ENGR 1623/2623 Engineering for a Better Environment: Brazil (EB²)

EB² investigates renewable energy sources through exploration of Brazil’s utilization of sustainable and clean power. The course is preparatory to a 11-day capstone study abroad field experience July 26th – August 08th in Brazil. The field experience will provide students with the opportunity to engage in dialogue with Brazilian leaders in sustainable energy development as well as experience Brazil through a variety of cultural and historical activities.

COURSE DESCRIPTION
Renewable energy utilization in Brazil will be explored from a variety of perspectives: technology, history, politics, economics, contemporary culture and demographics, sustainability issues, and energy-technology trends. Through classroom discussion and research exercises, the student will learn to frame contemporary energy production and utilization issues in societal and global contexts and demonstrate mastery of the issues through written and oral communication.

The course is presented in preparation for the EB² field trip, ensuring that students have the requisite preparation to learn from the guest speakers and site-visits while in Brazil. Each week, guest speakers will address topics intended to provide the necessary background for the trip. The presentations will serve as the basis for comparative discussion and analysis. Topics will include: history and politics, economics, contemporary culture and demographics, and sustainability issues and energy-technology trends.

INSTRUCTOR
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ALL THINGS TRAVEL AND INTERNATIONAL
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MEETINGS
Place and date, TBA
Note detailed syllabus for dates where there are no class meetings

Conference Access: With prior permission, students may participate in individual class by conference call.

REQUIRED READING
Approximately $28 (hardback) or $12 (ebook) at most bookstores (BN.com, Amazon.com, etc.)
PROGRAM OUTLINE AND EVALUATION

The program and evaluation of student performance is based on three components: I) Pre-departure (65%), II) Study abroad trip (20%) and III) Post-trip (15%). These components are described below:

I) PRE-DEPARTURE (65%)
There are six components for grading and eight pre-departure sessions of the course (attendance at each of the eight sessions is required, including your active participation). The six components are:

a) Mandatory attendance/Website (5%). Dr. Abad will create the course’s blog (e.g. http://engr1623.blogspot.com/) for both the ENGR1623 and ENGR2623. Students will create individual blogs to share family members, friends and the public in general with access to the student activities while they are on the study abroad trip. You will need to set up your blog before the departure. Please send the link of your blog in an email to Dr. Abad (jabad@pitt.edu). Due: TBA

b) Self-Introduction (5%). Prepare a single PowerPoint slide that provides a snapshot of who you are. This will be shared in class. Include your name, institution/department, field of study, an ‘ice breaker’ of some sort, a cultural faux pas you (may) have committed in the past and respond to the question “why am I taking this course?”. Due: in class TBA

Current Events Report (10%). Due: TBA (Please send your report to Dr. Abad, jabad@pitt.edu). Each student will individually identify a recent (published after July 1, 2013) article (or related series of articles) from a mainstream press outlet (no internet-only venues) focusing on some aspect of sustainable energy. Each student will prepare a brief (no more than 2000 words) critical report (may be in support of or against the premise of the article selected) based on the selected article. The report should begin with a synopsis of the article itself (so that Dr. Abad doesn’t need to read the entire article in every case) and the cited article must be appended to the report. Extra points for good use of The Powers That Be by Scott L. Montgomery. Extra points for a Brazil connection. Examples of appropriate articles are:


- “In Brazil, the wind is blowing in a new era of renewable energy”, The Washington Post, October 30, 2013.

- “Renewables hit a wall in South America”, New York Times, October 25, 2011,

c) Book Report (15%). Due: TBA
Each student will individually prepare a book report on The Powers That Be by Scott L. Montgomery. Each report will select one or two appropriate hypotheses put forth by the author and discuss how these are defended (or negated) in the book. The report will likely also include a brief summary of the book in order to introduce the focused topic of the report. The submission should not exceed approximately 3000 words.

d) Group Project (15%) Due: in class TBA
Student teams will assess the viability of sustainable energy from various sources. The sources considered will be those of Chapters 4 through 12 of The Powers That Be. Thus, the book report assignment should provide the initial basis for this project. Groups will formulate a debate topic related to their assigned Chapters and divide into two, taking both for and against sides. Each group will make a brief (absolutely no more than 10 minutes) ‘background presentation’, providing an overview of their topic and culminating in a statement of the debate topic selected. Each ‘side’ will then take no more than 5 minutes to introduce their side of the debate topic. Then the debate (fun) begins. The entire class will be involved and may pick and change sides as the debate progresses. The ‘winner’ is the side having the most adherents at the end of the debate. No additional grades for winning; this is just a moral victory.
The debate topic should be based on The Powers That Be (since all have read this). It is suggested that each group prepare a few reflective questions in order to initiate the debate. A report of this exercise, focusing on insights developed during the debate will be due one week following the in-class debate. This report should not exceed 2000 words.

e) Pre-trip Company Report and Presentation (15%). Due: TBA
Student teams will prepare a brief report describing the companies that will host site visits in Brazil. Each report will include key information about the company such as:

- key business lines and technologies
- position within Brazilian industry
- renewable energy methods utilized
- challenges facing the company in the short term (5 years) and long term (10+ years)
- questions about sustainability
- how technology and business in Brazil compares to USA

This report will consist of no more than two pages (after the study abroad trip, you will continue to work on this report) and a brief (15 minutes) power point presentation to be made in class. The Power Point presentation should be 10-minutes long plus 5 minutes for questions. A copy of the presentation will be posted to the ENGR1623’s blog.

II) TWO WEEKS STUDY ABROAD EXPERIENCE (20%) July 26 to August 8, 2015.
There are two components evaluated as part of the Study Abroad Trip:

a) Individual Journal (10%). Due: TBA
During the two-week in-country component of the course, each student is responsible for keeping a daily professional journal of their reflections on various professional issues and concerns that are encountered during the trip. We expect the average daily entry to be at least 250 words in length. We expect that each entry will discuss the daily experiences, and describe what each student did and saw; however, this is also a professional journal. This means that each entry must include not only descriptive comments about what you saw or did, but it should make connections between the daily experiences and how they help in your development as an engineering and everything should be linked to energy sustainability. Your journal should be updated daily (if web access is available). Bring digital or standard cameras to document your trip and include photos with your journal if possible. At the end of each day go back and reflect on what you wrote for each day of the trip and continue to update your journal. We have found that the time goes by very fast during the trip, and students do not always have time to completely finish each day’s journal during the trip; thus, you have until August 29 to reflect on each day and edit/modify/complete your journal.

b) Participation (10%).
Professional activities: Each student is expected to attend each and every planned event, including the sightseeing trips, the company visits and the lectures at the local universities; be on or ahead of schedule for all events; participate in all work activities; and be actively engaged in asking questions of lecturers and speakers. The professors will maintain participation records. Student groups are encouraged to share their thoughts with others groups and with each other.

Personal activities: We understand that each student is an adult and as such has the right to spend his or her free time in the country as he or she wishes. However, all students must also understand that while they are on the site visits and also while they are on their own time, they are representing the University of Pittsburgh. Thus, their actions directly reflect on the university’s image and the image of the United States. Failure to maintain acceptable behavior will result in a lower grade or failure of the participation component and can be grounds for a lower final grade or failing the course and being sent home. Acceptable and unacceptable actions will be described in the pre-departure sessions.

III) POST-TRIP RESEARCH ARTICLE (15%). Due: TBA
Student teams will prepare a minimum of 5-page research article (with references) based on the pre-departure report about the company visit in Brazil. Dr. Abad will provide the template for this research article.
Program Itinerary

Sunday, July 26
Depart the U.S. (overnight flight)

Monday, July 27
10h00-17h00: ISA pick-up at Florianópolis Hercílio Luz Airport and check-into hotel
17h50: Meet in Hotel Lobby for orientation
18h00-20h00: Orientation
20h00-22h00: Group Welcome Dinner
*Overnight at Florianópolis hotel*

Tuesday, July 28
09h15: Meet in Hotel Lobby
09h30-12h00: Travel to Capivari de Baixo (Santa Catarina)
12h00-13h00: Lunch
13h00-16h00: Hydroelectric/thermal energy visit (Tractebel Energia)
16h00-20h00: Travel to Osório (Rio Grande do Sul)
20h00 – hotel check-in and free time
*Overnight at Osório hotel*

Wednesday, July 29
10h00-12h00: Wind energy visit (Ventos do Sul)
12h00-13h00: Lunch
13h00-19h00: Travel to Florianópolis
*Overnight at Florianópolis hotel*

Thursday, July 30
Speaker Professor Dr. Baltazar Guerra – Renewable Energy
*Overnight at Florianópolis hotel*
Friday, July 31

08h45: Meet in Hotel Lobby
09h00-16h00: Florianópolis City Tour (with guide)
16h00-17h00: Free time in downtown Florianopolis

Overnight at Florianópolis hotel

Saturday, August 1

9h00: Meet in Hotel Lobby
9h15-10h00: Travel to Santo Amaro
10h00-12h30: Apuama Rafting
12h30-13h00: Check-in at Águas Mornas Hot Springs resort
13h00-15h00: Lunch at Hotel
15h00: Free time at hot springs resort

Overnight at Águas Mornas Hot Springs resort

Sunday, August 2

07h30-08h00: Meet in Hotel Lobby – Check out
08h00-08h45: Breakfast
08h45-13h30: Travel to Curitiba (Paraná)
13h30-14h30: Lunch
14h30: Free time (or go to Universidade Federal do Paraná)

Overnight in Curitiba

Monday, August 3

07h30-08h45: Breakfast in Hotel
09h00-13h00: Meeting at Universidade Federal do Paraná
13h00-14h00: Lunch
Tuesday, August 4
07h30-08h45: Breakfast and Hotel Check out
09h00-17h00: Travel to São Pedro do Ivaí (Paraná)
Free afternoon
Overnight at São Pedro do Ivaí hotel

Wednesday, August 5
09h00-09h45: Breakfast
09h45-10h00: Meet in hotel lobby and Check out
10h00-12h00: Ethanol visit (RENUKA)
12h00-13h30: Lunch
13h30-20h00: Travel to Foz do Iguaçu (Paraná)
Overnight at Foz do Iguaçu hotel

Thursday, August 6
9h00-10h00: Breakfast
10h00-11h00: Meet in Hotel Lobby and go to the Parque Das Aves (Bird Park)
11h00-12h30: Bird Park visit
12h30-13h30: Lunch
13h30-16h30: Iguaçu Falls National Park
16h30-17h00: Meet at Park’s Food Court
Overnight at Foz do Iguaçu hotel

Friday, August 7
07h30-09h30: Travel to São Miguel do Iguaçu
09h30-11h00: Bio-energy visit (Fazenda Colombari)
11h00-12h30: Travel to Itaipu

12h30-14h00: Lunch at Itaipu

14h00-16h30: Itaipu Dam Visit

Farwell dinner at Rafain Churrascaría

Overnight at Foz do Iguaçu hotel

Saturday, August 8

08h00-10h00: Breakfast and Hotel Check out

Airport shuttle departures out of Foz do Iguaçu International Airport

*This schedule may change. Your on-site directors will reconfirm all scheduled meetings and visits on location.*