E-COURSE:
Environmental science

Host institution	National University of Mongolia, School of Engineering and Applied Sciences
Credits	6 ECTS (optional course)
Lecturers	Ochir Altansukh
Level	MSc and PhD course
Course duration	16 classes
Type	General skill
OpenEDX link	http://online.num.edu.mn/courses/course-v1:NUM+ENVI700+2020/about

Summary

Environmental science is not only teaching about the environment. It is also about the people and the effect of their life on the environment. Environmental education emphasizes the exploration of attitudes and values, and the development of the knowledge and skills so that people will actively participate in decision making in the world around them.

Target student audiences

MSc and PhD students in environmental science and management

Prerequisites

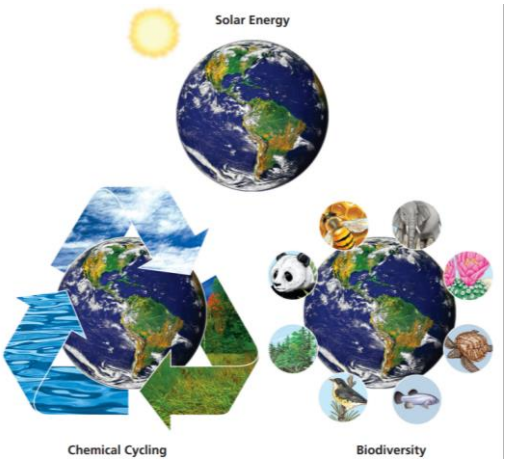
Required courses (or equivalents):

- None

Aims and objectives

The course objective is to give knowledge of the difference between environment and nature, human development, their consumption, industrialization, agriculture, how human lifestyle affects to environment, natural sustainability. Economic growth is not a right way to measure national development. We need a different evaluation system to measure country development, which considered long-term sustainable development.

We could shift toward living more sustainably by applying full-cost pricing, searching for win-win solutions, and committing to preserving the earth's life-support system for future generations. By the course, we are also going to learn how to sustainably live applying three social science principles and three scientific principles.



General learning outcomes:

By the end of the course, successful students will understand:

- Environmental problems and their causes
- Ecosystem, biodiversity and evolution
- Human population and their impact
- Sustainable aspects socio-economic-environment
- Water resource and its pollution
- Depleting and non-depleting resources
- Air pollution and climate change
- Urbanization and its impact

Applicable learning skills:

- Access and conclude impact of own lifestyle to environment
- Understand sustainability depends on many factors
- Access ecological footprint

Overview of sessions and teaching methods

The course will make most of the interactive and self-reflective methods of teaching and learning and where possible, avoid standing lectures and presentations. It will start with an overview of science, environment and ecosystem. Then it will continue with biodiversity, how the nature is sustainable for billions of the year, and evolution of humankind. Moreover, different kind of environmental issues such as water resources, depleting and non-depleting resources, human and natural health, air pollution, waste management will be taught. Most interestingly, urban area where half of world population lives, and its sustainable development issue will be discussed.

Grading

The students' performance will be based on the following:

~ Level of preparedness for participation in class discussions and seminars (30% from 100% for active participation and demonstrated familiarity with the course readings to 0% for completely ignoring in-class discussions);
~ Contribution to group assignments and demonstration of individual work (30% from 100% for clearly demonstrated input to 0% for non-participation);
~ Level of final exam (40% from 100% for correct answers to all questions);

Course schedule

Class	In-class hours	Topic	Type
1	4	Science, matter, energy, and systems	Lecture
2	4	Environmental problems, their causes, and sustainability	Lecture
3	4	Ecosystem	Lecture
4	4	Biodiversity and evolution	Lecture
5	4	Biodiversity, species interactions, and population control	Lecture
6	4	The human population and its impact	Lecture
7	4	Sustaining biodiversity	Lecture
8	4	Food production and the environment	Lecture
9	4	Water resources	Lecture
10	4	Nonrenewable mineral resources	Lecture
11	4	Renewable mineral resources	Lecture
12	4	Environmental hazards and human health	Lecture

13	4	Air pollution	Lecture
14	4	Water pollution	Lecture
15	4	Solid and hazardous waste	Lecture
16	4	Urbanization and sustainability	Lecture

Course assignments

At the end of the topics, there are topic review parts, which include key questions, critical thinking, tasks that students should answer and do. All these topic assignments take 30% of the full evaluation of the subject.

Literature

Compulsory:

1. O.Altansukh and et all, (2021) “Environmental science”, editors Ch.Sonomdagva and et all, NUM press publication house, Ulaanbaatar, pages 680, ISBN:978-9919-23-689-2.
2. O.Altansukh, (2020) “English-Mongolian glossary and Mongolian-English dictionary of environmental science”, editors N.Batsaikhan, E.Batchuluun and M.Odsuren, NUM press publication house, Ulaanbaatar, pages 128, ISBN:978-9919-23-689-2.