Introduction to Environment and Climate Studies

(Course Code: EVS104)

**Fall semester, 2018-2019**

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| Coordinator | **Sangay Tshering** |
| Credits | 6 ECTS (Compulsory course), 30 in-class hours |
| Lecturers | **Sangay Tshering** (Environment and Climate Studies, The College of Natural Resources, Royal University of Bhutan)**Tshering Dorji** (Environment and Climate Studies, The College of Natural Resources, Royal University of Bhutan) |
| Level | BSc |
| Host institution | Environment and Climate Studies, The College of Natural Resources, Royal University of Bhutan |
| Course duration | August 01- September 30 2018 |

### Summary

*This 6 ECTS course covers the foundations on global environmental challenges, types of natural resources management, cases on how the Bhutan has championed in protecting gits environment through protection of forests in Bhutan. The course also focuses on emerging environmental challenges in Bhutan and requirement of environmental impact studies for implementation of different projects in Bhutan and elsewhere. The course includes several case studies and assignments on specific issues with regard to environmental issues.*

### Target student audiences

First year BSc of Environment and Climate Studies students who would be taking up the environmental science course relating to he climate change impacts.

### Prerequisites

None

### Aims and objectives

This module will provide knowledge and skills on concepts of environment and its degradation. It aims to impart knowledge on the emerging environmental issues in the international and national context. It also aims to create understanding in environmental practices and apply skills to manage emerging environmental issues.

### General learning outcomes:

* Identify emerging environmental issues,
* Appraise emerging environmental issues at global, national and local levels,
* Debate on protection of the environment,
* Explain solid wastes as one of the main causes of emerging environmental pollution,
* Explain principles of integrated solid waste management,
* Identify sources, types and categories of wastes,
* Discuss and list major sources and types of air and water pollutants,
* Assess the status of air and water pollution in Bhutan,
* Use existing government rules and procedures for environmental clearance to prepare environmental clearance proposals.

### Overview of sessions and teaching methods

The course is delivered in the interactive and self-reflective manner in which teaching and learning and, where possible, avoid teacher centered lectures and engage students to participate in class through analysis of case studies. The course starts with brief introduction to state of the environmental issues and their impacts, global environmental governance, history strategies used to protect the environmental amenities through class debates, quizzes, class tests, and role play. The major sections of the study will depend on the case studies used in different contexts.

### Course workload

The table below summarizes course workload distribution:

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| --- | --- | --- | --- |
| **Activities** | **Learning outcomes** | **Assessment** | **Estimated workload (hours)** |
| **In-class activities** |
| Lectures  | Understanding theories, concepts, of environmental management and mitigation.  | Class participation | 30 |
| Moderated in-class discussions | Understanding the scale and cases of environmental disasters around the world and how the different cases are addressed. The discussion also focuses on the history of the environmental management concerns and trajectories and their impacts to land, water and human wellbeing.  | Class participation in discussion and debates | 30 |
| In-class assignments | Understanding scales and their impact on the environmental issues.  | Class participation  | 30 |
| **Independent work** |
| Group work:* Contribution to the case-study projects
 | Ability to interpret data, to analyze the scale of impacts and mitigation strategies. Also includes the environmental governance and politics.  | Quality of group assignments and individual presentations | 20 |
| Course group assignment | Ability to conceptualize and frame strategies to address the simple problems and the wicket problems around the world.  | Argument based on the evidences of different cases | 20 |
| Reading and discussion of assigned papers for seminars and preparation for lectures | Familiarity with and ability to critically and creatively discuss key concepts, tools and methods to address the major environmental problems.  | Class participation.  | 20 |
| ***Total*** |  |  | ***150*** |

### Grading

The students’ performance will be based on the following:

* Level of understanding of environmental uses around the world in term of scales and impacts to be used for participation in class discussions and seminars (10 %) (from 100 % for active participation and demonstrated familiarity with the course readings to 0 % for completely ignoring in-class discussions);
* Presentation of cases and their applicability to the Bhutanese context (40 %) (from 100% for clearly demonstrated input to 0 % for non-participation);
* Quality and relevance of recommendations for practice (20%)
* Use of evidences and tools, and methods to address similar issues in the future (40%)

### Course schedule

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| --- | --- | --- | --- |
| **Day** | **Time** | **Topic** | **Lecturer** |
| Friday 10 August | 13:15 – 15:15 | The concept of environmentMultidisciplinary nature of environmental scienceGlobal environmental issuesConcept of emerging environmental issues | Sangay Tshering |
| Monday 13th August | 09:15 – 12:15 | Introduction to climate changeGreenhouse gassesRole of institutions like UNFCCC, IPCC | Sangay Tshering |
| Wednesday 15 August | 13:15 – 15:15 | Global Environmental ChallengesCurrent climate scenario Status of environmental challenges around the world | Sangay Tshering |
| Tuesday 21 August | 09:15 – 12:15 | Different types of wastesCategories of solid wastes and its sourcesCharacteristics of wastes Quantity and types of solid wastes generated in urban centres | Sangay Tshering |
| Friday 24 August | 13:15 – 15:15 | Trends of solid wastes generation and its relationship to per capita income of peopleEstimation of solid wastes generation trendCurrent solid waste management practices and their impact |  |
| Monday 27 August | 09:15 – 12:15 | Principles and significance of integrated waste managementLink between improper solid waste management and public health | Sangay Tshering |
| Monday 10 September | 09:15 – 12:15 | Classification of natural resourcesConcept of resource conservationPotential, actual, reserve and stock resourcesTypes of management | Sangay Tshering |
| Wednesday 12 September | 13:15 – 15:15 | Community-based natural resource managementAdaptive managementIntegrated natural resource managementAlternative energyRenewable and non-renewable energy | Sangay Tshering |
| Friday 14 September | 13:15 – 15:15 | Environmental PollutionEnvironmental Challenges in BhutanWaste managementPollution managementNatural hazardsClimate changeEcosystem managementEnvironmental impacts and consumption patterns | Sangay Tshering |
| Friday 20September  | 13:15-14:15 | - Reports by assignment groups | Sangay Tshering |

### Course assignments

Course assignments will constitute a project:

* Assignment **#1** (in-class) – Students, individually, will conduct a case study on any issues related to environmental pollution and present the findings in the class.
* Assignment **#2** (in laboratory) – students in groups will differentiate the differential impacts of pollutants such as land and water and link to different resources such as land, water and air.
* Assignment **#3** – Link to different pollution to policies and regulations to understand the link between policies and practice.

To complete the assignments the class will be divided into several groups. **Assignment #1** will help students to understand the meaning of the term environmental impacts (ppts, oral presentations, poster presentation and role play).

**Assignment #2** will link the Assignment #1 where the pollutants and the process of pollution will try to link the different parameters such as land, water and air and how the different pollutants will be affected. (ppts, oral presentations, poster presentation and role play).

**Assignment #3** is based on the assignments #2 where students will learn that how the policy and practice are linked looking into different environmental parameters. The group work output can be in a form of ppt presentation, role play, poster presentation and also in the form of stage skit.

### Literature

1. Landuse Planning Project. (1997). Atlas of Bhutan, Land Cover and Area Statistics of 20 Dzongkhags, Ministry of Agriculture, Bhutan.
2. MOWHS. (2008). Survey report published by MOWHS as conference proceedings, National Conference on solid wastes Management. Thimphu, (August 2008).
3. National Environmental Commission. (1997). Environmental Assessment, Sectoral Guidelines, NEC, Thimphu.
4. National Environmental Commission. (1998). The Middle Path - National Environmental Strategy for Bhutan, Keen Publishing Co. Ltd. Thailand.
5. NEC. (2008). Bhutan Environment Outlook, Thimphu.
6. Carson, R. (1962). Silent Spring. Houghton Mifflin. USA.
7. NEC. (2000). Initial National Communication and GHG Inventory Report and subsequent publications.
8. RSPN. (2006). Survey reports published by RSPN on Thimphu and Phuentsholing wastes generation. Thimphu.
9. Issues for the 21stCentury. [www.unep.org/.../ebooks/foresightreport/.../Executive\_Summary.pdf](http://www.unep.org/.../ebooks/foresightreport/.../Executive_Summary.pdf)
10. Tchobanoglous, G., Theisen, H., and Vigil, S. (1993). Integrated Solid Waste Management: Engineering principles and management issues.