

## Tárgytematika / Course Description

### Environmental Protection

AJNB\_KMTA002

**Tárgyfelelős neve /**

**Teacher's name:** dr. Zseni Anikó

**Félév / Semester:** 2020/21/2

**Beszámolási forma /**

**Assesment:** Vizsga

**Tárgy heti óraszám /**

**Teaching hours(week):** 2/0/0

**Tárgy féléves óraszám /**

**Teaching hours(sem.):** 0/0/0

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### OKTATÁS CÉLJA / AIM OF THE COURSE

If today's trends continue, there will be no soils left on Earth in 60 years and cultivating croplands will be pointless; due to climate change, Africa may become uninhabitable by man; and migration will reach a point that no amount of fence can stop. The aim of this course to increase students' awareness of the multitude of environmental problems we face today. During the semester, students will focus on human population growth, critical exploitation of the natural resources, environmental pollution, scarcity and intermittency of the renewable energy sources, and other global, regional and local issues of high relevance today. The goal of the course is to provide students with the scientific knowledge required to understand the interrelationships of man and the natural world, to evaluate the risks associated with environmental problems, and to examine alternative solutions for resolving or preventing them.

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### TANTÁRGY TARTALMA / DESCRIPTION

#### Learning outcomes:

Students who take the course – and attend the lectures regularly! – will understand key concepts such as interdisciplinarity, ecological footprint, Bergman's rule, food webs, ecological service of ecosystems, etc. Using this knowledge they will be able to appreciate and address complex environmental issues from a problem-oriented, interdisciplinary perspective. They will be able to reflect self-critically about man's role in bringing about today's environmental crisis and, hopefully, will be able to apply the knowledge gained in the course to find a solution (in case a solution exists). They will understand that one prerequisite to the survival of humanity is learning to think and act on a long-term basis, instead of relying on the short-term approaches we currently prefer.

#### Course outline:

Week 1: Introduction. Why do we need Environmental Science and what can it teach us? The rise and fall of some Pacific islands. The short story of the universe and man; the significance of the agricultural revolution.

Week 2: The ecological footprint (and the dire outcomes of not diminishing it urgently).

Week 3: The atmosphere of the Earth; the main polluting chemicals.

Week 4: The ongoing climate change, compared to natural changes of the past; its scope, its causes and the probable outcomes.

Week 5: The deleterious effect of air pollution on our health: the yearly death toll of the traffic. The fundamentals of environmental psychology.

Week 6: Soil erosion and pollution of the soil – a global problem we often underestimate. Malnourishment and famine in the world: the problems lies with our agriculture.

Week 7: Water pollution. Waste water treatment – the technology without which our rivers couldn't survive.

Week 8: The Biosphere 2 experiment and the lessons we should have learned from it. The biosphere of the Earth; the extinction of species; nature conservation.

Week 9: Solid wastes. The DPSIR framework. Environmental policy.

Week 10: Environmental energetics: fossil energy sources.

Week 11: Environmental energetics: renewable energy sources.

Week 12: Protection against noise, vibration and radiation.

Week 13: On our future: prospects for humanity. The need for a paradigm shift.

Week 14: Test

### **Disclaimer:**

We make all reasonable effort to deliver the course in accordance with this description. However, it is possible – mainly due to our continuous review of our programs to ensure quality enhancement – that some changes will occur between the date of uploading and the academic year to which the description relates. Also, the exact content of the lectures may slightly vary from instructor to instructor.

The regular attendance of the lectures is no guarantee of a successful examination, and a successful exam is no guarantee that students will be able to solve all environmental problems they may encounter after graduation.

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## **SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD**

### **Requirements:**

Attendance of the lectures is not compulsory, but it's highly recommended. During the semester, short essays related to certain topics should be written and submitted.

### **Exam:**

1. Written test on the last lecture (on week 14). If completed successfully, no more tests needed.
2. If the aforementioned test is not completed successfully, students are required to write another test in the examination period.

Both kinds of tests consist of free-response questions, gap-filling exercises and/or multiple choice questions.

### **Grading policy:**

90–100%: 5 (best grade)

75–89%: 4

61–74%: 3

50–62.5%: 2

0–49%: 1 (not passing)

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## **KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL**

### **Compulsory reading:**

The slides presented on the lectures and the lecturers' oral explanations to them. The slides are made available to the students at the end of the semester, while the oral comments are expected to be noted down by each student individually.

### **Suggested readings:**

Mihelcic, J. R. – Zimmerman, J. B. (eds.)(2009): Environmental Engineering. John Wiley & Sons, Hoboken

Enger, E. D. – Smith, B. F. (2015): Environmental Science. 14<sup>th</sup> edition. McGraw-Hill Education

Frumkin, H. (2016): Environmental Health: From Global to Local. 3<sup>rd</sup> edition. Jossey-Bass, San Francisco

Cohen, A. – Saal, F. S. (2017): Integrative Environmental Medicine. Oxford University Press, New York

Baird, C. – Cann, M. (2012): Environmental Chemistry. 5<sup>th</sup> edition. W. H. Freeman and Company, Houndmills

Scott, B. A. – Amel, E. L. – Koger, S. M. – Manning, C. M. (2015): Psychology for Sustainability. 4<sup>th</sup> Edition. Routledge, New York

Diamond, J. M. (1997): Guns, Germs, and Steel: The Fates of Human Societies. W. W. Norton and Company, New York

Diamond J. M. (2005): Collapse: How Societies Choose to Fail or Succeed. Penguin Books, New York

Gowdy, J. M. (1998): Introduction: Back to the future and forward to the past. In: Gowdy, J. (ed.): Limited Wants, Unlimited Means: A Reader on Hunter-Gatherer Economics and the Environment. Island Press, Washington

MacKay, D. J. C. (2009): Sustainable energy – Without the hot air. UIT Cambridge Ltd.

McDaniel, C. N. – Gowdy, J. M. (1994): Paradise for Sale: A Parable of Nature. University of California Press