ENVIRONMENTAL MANAGEMENT
MODULE FOR MASTER’S LEVEL STUDENTS

Environmental management module is an international collaborative course module between the University of Tartu (UT) and the Estonian University of Life Sciences (EMU). The module is intended for international exchange and visiting students at Master’s level. The module will be lead by lecturers and scientists from both universities.

Environmental management module focuses on basic principles, current research, and practical applications. Participants will acquire the fundamentals in environmental management and engineering. In addition, students will gain practical application skills, as well as an overview of the state-of-art in various fields, including ecological engineering, biotechnology, waste and resource management, hydraulics and water management, and environmental protection.

34 ECTS Module is scheduled from February 2015 to June 2015 at the University of Tartu and Estonian University of Life Sciences, Tartu, Estonia.

WHO CAN PARTICIPATE?
Graduates with bachelor’s degree in natural sciences, engineering, technology, physics, chemistry etc are expected. Module is suitable for Master’s level exchange students and visiting students of UT and EMU. Participants can choose to either complete the whole module, or attend certain courses of interest!

MODULE CO-ORDINATORS:
Prof. Jaak Truu (UT)
Prof. Mait Kriipsalu (EMU)

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ADMISSION:
UT: www.ut.ee/en/admissions
EMU: www.emu.ee/en/admissions

WHY TARTU:
• Tartu is a student town – 20% of the population are students!
• Modern residence halls and affordable accommodation fees.
• Free wireless Internet almost everywhere!
• Top 3% universities by THES 2013-14 World University Rankings.
• Estonia has the highest satisfaction of stay in the eyes of international students.
**Course name** | **Course code** | **Course description** | **Lecturers**
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Introduction to Ecostechnology | LOOM.02.333 (UT) | Provides an introductory overview on the principles of ecological engineering, ecological architecture and building; the assessment of sustainability of materials and technologies, sustainable drinking- and waste-water treatment technologies, life cycle assessment, planning and building sustainable and passive energy buildings. | M. Kõiv (UT) A. Noorvee (UT) Prof. V. Kuusemets (EMU) |
Applications of Ecological Engineering | LOOM.02.332 (UT) | Focuses on a comprehensive and in-depth practical knowledge of applications of different technologies and principles relevant in ecological management and engineering. | A. Noorvee M. Kõiv M. Maddison J. Laht (all UT) |
Biotechnology in Environmental Management | LOOM.02.293 (UT) | Covers various topics, including theory and design of biological processes applied in environmental technology; stoichiometric, energetic, and kinetic analysis of biological treatment processes of municipal, industrial, and hazardous wastes; nutrients removal; fundamentals of bioreactor design and bioengineering to produce biological commodities. | Prof. J. Truu (UT) |
Waste and Resource Management | MI.1786 (EMU) | Provides knowledge of integrated solid waste management: waste minimisation, processing, material recycling, bio-treatment, energy recovery, and final disposal. Special attention is paid to end-of-waste and zero-waste approaches. Landfill mining will be discussed with a focus on safety; water and gas control; technology; and material recovery. | Prof. M. Kuusipalu (EMU) |
Introductions to Hydraulics | LOOM.02.338 (UT) | Provides a deeper understanding of traditional flow problems and state-of-the-art skills in hydrostatics (incl. properties of fluids, pressure and pressure head, forces on submerged areas) and in hydrodynamics (incl. kinematics of fluid flow, loss of head from pipe friction, flow in closed conduits, and in open channels). In addition to theoretical background, the course also offers practical experience in hydraulic lab using contemporary lab equipment. | T. Tamm |
Hydraulic Structures and Water Management | MI.1787 (EMU) | Offers a thorough knowledge of hydraulic structures and water management. Course covers hydraulic and hydrological conditions in watercourses, flood analysis and control (incl. dams, hydropower stations and fish passes), and associated environmental consequences. | T. Tamm (EMU) |
Pollutants in Environment | PK.1594 (EMU) | Provides an overview of environmental pollutants, pollutants’ distribution in the environment, and related problems. The course discusses the basic principles of ecotoxicology with a goal to understand the effects of various chemicals on both environment and on living organisms. | K. Orupõld (EMU) K. Hellat (UT) |
Project and Quality Management | LOFY.01.098 (UT) | Introduces general project management principles and the quality management of an organization. The participants will learn to complete individual projects, and to analyse performance and structures of organizations using quality management principles. | M. Noorma (UT) |
Environment and Measurement | LOKT.04.072 (UT) | Provides an overview of methods applied for the characterisation of environmental objects. Through practical tasks students will learn to execute a basic analysis of various environmental samples, define measurement uncertainty, and report their results. | S. Velling (UT) |
Master’s Seminar in Environmental Management | LOOM.02.334 (UT) | This seminar provides an overview of the research done by fellow students and scientists of University of Tartu. All participants will have to present their own study results as an oral presentation. | M. Maddison (UT) M. Kõiv (UT) |
**TOTAL:** | | | 34 ECTS |

**LECTURERS:**
- **Prof. Jaak Truu** – Professor in Environmental Technology, University of Tartu, Institute of Ecology and Earth Sciences, Department of Geography. Domain: biogeochemistry, environmental biotechnology, bioremediation. jaak.truu@ut.ee
- **Prof. Mait Kriipsalu** – Professor in Water Protection, Estonian University of Life Sciences, Institute of Forestry and Rural Engineering, Department of Water Management. Domain: waste management, waste to resource, water protection, wastewater treatment, soil remediation. mait.kriipsalu@emu.ee
- **Prof Valdo Kuusemets** – Head of Department of Environmental Protection, Estonian University of Life Sciences, Institute of Agricultural and Environmental Sciences. Domain: ecological engineering, landscape ecology, environmental protection. valdo.kuusemets@emu.ee
- **Toomas Tamm, DSc** – Associate Professor and head of Department of Water Management, Estonian University of Life Sciences, Institute of Forestry and Rural Engineering. Domain: hydraulic, hydraulic structures and water management, modelling of hydrological processes. toomas.tamm@emu.ee
- **Margit Kõiv, PhD** – researcher in Environmental Technology, University of Tartu, Institute of Ecology and Earth Sciences, Department of Geology. Domain: ecological engineering, wastewater treatment technologies (treatment wetlands, alternative filter materials for phosphorus removal), waste and wastewater management. margit.koiv@ut.ee
- **Alar Noorvee, PhD** – researcher in Environmental Technology, University of Tartu, Institute of Ecology and Earth Sciences, Department of Geography, and director of Alkrannel LLC. Domain: environmental engineering, treatment systems design, development plans, consultations and environmental research, environmental impact assessments. alar@alkrannel.ee
- **Martin Maddison, PhD** – researcher in and programme manager of Environmental Technology, University of Tartu, Institute of Ecology and Earth Sciences, Department of Geography. Domain: climate change and GHG emissions, sustainable development, ecological engineering. martin.maddison@ut.ee
- **Marta Noorma, PhD** – Associate Professor and Vice Dean for Studies, University of Tartu, Faculty of Science and Technology, Institute of Physics. Domain: physics and technical physics, optical radiometry, metrology. mart.noo@ut.ee
- **Kaja Orupõld, PhD** – Senior research fellow in Environmental Chemistry, Estonian University of Life Sciences, Institute of Agricultural and Environmental Sciences, Department of Environmental Protection. Domain: ecotoxicology, environmental analysis, bioconversion of wastewaters, wastes and crops. kaja.orupold@emu.ee
- **Siiri Velling, PhD** – Lecturer and researcher in Colloid and Environmental Chemistry, University of Tartu, Faculty of Physics and Chemistry, Institute of Chemistry. Domain: environmental research and protection, environmental technology, monitoring, biosensors, modelling. siiri.velling@ut.ee
- **Karim Hellat, MSc** – Lecturer in Colloid and Environmental Chemistry, University of Tartu, Faculty of Physics and Chemistry, Institute of Chemical Engineering. Domain: environmental research and protection, substances hazardous to the environment, chemistry and chemical technology. karin.hellat@ut.ee
- **Janika Laht, MSc** – PhD student in Environmental Technology, University of Tartu, Institute of Ecology and Earth Sciences, Department of Geography. Domain: ecological engineering, indoor climate and energy efficiency, life cycle assessment of environmental technologies. janika.laht@ut.ee

**MODULE INFORMATION:**
mi.emu.ee/en/studies/international-courses
lote.ut.ee/Environmental_Mangement