

Renewable Energy, Technology, and Resource Economics Project

ENGR 3060 (3 credits / 45 hours)

Iceland: Renewable Energy, Technology, and Resource Economics

This syllabus is representative of a typical semester. Because courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester.

Description

In this project students familiarize themselves with recent research in renewable energy, technology, and resource economics, and with the methodologies employed in energy and sustainability studies. Students select and analyze a relevant issue in renewable energy in consultation with program faculty. Each student conducts research to produce an original research project and paper and presents their results to the class via formal presentation. The course gives students the opportunity to engage on a deeper level with one of the topics covered in the seminar and to develop their academic skills. Support is provided throughout the project by program faculty, particularly in aiding students in finding resources in Iceland. This course runs parallel to the Renewable Energy, Technology, and Resource Economics seminar throughout the duration of the program.

Learning Outcomes

The *Renewable Energy, Technology, and Resource Economics Project* course comprises 45 hours of instruction (3 credits). Upon completion of the course, students will be able to:

- Design a project proposal;
- Delimit a research question and define methodology;
- Gather relevant research and data and interact with experts in the field;
- Carry out original analysis;
- Compose a coherent discussion;
- Communicate research findings via a chalk-talk, final paper and final presentation.

Reading Materials

All reading materials will be made available on our Moodle site.

Course Schedule

Students will be provided a detailed course schedule during orientation on the program. Please be aware that topics and excursions may vary to take advantage of any emerging events, to accommodate changes in our lecturers' availability, and to respect any changes that would affect student safety. Students will be notified if this occurs.

Weeks 1 and 2

Students work with the Academic Director from day one to identify interests and choose a topic that is of relevance to energy issues in Iceland and that can be applied elsewhere. Time is scheduled in which the students discuss their ideas with the academic director, but students are also encouraged to seek support with both the academic director, other members of program faculty, and others who can provide insight into the field. Students will submit a *preliminary* research question and their planned methods by the end of Week 2.

Week 3

Students develop and submit their Research Proposals by the end of Week 3.

Weeks 4 and 5

In these weeks, students focus on collecting relevant research and data. The academic director facilitates student contact with appropriate sources. Field research is strongly encouraged. Students will begin analyzing their data and should begin writing their research papers. Chalk talks will be presented by the end of Week 5.

Week 5 and 6

Students complete their analyses, writing and present their research projects to the rest of the class and invited guests by the end of Week 6.

Evaluation and Grading Criteria

Evaluation is based on successful completion of each component of the individual research project. Grade is determined by:

Research Proposal (20%)

Student research proposals (4-7 pages in length) should contain: (1) Introduction to the problem being examined (why is the research/question important?); (2) Research question; (3) Initial review of relevant literature that validates the importance/framing of the research (at least 10 sources); and (4) Methods (there should be a clear description of why the methods/research design will answer the research question).

Chalk-Talk (20%)

Students will present their titles, research questions, methods, and initial research findings/analysis via a five-minute “chalk talk.” Chalk-talks are a tradition in research settings and provide individuals with an opportunity to informally share their research questions, methods and initial findings, in order to receive feedback and suggestions on how to improve their final projects. Students will be provided with butcher-block paper and marking pens that they can use to create their posters for their chalk-talks beforehand; no PP presentations are allowed. Chalk talk posters should include a written: title, research question, methods, initial findings and *at least original figure*. The original figure can be a graph, illustrative diagram, charts, etc.

Research Paper (40%)

The research paper (15 – 20 pages double-spaced, at least 15 sources required) follows the traditional scientific research paper format, and should include the following:

Research Paper

1. Introduction: Justify the importance of your research topic and clearly state your research question.
2. Background/Literature Review: Using at least 15 sources (most should be academic/peer-reviewed journals, talk to your AD about your desired sources if you find

others), your background/literature review should justify why your research is timely, important and unique. You should carefully read, evaluate and draw connections across relevant studies in the literature in order to highlight gaps/lacunae (which your research addresses), contradictions (which your research engages), similarities (which your research offers further clarification of...), etc. Your literature review should respond to the following questions: What do we already know about this issue? What questions surround the issue, and how have other studies addressed this issue? Where else has this issue arisen, and what has been written about it? For how long has this issue been discussed in the literature?

3. **Methods and Data:** What methods will you use to answer your research question. Clearly describe your methods, data sources, and any limitations of the data. Your method will depend on the aspect of the issue that is your main focus, and could include approaches covered in the program. Your methods SHOULD include at least one interview from an Icelander (key informant) about your issue. For example:
 - a. For engineering aspects, describe how you approach the design question, what formulas you use to calculate results;
 - b. For economic aspects, describe whether you are calculating a benefit-cost ration, a net present value, a levelized cost of energy, a cost of conserved energy, a local economic impact, etc., and present the relevant information.
 - c. For social and policy aspects, describe how you establish the social relevance of this issue (perhaps survey), and how you analyze policy alternatives.
4. **Results/Analysis:** Based on your methods and data, what is the answer to your research question? Present values calculated, estimates of impacts, results of analysis, etc. When possible, compare your results to those of similar studies identified in the literature review. **This section should include at least one original figure and at least original table.*
5. **Discussion:** What are the broader implications of your results, and what recommendations do you make? Here you should relate your findings to the key questions and trends you discussed in your Background/Literature Review section. In some cases, this Discussion section might be combined with the Results/Analysis section – see your AD with questions.
6. **Conclusion:** Provide provocative and compelling recommendations (e.g. how your study relates to a larger renewable energy transition) and/or implications for future research (what other questions are presented through your analysis?). Your conclusion should not just reiterate your study and findings – it should leave your reader with fresh insights and provocations.

Project Presentation (20%)

Final presentations (approximately 15 minutes) should cover the key sections of the final paper, as described above. Students will be provided with some public speaking training during the program and it is expected that students practice their public speaking skills during this presentation. Students should expect to respond to questions from the class and the AD/PA.

Assessment:

Research Proposal	20%
Chalk Talk	20%
Research Paper	40%
Presentation	20%

Grading Scale

94-100%	A	Excellent
90-93%	A-	

87-89%	B+	
84-86%	B	Above Average
80-83%	B-	
77-79%	C+	
74-76%	C	Average
70-73%	C-	
67-69%	D+	
64-66%	D	Below Average
below 64	F	Fail

Expectations and Policies

- Have assignments completed on schedule, printed, and done accordingly to the specified requirements. This will help ensure that your assignments are returned in a timely manner.
- Comply with academic integrity policies as specified in the [SIT Study Abroad Student Handbook](#).
- Respect differences of opinion (classmates, lecturers, local constituents engaged with on the visits). You are not expected to agree with everything you hear, but you are expected to listen across difference and consider other perspectives with respect.

Please note: the syllabus, course content, lecturers, and readings may modified by the Academic Director in order to better suit the needs of the course and its participants. Should any change of class topics or lecturers be necessary, students will be promptly notified.

Academic Policies: SIT prides itself on providing students with an experientially based program; we hold ourselves, and our students, to the highest of academic standards. Students are asked to refer to the **SIT Study Abroad Handbook** for policies on academic integrity, ethics, academic warning and probation, diversity and disability, sexual harassment and the academic appeals process.

Disability Services: Students with disabilities are encouraged to contact Disability Services at disabilityservices@sit.edu for information and support in facilitating an accessible educational experience. Additional information regarding SIT Disability Services, including a link to the online request form, can be found on the Disability Services website at <http://studyabroad.sit.edu/disabilityservices>.