

**CEE 176F/276F: China Energy Systems**  
**WINTER QUARTER 2012**  
**SYLLABUS & ASSIGNED READINGS**  
**Tuesdays 4:15-5:30 pm | ROOM: TBD**  
**Cultural & Guest Lecture Section (Thursdays 4:15-5:30 pm) | ROOM: TBD**

## 1. WELCOME TO CLASS

CEE 176F/276F is a weekly seminar on energy issues in China, worth one unit. In addition, there will be a field trip to China over spring break, with limited space. Anyone may take the seminar art of the class, but the trip is limited to 24 students only. Trip participants will earn a second unit. A second discussion section will be required for students attending the field trip, which is open to all students in the class, but optional for those not attending the trip.

## 2. CLASS REQUIREMENTS

Students are expected to attend class, complete all readings, and participate in discussion. Each week one or two small groups will give a presentation on a selected topic, lead discussion and complete a brief information sheet.

In addition, students who will be taking the spring break trip will complete a short written assignment near the end of the quarter, a 1-2 page summary of one of our site visits on the trip, and give a presentation in one Thursday section. These summaries will be collected into a booklet for students to take on the trip in order to make the most of our visits. Students are also expected to participate in a post-trip presentation seminar summarizing our trip, open to the Stanford community.

### 2.1. *Reading and Participation [100 points]*

Each week we will meet to discuss readings organized around a focus area in Chinese energy issues. The first week will be an overview of the class and trip, led by Karl Knapp and Lucy Yueming Qiu. The second meeting will be an introduction to Chinese Energy Policy, regulatory and decision-making organizations and hierarchy, long and short-term goals, progress, and outlook. For the third and all subsequent meetings, teams of students will be in charge of leading discussion.

There are TWO publications that we will use that can be purchased online or from the bookstore.

Michael J. Economides, Xina Xie; ***Energy: China's Choke Point***, Energy Tribune Publishing Inc.; ISBN: 0578037556

Worldwatch Report #182: ***Renewable Energy and Energy Efficiency in China: Current Status and Prospects for 2020***; Ed. Lisa Mastny; ISBN: 978-1-878071-95-8

Further details of the outside readings for each week will be provided in a separate document.

The class will be conducted as a discussion-based seminar. Students are expected to **complete the required readings before class, submit a question regarding the readings in advance by Sunday 11:59 pm through Coursework Dropbox**, and arrive prepared to discuss the day's topic. Supplemental readings (optional, but highly recommended) can help orient students for discussion. The more you put into this class, the more you and your fellow students

will get out of it. Class participation counts for 100 points of the final grade. We will take attendance.

## **2.2. Current Events [100 points]**

In a society that is changing as quickly as China is, keeping up-to-date on the latest news is a valuable habit. Students are asked to post **2 articles or news items** to the China Energy Systems blog during the quarter. Students are to provide a 50-150 word summary before the full articles. This is NOT limited to your topic; students may make a posting on anything related to energy, the environment, governance, etc. The 2 articles count for 100 points of the final grade.

## **2.3. Leading Discussions [600 points]**

Each student will be assigned to teams to lead one class session. Small teams will **present on a selected topic for 15-20 minutes** and then lead a 20 minute **discussion on key questions related to that topic** [400 points]. Teams are expected to send the instructor their presentation slides by Sunday 11:59 PM and will meet with the instructor before the day of class to review their presentation topic and plan the discussion. Given the number of students taking the class, there will likely be more than one group presenting each week. Students are responsible for coordinating to ensure that topics do not overlap.

At the beginning of student group's presentation, the TA will handout the information sheet and also a feedback/grading form to each audience student. Each audience student will grade the presentation and information sheet, as well as to provide some feedback on how the information sheet can be improved. At the end of each class, each audience student should return their feedback/grading form to the TA. Each student group shall resubmit their revised information sheet by Friday of the same week as their presentation. In addition to the grading from the audience, the member within each group will grade each other. The TA will send out an online survey form to each group after their presentation for them to grade their group member.

Each team will be responsible for producing a **2-page information sheet** that covers the key points about their topic [200 points]. The information sheet should be sent to the instructor by Sunday 11:59 PM. The TA will post the information sheet to Coursework, and print them to hand out to the class. The information sheets will be compiled into a briefing booklet to use a future reference and on the trip. The presentation, discussion lead and information sheet count for 600 points of the final grade.

Your presentation should cover the most salient points about your topic. What is the critical information that one should know? What is the story that you want to tell about this particular aspect of energy in China? The presentation should orient the class to the key features of the topic and the implications of its production and use for China, other countries, and the environment.

Weeks 3-6 are largely focused on energy resources, while Weeks 7-10 are focused on end-uses, so presentations should be adjusted accordingly. The key issues each group should cover in their presentations and information sheets include:

**Energy Resources**

Oil, Natural Gas, Coal, Hydro, Nuclear, Biomass, Solar, Wind

Scale:

- (1) Production and usage;
- (2) China's world ranking;
- (3) Percentage of world;
- (4) Compared to U.S.

Trends:

- (1) Historical situation & context;
- (2) Current patterns of growth/depletion;
- (3) Forecasts

Key facts:

- Where is(are) the resource(s) located?
- What is its availability? Is China an importer, exporter, or neither?
- What are the costs of extraction/utilization? How has China's capacity to extract/utilize the resource changed, and is it expected to grow or shrink?
- Who are the major producers? (e.g. companies or government entities)
- If applicable, what is the system for transport and delivery?
- What are the social, economic and environmental impacts of extracting and using the resource?
- What are the main end uses? How does it compare to other competing energy options?
- Regulation: Who regulates or controls the resource?
- Has the government set any policy or regulatory goals?
- Politics: are there domestic or international implications related to the resource and its utilization?
- What are the unique issues China faces?

**Sectors & End Uses**

Electric power, Industrial, Residential/Commercial, Urbanization, Transportation, Energy Efficiency

Scale:

- (1) Scale
- (2) China's ranking
- (3) Percent of world
- (4) Compared to US

Trends:

- (1) Historical trends & context
- (2) Forecasts

Key facts:

- How is energy used in this sector? i.e. what energy services are demanded and provided?
- What are the drivers of demand? (e.g. economic growth, urbanization, changing consumption patterns, etc.)
- Where are the major centers of demand?
- What are the economic costs? What about social and environmental costs?
- What major companies are involved? (state-owned enterprises, private companies, multinationals, etc.)
- What is the current state of technology? Are alternatives available?
- What government entities are responsible for regulating this sector?
- Has China set any policy or regulatory goals for the resource or its utilization?
- Are there any political issues (domestic or international) that affect how energy is used?
- What are the unique issues China faces?

## **2.4 China Field Trip Requirements**

Please note that the students who attend the trip are graded separately from those will not attend the trip.

### **2.4.1 Trip Briefings (required for those going on the trip) [500 points]**

Before visiting sites in the field, students responsible for the corresponding topic will give a brief introduction to the site and how it ties into China's energy situation (during one Thursday section, tentatively scheduled on March 8<sup>th</sup>, 2012). After the class tours the site, the students will lead a follow-up presentation & discussion about the visit that will be open to the public during a campus-wide China Energy System Trip Review, to be held in late April, 2012 (approximately 2 weeks after we return) . The pre-trip introduction counts for 200 points and post-trip discussion count for 300 points of the final grade.

### **2.4.2. Thursday Section Attendance (required for those going on the trip) [100 points]**

Students going on the trip should attend the Thursday section, though it is open to all. Sections will include guest lectures by experts on related topics and prepare students for site visits in March, as well as addressing many cultural aspects of our visit to China. There are 6 or 7 Thursday sections in total through out the quarter. Section participation will count for 100 points of the final grade.

### 3. TRIP DETAILS

Application: If you are interested in attending the Spring break trip, please complete the trip application form by **midnight on Thursday, January 12**. We will make decisions in the beginning of the second week of the quarter, and will announce them by email. Please use the Coursework Drop Box function to submit your application.

Costs: Trip costs should fall in the neighborhood of \$5,000 to \$6,000; Jane Woodward's company, MAP, will subsidize the trip so that student costs are limited to no more than \$2,000. Students accepted on the trip will need to bring a non-refundable \$500 deposit check to the second week (Tuesday) of class in order to hold their spots.

Travel: We will leave San Francisco at 10:58 AM on Friday, March 23 (UA-889), flying direct to Beijing. If you have a final exam that day you must reschedule it in advance of the trip. We will return from Hong Kong and arrive in San Francisco at 9:08 AM on Tuesday, April 3 (UA-862). We will be purchasing group travel insurance, but students are responsible for getting travel vaccinations and personal medication individually—be sure to get an early start as travel clinics book up quickly. Also, we will apply for Chinese visas as a group. Each student will need to complete a visa application form and hold a valid passport with at least 2 empty pages.

Itinerary: The details of the itinerary are still in planning stages, but we will definitely be spending several days in the areas of Beijing, Shanghai and the Three Gorges Dam in Yichang. In addition, we are considering a visit to at least one other region. Along the way, we will be meeting with energy officials in the central government, representatives of the state oil company (Petro China), solar manufacturers, wind turbine manufacturers and non-governmental organizations in the energy and environment field. Our site visits are not fully arranged yet but are likely to include hydropower dams, coal-fired power plants, oil & natural gas infrastructure, renewable energy sites, and industrial energy consumers. Each day will be long and filled with travel, but the trip will be rewarding.

**4. CLASS SCHEDULE**

| <b>DATE</b> | <b>TOPICS</b>   | <b>TRIP DUE DATES</b>   | <b>DATE</b> | <b>SECTION (Order may Change)</b>   |
|-------------|---|---|-------------|---|
| 1/10        | Class overview and course logistics (Karl Knapp and Lucy Yueming Qiu).<br>Introduction to Energy in China | Trip application due midnight on Thursday, January 12; participation decisions made by instructor, notification via email | 1/12        |   |
| 1/17        | National Energy & Environmental Policy & Outlook  | \$500 deposit due   | 1/19        | Guest speaker: Prof Leonard Ortolano from the Department of Civil and Environmental Engineering |
| 1/24        | Oil and Natural Gas   | Visa application due  | 1/26        | Chinese culture presentation; Networking dinner to meet with students from previous trips       |
| 1/31        | Coal and Electric Power   |   | 2/2         | Guest speaker: Prof Xuegang Zhou from Sociology Department                                      |
| 2/7         | Hydroelectric & Nuclear Power   |   | 2/9         |   |
| 2/14        | Non-hydro Renewable Energy  | Balance of payments due (up to \$1,500)   | 2/16        | Guest speaker: Gang He, Chinese coal expert from Program on Energy and Sustainable Development  |
| 2/21        | Industrial Energy Use and Industrial Energy Efficiency  |   | 2/23        |   |
| 2/28        | Residential/Commercial Energy Use and Building Energy Efficiency  |   | 3/1         | Guest speaker: Anthony Suen from Natural Resource Defense Council                               |
| 3/6         | Transportation and Clean Vehicle Technology   |   | 3/8         | Group presentations of the trip participants: trip briefings                                    |
| 3/13        | Urbanization and Eco-cities; Rural Energy   |   | 3/15        |   |
|             |   |   | 3/23        | Leave for Beijing   |

Please direct questions about class requirements or trip details to Lucy Yueming Qiu ([yuemingq@stanford.edu](mailto:yuemingq@stanford.edu)) or Karl Knapp ([karl@maproyalty.com](mailto:karl@maproyalty.com)). Jane Woodward will be available during class time.