CHEM 492: Renewable Energy and Sustainability

Summer 2014

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Web page:	https://d2l.sdbor.edu/index.asp
Dates:	May 17 to May 31, 2014
Credits:	3 credits

1) Course Objectives and measurable learning outcomes: The summer program, "Renewable Energy and Sustainability" aims to provide students with exposure to renewable energy and sustainability research, practices, and policies in Germany, The Netherlands, and Belgium.

The course will help students to:

1.) Realize the importance of renewable energy,

2.) Get a better understanding of the various alternative sources of renewable energy, and

3.) Provide opportunities to examine the barriers and challenges in increasing the share of renewable energies.

Germany and The Netherlands are innovators in renewable energy and students participating in this program will benefit from the knowledge in learning about innovations in renewable energy and sustainability in these countries. It will also allow student to reflect upon similar efforts in the United States. At the end of this course, students will demonstrate a basic understanding of renewable energy sources. Also, they will understand sustainable practices in Belgium, Germany, and The Netherlands.

In addition, students will understand how global issues, developments, and ideas affect their lives and those of others.

Student Learning Outcomes:

1. Students will demonstrate awareness of multiple perspectives within the global community.

2. Students will investigate and analyze contemporary issues, phenomena, and ideas with global impact, considering their effect on the individuals, communities, and social or natural environments involved.

Thus, this course will satisfy USD's Institutional Graduation Requirements (IGR) Goal 3 namely, "*Students will understand how multiple perspectives affect global issues and ideas.*"

2) Suggested Readings:

1) Renewable Energy, Roland Wengenmayr, and Thomas Weinheim, Wiley-VCH, 2013, ISBN 9783527411870 and 3527411879.

2) Renewable energy sources and climate change mitigation [electronic resource] : Special report of the Intergovernmental Panel on Climate Change / edited by Ottmar Edenhofer, Ramón Pichs Madruga, Youba Sokona, New York: Cambridge University Press, 2012, ISBN 9781139224963, 1139224964, 9781139151153, and 1139151150 (electronic bk.)

3) Grading:

Written paper **50 points**

Students will need to submit a paper on a topic of their interest related to Renewable Energy and Sustainability.

Here are the guidelines to the written paper.

i) Microsoft Word document (submit your paper, "LastName-2014" in D2L. A .doc style is preferred!)

ii) Margins should be 1" on all sides.

iii) Use Times New Roman font type and font size 12 and use double line spacing.

iv) The length of the paper should be 15 pages not counting the first page, Table of Contents, Abstract, References and Figures and Tables (if any).

v) The organization of the written paper should be as follows: The first page should contain "Title" and "Name of Student" only. The next page(s) should contain Table of Contents. After that there should be a short abstract of your entire paper (limited to 200-300 words). The next few pages should contain the "Introduction" section. After the introduction section, the next section is the most important one, *i.e.* main content, wherein the students provide a comprehensive discussion of the topic of interest. Depending on the topic, this can be further broken down to different sub-sections. The final page(s) should contain "Summary and Outlook". This should be followed by References (start this on a fresh page). After the reference section, if any Tables are used, then list them separately on each page. Each Table should have a title before the Table. This should be followed by Figures (if any). Figure captions should be provided at the bottom of each figure. Thus, your paper should be organized as follows:

a. Title and Name – Page 1

b. Table of Contents – Page(s) 2 and above

c. Abstract (start on a fresh page, limited to 200-300 words)

d. Introduction (start on a fresh page)

e. "Main Content" (Introduction and content – 15 pages at least in length)

f. References

g. Tables (if there are any, start on a fresh page) with Table caption at the top with citation.

h. Figures (list each figure on a separate page) with Figure caption at the bottom with appropriate citation.

vi) The written paper is graded for a total of 50 points based on the following rubric.

Written Paper Grading Rubric

Criteria	**Point Scale**	**Points**
Content (is there a critical and in-depth analysis of the research topic done with focus on a specific topic).	2 point (poor) 4 points (fair) 6 points (good) 8 points (very good) 10 points (excellent)	10
Clarity (are the ideas clear, lucid, articulated well, and persuasive?)	2 point (poor) 4 points (fair) 6 points (good) 8 points (very good) 10 points (excellent)	10
Grammar (is there correct grammar and syntax, no typographical errors or incoherent sentences etc.)	2 point (poor) 4 points (fair) 6 points (good) 8 points (very good) 10 points (excellent)	10
Paragraph development (are the paragraphs well developed with appropriate topics that articulate the ideas with examples and smooth, seamless	2 point (poor) 4 points (fair) 6 points (good)	10

transition and flow from one idea to another)	8 points (very good) 10 points (excellent)	
Summary/Conclusions and outlook (is there a succinct summary of the thoughts and ideas presented with some insight into future directions)	2 point (poor) 4 points (fair) 6 points (good) 8 points (very good) 10 points (excellent)	10

Total Points 50

The grading scale for the course is as follows:

A:	45 points and above	90-100%
B:	40-44 points	80-89%
C:	35-39 points	70-79%
D:	180-209 points	60-69%

4) Disability Requirements: Any student who feels s/he may need academic accommodations or access accommodations based on the impact of a documented disability should contact and register with Disability Services during the first week of class. Disability Services is the official office to assist students through the process of disability verification and coordination of appropriate and reasonable accommodations. Students currently registered with Disability Services must obtain a new accommodation memo each semester.

Ernetta L. Fox, Director

Disability Services,

Room 119 Service Center

Tel: (605)677-6389; Web Site: www.usd.edu/ds; E-mail: dservices@usd.edu

5) Policy on Academic Dishonesty (USD College of Arts and Sciences): The College of Arts and Sciences considers plagiarism, cheating, and other forms of academic dishonesty inimical to the objectives of higher education. The College supports the imposition of penalties on students who engage in academic dishonesty, as defined in the "Conduct" section of the University of South Dakota Student Handbook.

No credit can be given for a dishonest assignment. At the discretion of the instructor, a student caught engaging in any form of academic dishonesty may be:

a. Given a zero for that assignment.

b. Allowed to rewrite and resubmit the assignment for credit.

c. Assigned a reduced grade for the course.

d. Dropped from the course.

e. Failed in the course.

Adopted by vote of the faculty, College of Arts and Sciences - April 12, 2005

6) Freedom in learning: "(Under South Dakota) Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact Associate Dean Kurt Hackemer to initiate a review of the evaluation."

7) Proposed Itinerary

Proposed Departure Date: May 17, 2014

Proposed Return Date: May 31, 2014

Itinerary		
Date	**Time**	**Location & Activity**
5/17	PM	Depart US for Brussels, Belgium
5/18	AM	Arrive Brussels, Belgium; transfer to hotel
	PM	Orientation to Brussels, and program; group dinner
5/19	AM	Visit to European Commission
	PM	Guided visit to the Atomium
5/20	AM	Lecture/visit at Renewable Energy House (REH)
	PM	Free time in Brussels
5/21	AM/PM	Cultural visits, free time for museum visits, exploration of city
5/22	AM	Transfer from Brussels to Enschede, The Netherlands for lecture and visit to research labs at University of Twente
	PM	From Enschede, transfer to Hamburg, Germany; arrive and check-in at hotel in Hamburg
5/23	AM/PM	Travel from Hamburg to Oldenburg for lecture and visit to research facilities at University of Oldenburg (organized through local international office); spend evening exploring Oldenburg, with dinner

5/24	AM PM	Guided tour and orientation of Hamburg Free time
5/25	AM PM	Free time Guided tour of Hamburg Port (one of the most important harbors in Europe)
5/26	AM PM	Transfer from Hamburg to Berlin, Germany; check-in at hotel Free time
5/27	AM PM	Lecture, visit at Renewable Energies Agency Visit to German Historical Museum
5/28	AM PM	Visit to Institute for Resource Conservation, Innovation and Sustainability (IRIS) Visit to German Technology Museum Berlin
5/29	AM	Federal Holiday in Germany – free day
5/30	AM/PM	Final discussions; wrap-up farewell dinner in evening
5/31	AM/PM	Return flight from Berlin to US