

## ENGR 3984 SS: Global Perspectives in Green Engineering Spring 2020

**Time and Place:** Arranged between Faculty and Students

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### Course Description:

This course is designed to support an independent research-based project that complements a 1-2 week international travel experience focused on Green Engineering topics. The course consists of trip preparation modules, in-travel experiences and assignments with the third-party GREEN Program, and post-travel research and reflections on sustainability topics such as water, energy, infrastructure, agriculture, economics, and politics. This course can be substituted as an engineering elective for the Green Engineering Minor program.

**Prerequisites:** Sophomore standing

### Course Purpose:

The purpose of this course is to provide a holistic framework around an experiential study-abroad trip focused on sustainability topics to provide students with opportunities to optimize this experience through the interconnected themes of culture, history, green engineering, and critical analysis.

**Readings/References:** Readings will include those below for all trips and other resources/references that are dependent upon the location of study-abroad travel..

- StudyAbroad.com, Effective Marketing of Your Study Abroad Experience to Employers, [www.studyabroad.com/resources/effective-marketing-of-your-study-abroad-experience-to-employers](http://www.studyabroad.com/resources/effective-marketing-of-your-study-abroad-experience-to-employers)
- Marquette University, Leveraging Your Study Abroad Experience, [www.marquette.edu/career-services/resources/leveraging-your-study-abroad-experience.php](http://www.marquette.edu/career-services/resources/leveraging-your-study-abroad-experience.php)
- Global Energy Statistical Yearbook 2019, [yearbook.enerdata.net/](http://yearbook.enerdata.net/)
- International Energy Organization website, [www.iea.com](http://www.iea.com)
- Gleick, P. H. (2014). The world's water.: the biennial report on freshwater resources Volume 8. [www.worldwater.org/water-data/](http://www.worldwater.org/water-data/)
- Shortall, R., & Kharrazi, A. (2017). Cultural factors of sustainable energy development: A case study of geothermal energy in Iceland and Japan. *Renewable and sustainable energy reviews*, 79, 101-109.
- Kander, A., Malanima, P., & Warde, P. (2015). *Power to the people: energy in Europe over the last five centuries* (Vol. 46). Princeton University Press, Chapter 1, pp. 1 - 19.

### Course Content:

1. Pre-Trip Module
2. In-Trip Module
3. Post-Trip Module

**Learning Outcomes** (TSWBAT – The Student Will Be Able To):

1. Articulate past and current environmental issues for the country of travel based on culture, history, and implementation of engineering and technology.
2. Articulate similarities and differences between engineering practices in the US and country of travel.
3. Compare and contrast energy and water resource systems in the US and country of travel using qualitative historical methods.
4. Compare and contrast energy and water resource systems in the US and country of travel using quantitative engineering methods.
5. Demonstrate skills in critical thinking by evaluating green engineering projects in terms of feasibility within the matrix of technical, economic, environmental, and political implementation.

**Assessment/Assignments:**

| Assessment   | %           | Assignments  |
|--------------|-------------|--|
| Pre-Trip     | 25%         | Pre-trip quiz, energy and water country profile, Reflections on trip goals and purpose               |
| In-Trip      | 25%         | GREEN capstone project, Field observations and reflections   |
| Post-Trip    | 50%         | Green Engineering research project, Summary of trip experiential learning, Job Interview preparation |
| <b>TOTAL</b> | <b>100%</b> |  |

**Evaluation:**

Student performance will be evaluated qualitatively and quantitatively by several methods including online quizzes for the pre-trip module, reflections and other short essays before, during, and after the study-abroad trip, an in-trip team capstone project, and a research project following the trip which focuses on one or more green engineering topics related to the trip.

If you choose to take this class P/F, you are required to complete all assignments in order to pass. Also note that you must take the class for a grade (A/F) to use it as an elective in the Green Engineering Minor.

Final grades are calculated according to the following quantitative and qualitative scales:

| Grade | Quantitative % | Qualitative Assessment   |
|-------|----------------|--------------------------|
| A     | 93 - 100       | Exceeds expectations     |
| A-    | 90 - 93        |                          |
| B+    | 87 - 90        |                          |
| B     | 83 - 87        | Above Expectations       |
| B-    | 80 - 83        |                          |
| C+    | 77 - 80        |                          |
| C     | 73 - 77        | Meets expectations       |
| C-    | 70 - 73        | Approaching expectations |
| D+    | 67 - 70        |                          |
| D     | 63 - 67        |                          |
| D-    | 60 - 63        | Below expectations       |
| F     | <60            |                          |

**Instructional Notes:**

1) Canvas will be utilized for assignments, lectures, information, lecture notes

**2) THE RULES OF THE VT HONOR CODE APPLY TO ALL ASPECTS OF THIS COURSE**

The Undergraduate Honor Code Pledge that each member of the university community agrees to abide by states:

*“As a Hokie, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.”*

Students enrolled in this course are responsible for abiding by the Honor Code. A student who has doubts about how the Honor Code applies to any assignment is responsible for obtaining specific guidance from the course instructor before submitting the assignment for evaluation. Ignorance of the rules does not exclude any member of the University community from the requirements and expectations of the Honor Code. For additional information about the Honor Code, please visit:

<https://www.honorsystem.vt.edu/>

**3) THE RULES OF THE STUDENT VT CODE OF CONDUCT APPLY TO ALL ASPECTS OF THIS COURSE.** You are responsible for knowing and following its provisions:

<https://www.hokiehandbook.vt.edu/policies/code-of-conduct.html>

4) If you are in need of special accommodations for this class due to a disability, as recognized by the Americans with Disabilities Act, please contact the Office for Services for Students with Disabilities (SSD) and then talk to me ([www.ssd.vt.edu](http://www.ssd.vt.edu)). If you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please make an appointment with me early in the semester.