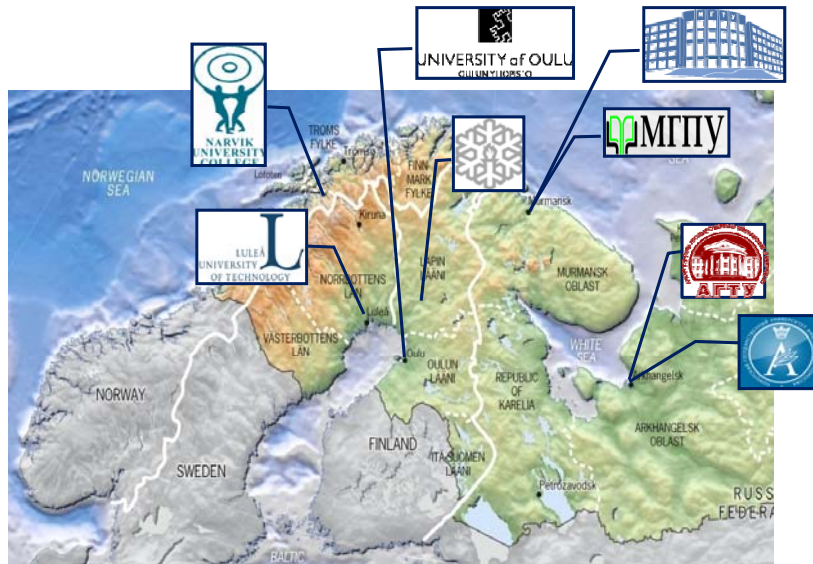


Master's Programme (BCBU) in Environmental Engineering



Barents Environmental Engineering (BEE)

- ▣ **Main responsibility:** University of Oulu, Faculty of Technology, Department of Process and Environmental Engineering (PYO)
 - Developed together with PYO and the Thule Institute (BCBU coordination)
- ▣ **Full partners**
 - University of Oulu, Finland
 - Archangelsk State Technical University, Russia
 - Murmansk State Technical University, Russia
 - Narvik University College, Norway
 - ▣ Not part of the BCBU agreement, but very active
- ▣ **Associate partners**
 - University of Lapland, Finland
 - Murmansk State Pedagogical University, Russia
- ▣ **Possible partners**
 - Luleå University of Technology, Sweden
 - ▣ Status unclear, ready to provide courses
 - Pomor State University, Archangelsk, Russia
 - ▣ Expressed interest, participation to be approved
 - Danish Technical University, Denmark
 - ▣ Collaboration with Arctic Technology Centre



Our interpretation of a BEE master's programme

- The rationale behind the programme is the needs of the Barents region
 - Support sustainable production practices
 - Bring growth and progress to the Barents region
 - Maintaining a sustainable use of natural resources
 - Protecting the sensitive Barents environment
- The programme is open for international applicants; however, it is primarily intended to train experts for the Barents regions
- Formally, it is a 2 year, English language master's programme of 120 ECTS, which includes an exchange period of some 30 ECTS in at least one of the BEE partner universities
- A special feature of BEE is jointly organized courses, which are taught by an international teacher team from member universities
- Partner universities can offer their own orientations, however, they all should include the jointly offered courses

Orientations in BEE

- University of Oulu (2009):
 - **Clean production**
 - **Water and environment**

Orientations launched Sept. 7th, 2009,
2nd call ended, students to be selected
- Narvik University College & University of Oulu (2010)
 - **Sustainable energy**

Orientation to be launched Sept. 2010

 - **Programme to be realized jointly by NUC and UOulu**

Situation at full partner Russian universities

- Archangelsk State Technical University
 - **«Environmental protection» master's degree programme**
 - No information of its English content

2 budget places received in 2009
for a 90 ECTS programme to
enroll Specialist graduates
- Murmansk State Technical University
 - **All-round Utilization of Water Resources**
 - 120 ECTS MSc programme, of which 12 is possible to lecture in English

3 budget places received in 2009

‘Clean production’ and ‘water and environment’ orientations

- Curricula based on existing courses of “*industrial environmental engineering*” and “*water and geo-environmental engineering*” orientations of the environmental engineering study programme, with some BEE content:
- Joint courses designed to be taught by an international BEE teacher team of partner universities
 - **Introduction to the environmental and socio-economic issues of the Barents region**
 - *Introduction to the environmental legal systems of the Barents region*
 - **Environmental issues of the Barents region**
 - Bolded courses are seminars offering a platform for all students to meet
 - All students of the different orientations expected to participate
- Further multidisciplinary content relevant to multilateral collaboration
 - Resource economics, international procurement & logistics, risk management
- New courses implemented based on strong UOulu expertise
 - Sustainable development
 - To be develop as video-course
 - Global change
 - Internet-based course



Sustainable Energy orientation

- Joint master’s programme with Narvik University College (NUC)
 - During the first full year, all students would be at UOulu with NUC contributing a 10 ECTS intro course
 - 2nd year autumn semester in Narvik
 - Diploma work project at home university
- Situation in UOulu
 - Agreement with NUC signed, Erasmus agreement in progress
 - Faculty of Technology has accepted the programme as a study orientation for students of the Process and Environmental Engineering Department
 - 7 3rd year BSc students have chosen the orientation
- Situation in NUC
 - Accreditation application resubmitted before March 1st, results expected for April 27th
 - 50% funding received for a professorship in sustainable energy to support the programme
 - First new course to be piloted in May in Narvik for our present BEE students



Marketing the BEE programme

- Has not been one of the success stories
 - No applicant from partner universities in 2009
 - 1 in 2010, however, with background insufficient for engineering studies
- BEE www page (<http://bee.oulu.fi>)
 - Informative, serves also present and future students of UOulu
 - Need to further develop to include all orientations equally
 - Most applicants probably found BEE in “University Admissions Finland” web-portal
 - Only 1-2/year is specifically applying for BEE, most are interested in environmental engineering
- Programme presented at educational related fairs and events
 - Very few real interest, has not yet attracted students to apply
- Strong need to improve marketing strategy
 - We need especially to perfect marketing in the Barents region



Summary of experiences with CP and WE orientations

BEE/CP&WE start successful in UOulu, although not without problems

- Positive issues, but providing new challenges:
 - It was unexpected that BEE attracted applicants from all through the world
 - Of those accepted in 2009: 6 European, 6 Asian, 2 African, 1 South-American
 - Best 10 applicants in 2010: 2 European, 4 Asian, 4 African
 - Raises the question: should BEE be only for Barents students?
 - More mature students with higher degrees from other fields or from working life interested in taking BEE as a second (third...) degree
 - Not always with an ideal background, but mature and motivated
 - Student group very heterogeneous
- Negative issues that need to be fixed
 - No students from BEE partner universities
 - We all need to advertise BEE to our own students
 - Need more collaboration with Russian universities
 - Participation of Russian teachers in joint courses
 - Exchange courses or field study places in Russia



Questions to discuss

- The future of BEE, prognosis of having joint programmes with Russia
 - Are the administrative and financial frameworks supportive?
- BEE is a brand name describing the partnership, rather than a MSc programme
 - All 5 orientations are master's programmes on their own, rather than orientations
- How can Russian full partner universities fully utilize this partnership to offer international level master's programmes?
- Financial resources for implementing joint courses/exchange?
- Role of associate partners
 - Have no nationally recognized master's degree programmes in engineering
- Is there still a need for a Joint Selection Committee?
 - Only Oulu seems to have an international intake
- Is BEE 'in the Barents for the Barents', or more 'in the North for the World'?
 - Is BEE a channel for our own national students or an international recruitment channel?