Joint Master's Program Environmental Engineering

Finnish-Russian Barents Cross Border University Collaboration

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UNIVERSITY of OULU
OULUN YLIOPISTO

Partners

- University of Oulu
- Arkangelsk State Technical University
- Murmansk State Technical University
- Narvik University College

- All partners will offer the full program

Mutual aims

- The graduates will have scientific approach into environmental protection and management of natural resources
- The graduates will have skills and knowledge to do scientific and applied work both in industry and academia
- Number of students will be 20-30 students per year

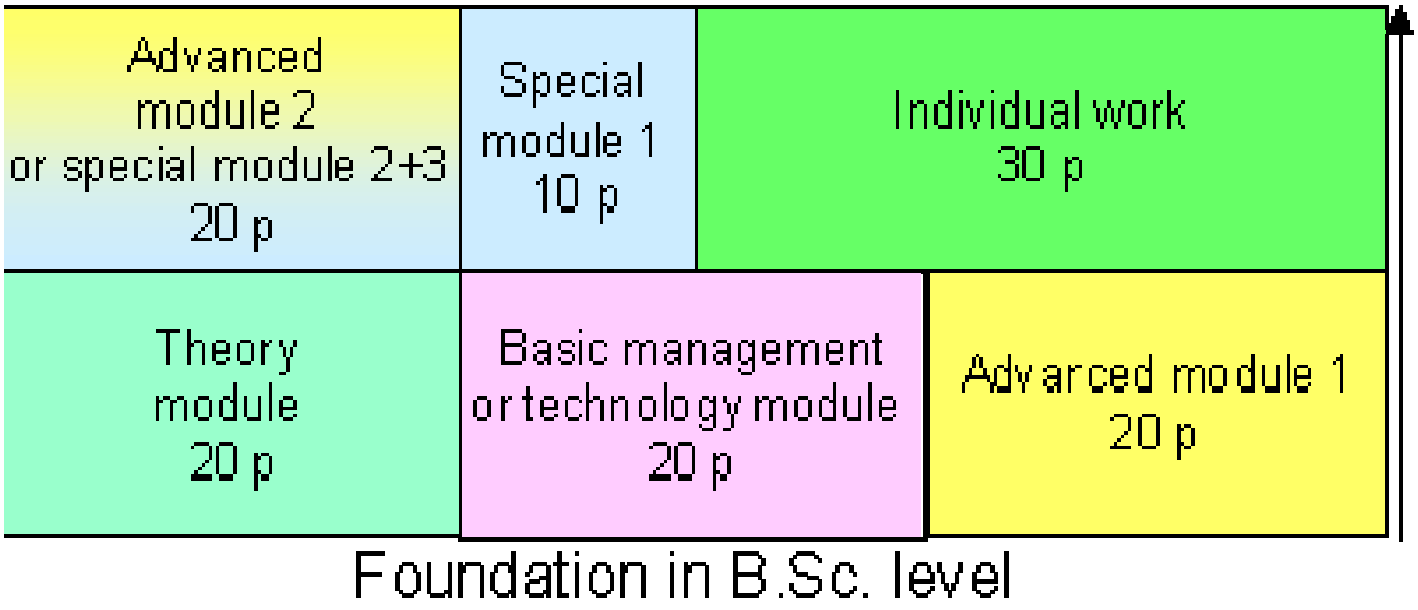
Orientations in the program

- ***Clean production engineering***
- ***Civil and pollution control engineering***
- ***Sustainable energy***

- Learning outcomes of the Master's programme are the same for the whole program, independent of the host university
- Courses are fully recognized by partner universities as part of the degree – double degrees can be gained

Draft of the curriculum

Proposed structure for the Joint Degree Program Environmental Technology



Activities

- The curriculum is under preparation
- Preliminary benchmarking of the courses has already been carried out
- The curriculum will include joint courses for the whole group
- Programme and student selection are planned and implemented in mutual understanding and co-operation
- The planning of the courses has already started, e.g. at Oulu the course contents are designed in 2007

Activities

- Main attention is to be given to provide knowledge to manage environmental affairs within the industry and companies by application of proper methods, tools and technologies.
- The Master's programme is mostly based on existing courses but new ideas and forward looking approach will be the main target when desining the programme and its courses
- Apart of the "hard values", such as technologies, processes, and management skills, it is also important to address the "soft values", to raise awareness and improve attitudes.

Activities

- Basic studies required: B.Sc. in process, chemical or civil engineering or comparable knowledge and skills (three years of studies in chemistry, biology + additional engineering studies)
- All students have to complete at least one semester of their studies (30 to 60 ECTS) in foreign partner university
- Student and teacher mobility is vital in the programme
- Support is given to the students by the host university (finding accommodation, advising, tutoring etc.)

Courses

Theory module (incl. language, mathematics, IT) 30 ECTS

Aim: To deepen the knowledge on theories of the discipline and other skills including

- mathematics, physics/chemistry,
- additional language skills,
- information and communication technologies,
- regional and global environmental problems,
- environmental ecology and ecotoxicology,
- environmental legislation (European and national),
- environmental economics and ethics,
- sustainable energy

These skills and knowledge are required before the students move on in their studies – if they have the required knowledge there is no need to do it again

Courses

Preparatory module 20 ECTS

Aim: Give the students a wide introduction to the professional knowledge on

- Material flows
- Eco-efficiency
- Monitoring and measuring methods
- Industrial ecology
- Environmental management systems
- Risk assessment
- Environmental impact assessment
- Project management

Courses

Special basic module 10 ECTS

- Each university may define the structure and the content itself, it may prepare for the future studies or deepen the knowledge of the preparatory module

Orientations in the program (2nd year)

- *Clean production engineering*
- *Civil and pollution control engineering*
- *Sustainable energy*

Courses

Advanced modules 10-20 ECTS

Different for each orientation:

- Environmental monitoring (ASTU), 10 ECTS
- Environmental analytical chemistry (ASTU), 10 ECTS
- Energy and environment (NUC), 10 ECTS
- Green logistics (NUC), 10 ECTS
- Design for the environment: Advanced industrial ecology module (UO), 10 ECTS
- Separation technologies and Special waste treatment technologies (UO), 10-20 ECTS
- Energy management and Air pollution control (UO), 10-20 ECTS
- Process design and Management module (UO), 10-20 ECTS
- Water supply and water treatment (UO), 20 ECTS
- Geoenvironmental Engineering (UO), 20 ECTS