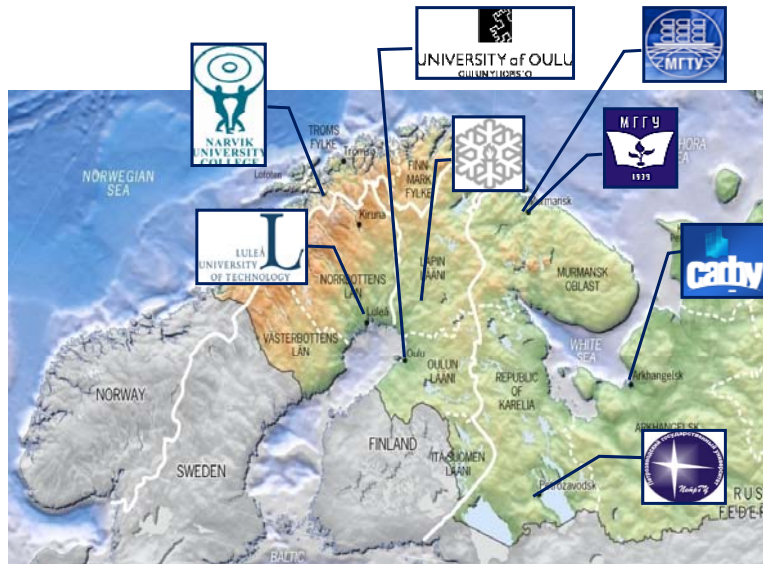


Barents Environmental Engineering



Barents Environmental Engineering (BEE)

- **BEE Programme leader: University of Oulu**
 - Programme implemented at the Faculty of Technology, Department of Process and Environmental Engineering

- **Full partners**
 - University of Oulu, Finland
 - Northern (Arctic) Federal University, Russia
 - Murmansk State Technical University, Russia
 - Narvik University College, Norway

- **Associate partners**
 - Petrozavodsk State University, Russia
 - University of Lapland, Finland
 - Murmansk State Humanities University, Russia
 - Luleå University of Technology, Sweden



Status of the BEE Programme

- University of Oulu:
 - Clean production (CP), Water and environment (WE)
 - Launched 2009, intake every year, total 14 (5+3+6) student intake, 4/5 2009 BEEs graduated in 2011
 - Sustainable energy (SE)
 - Orientation realized jointly with NUC, started 2010, intake total 12 (8+4)
- Northern (Arctic) Federal University
 - Energy and resource processes in chemical engineering, petrochemical and biotechnology master's degree programme launched in 2011 (120 ECTS), has 10 ECTS English content
 - A 90 ECTS programme available to specialist graduates since 2009
 - 12 students intake since 2009 (6+3+3), 3 graduated 2011, 3 in 2012, first BSc to graduate 2012
- Master's degree programmes at Murmansk State Technical University
 - Environmental Protection, 2009-2012 – some of the courses available in English (3 in, 3 graduated)
 - Safety of Technosphere, started 2011 – partly in English (2 students)
 - Sustainable Management, to start Sept. 2012 – will have English language modules (will accept 3-10 students)
- Narvik University College
 - Can provide up to 70 ECTS to the BEE/SE programme
 - 7 BEE/SE students of UOulu were at exchange in NUC in autumn 2011, one doing his diploma work there
- Status of associates
 - Petrozavodsk State University & Luleå University of Technology
 - Participated in the implementation of joint courses and have English language courses to offer to the BEE programme
 - University of Lapland & Murmansk State Humanities University
 - Have not participated in joint courses and WG meeting

Evaluating the BEE programme I: Internal evaluation of int'l programmes at UOulu

	Good practices	Development area	Overall score
Programme design	<ul style="list-style-type: none"> • Teachers' pedagogic skills • National centre of excellence • Student centred approach • Unique academic content 	<ul style="list-style-type: none"> • Increase the number of qualified applicants 	<i>Advanced</i>
Quality of implementation	<ul style="list-style-type: none"> • Student Advisor monitors progress • Student evaluations feed into the programme 	<ul style="list-style-type: none"> • Include "real world" feedback from companies 	<i>Advanced</i>
Roles and responsibilities	<ul style="list-style-type: none"> • Documentation on processes • Staff fully invested 	<ul style="list-style-type: none"> • Clarify role of Academic Coordinator 	<i>Advanced</i>
Graduate prospects	<ul style="list-style-type: none"> • Clear vision of what graduates need to achieve 	<ul style="list-style-type: none"> • No link to Barents region and employment • Need to engage employers 	<i>Developing</i>
Student counseling	<ul style="list-style-type: none"> • Student tutors • Close links of academic staff to students 		<i>Advanced</i>

Evaluating the BEE programme 2: Student feedback at UOulu

- Main motivation for studies in the BEE programme
 - Interest in the subject
 - Career expectations: to get a diploma that is recognized, to improve chances to get a better job
 - To study in English, to study in Finland/abroad
 - Wanted to study a multidisciplinary engineering programme
- Future plans
 - More than 60% plan to continue PhD studies after graduation
 - Over 90% would like to stay in Finland or elsewhere in Europe
 - Most thought that the BEE degree would improve employment possibilities
- Experiences with Personal Study Plan
 - All the students had a Personal Study Plan done with help of the student advisor
 - All have a contact person for the BEE programme, and consider tutoring good
- Study offer
 - The study guide is clear and with enough information
 - Like the possibility to include courses from other orientations/disciplines
- Quality of teaching
 - Subject specific expertise and English skills of the teachers considered mainly good or excellent
 - Students prefer participatory learning methods - exercises, group works, debates, negotiations, seminar presentations
 - Most students prefer face-to-face teaching to distant learning methods

Evaluating the BEE programme 3: SWOT

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> * High quality education and experienced teachers * Education of skilled engineers who are specialized in the Northern environment * Networking between the students and teachers * Provides motivation to develop English language courses in Russia * New curricula developed * BEE programme evaluated well at UOulu 	<ul style="list-style-type: none"> * Deficient marketing * Very few students in the programme * Most students at UOulu are not from Barents region * Lack of English speaking teaching staff and students in Russia * Distant learning methods underutilized * Teachers' overload
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> * Recruit graduates to doctoral programmes * Vast investment and development projects in the Barents region create a demand for trained experts * Distance education platform development in Kolarctic ENPI BCBU+ * Applying for funding for short-term student and teacher mobility (intensive courses) * BEE as platform to test new teaching methods 	<ul style="list-style-type: none"> * Graduates/international students will not stay in the North to utilize their education * Will be unable to realize joint programmes with in the short term * No incoming students in Russia – no motivation for developing courses in English * Tuition fee at UOulu may reduce the interest of international students to apply to the programme

Summary of the BEE WG meeting

- There is no joint BEE degree programme yet, but the provisions are good
 - The SE orientation is jointly organized with NUC
 - Number of courses in English increased in Russian universities as well
 - A key feature is a joint seminar in which 6 universities participate (students and teaching)
- We will have to work more on the comparability of curricula
 - Challenges of curricula and course scheduling
 - Need to harmonize learning outcomes of courses
- Agreement on the implementation of the BEE programme is to be finalized
 - Need to define the commitment required from full and associate partners
- Financial resources for implementing joint courses and exchange periods lacking
 - Challenges provided by different living costs in Russia vs. Finland vs. Norway
- Need to address the issue of teachers' work overload
 - Distant learning methods could be used more actively
 - Provide teachers with incentives to develop/translate courses to English
- Need to put more effort into marketing the programme
 - However, the WG made up of teachers is not the best tooled to perfect marketing