Global Climate Change: Environment, Technology and Society

AIMS
This pathway aims to give students a broad vision and perspective on Global Climate Change. This includes its mechanisms, impacts upon society and the environment, emerging mitigation technologies, and adaptation strategies. Students will explore these issues in a multidisciplinary framework with lectures, workshops and practical exercises. Seminars will be led by world-class researchers and experts in the fields of life sciences, engineering, mathematics, physical sciences and geography.

INTENDED LEARNING OUTCOMES (ILO’S)
On successful completion of this module, students should be able to:

Module Specific Skills:
1. Identify the principal causes of climate change and the evidence for them;
2. Explain the principal risks of climate change for global societies;
3. Understand the environmental consequences and impacts on ecosystem services of climate change;
4. Explain the way that economic and environmental issues affect the thinking of governments and how this is converted into policy;
5. Demonstrate an understanding of economic and political impacts due to climate change;
6. Demonstrate a good understanding of water supply and quality systems and storm water control systems;

Discipline Specific Skills:
7. Describe the main issues affecting renewable energy policy;
8. Appreciate the main aspects of hydropower resource estimation, turbine design, deployment and environmental impact;
9. Undertake analysis of complex, incomplete or contradictory areas of knowledge, precedent and practice;
10. Analyse and combine data from a variety of sources;
11. Apply scientific output to social policy and analysis;
12. Read research literature pertinent to climate change and its effects;
Global Climate Change: Environment, Technology and Society

Personal and Key Skills:

13. Effective written and oral communication of subject based knowledge and academic and research skills;
14. Effective group working skills;
15. Problem identification and solving;
16. The ability to organise material and ideas in constructing arguments;
17. Independent/self-directed learning (including time management) to achieve consistent, proficient and sustained attainment;
18. Management of deadlines and targets.

LEARNING AND TEACHING

Lectures and seminars will be used to introduce topics and provide a foundation for case studies; case studies will provide the foundation for discussion and personal work. Reading lists issued before the start of the module will be used to ensure that students have a common background. Teamwork and individual study will be used to present work.

ASSIGNMENTS AND ASSESSMENTS

<table>
<thead>
<tr>
<th>Form of Assessment</th>
<th>Formative or % Contribution</th>
<th>Size of the assessment e.g. duration/length</th>
<th>Feedback method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Assignment: Essay focusing on an aspect of climate change and its effects or mitigation; this may be based on one of the case studies or may be determined by the student’s own interests.</td>
<td>60%</td>
<td>1500 minutes</td>
<td>Individual written feedback will be provided.</td>
</tr>
<tr>
<td>Group Presentation: Students will be assessed on their ability to work as a group in researching and constructing a coherent argument for aspects of the case studies. The overall quality of the content and delivery of the presentation will be assessed.</td>
<td>40%</td>
<td>30 minutes</td>
<td>Verbal feedback will be provided following the presentation. Written feedback will be provided on evaluation forms.</td>
</tr>
</tbody>
</table>

I am a Civil Hydraulic and Environmental Engineer (BSc, PE) from Chile, with a doctoral degree in Environmental Engineering from Rice University (Houston, Texas, USA). My field of experience is water resources management, protection and restoration, and modelling of environmental systems. This includes, but is not limited to: groundwater and surface water contaminant fate, transport and monitoring, remediation technologies, bioremediation, and the use of computational tools and models for environmental risk assessment. I have experience as a consulting engineer in Chile and the United States, and as an engineering researcher in the United States (Rice University) and the United Kingdom (Lancaster University).

Dr Diego Gomez,
Academic Coordinator for the Global Climate Change pathway

www.exeter.ac.uk/international/summerschool
Global Climate Change: Environment, Technology and Society

SYLLABUS PLAN

Teaching Day 1: Administrative Introduction
- Climate Change and Water Resources
- Introduction to Climate Change, Adaptation and Mitigation

Teaching Day 2: Living with Global Change
- Environmental lifestyles and citizenship

Teaching Day 3: Climate Change: Cause and Effect
- Climate Change: Societal Impacts and Risks

Teaching Day 4: Adaptation and Mitigation Technologies:
- Water Management
- Water Management Technology for a Changing Climate

Teaching Day 5: Adaptation and Mitigation Technologies:
- Renewable Energy
- Renewable Energy for a low carbon future

Teaching Day 6: Case study workshops

Teaching Day 7: Health Impacts of Climate Change
- The Social Psychology of Responding to Global Environmental Challenges

Teaching Day 8: Early Warning of Climate Tipping Points
- Guest Speakers

Teaching Day 9: Student Presentations

INDICATIVE LEARNING RESOURCES

Indicative basic reading list:


