China go Green?		
How to promote solar energy in Africa? Is aid counterproductive?		
Can a Green Revolution renew America?		
Wiki due		
Diary due	No discussion question	
No Final Exam		