



# Higher Professional Environmental Education in Ukraine: Overview of the State and Perspectives

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# Levels of Higher Education

In accordance with the Ukrainian legislation training of specialists of environmental profile in Ukraine is provided at the higher education levels of **Junior Specialist**, **Bachelor**, **Specialist** and **Master** within a particular field (since 2016 – a speciality)



# The Field of Study

Until 2016 a separate field of '**Environmental Science, Environmental Control and Sustainable Nature Management**' had been distinguished with the specialities of:

- Environmental Protection
- Applied Aspects of Environmental Science and Sustainable Nature Management
- Environmental Safety
- Radioecology
- Environmental Control and Audit
- Reserve Area Protection



# Harmonization of the Specialities

In 2016, owing to harmonization of the specialities, following which training at Ukrainian universities is to be provided under the International Standard Classification of Education (2013), the list of specialties in the system of professional environmental training was reduced to the following:

- ▶ 'Environmental Science', related to the field of 'Natural Sciences'
- ▶ 'Environmental Protection Technologies' or 'Environmental Engineering', related to the field of 'Technologies and Production'

i.e. one natural specialty and one engineering specialty



# Odessa State Environmental University

As of today, training of professionals under the abovementioned specialities in Ukraine is provided by **more than 100 higher educational institutions**, among which **Odessa State Environmental University** is a HEI which directly specializes in the field



- Over a long period the main aim of OSENU (founded in 1932) was to train personnel in the fields of environmental quality monitoring and environmental control (mainly in the field of Hydrometeorology)
- Lately it has started training specialists in the allied fields, such as Geographic Information Systems and Management
- Citizens of 81 countries have been provided education at the University, including students from Poland



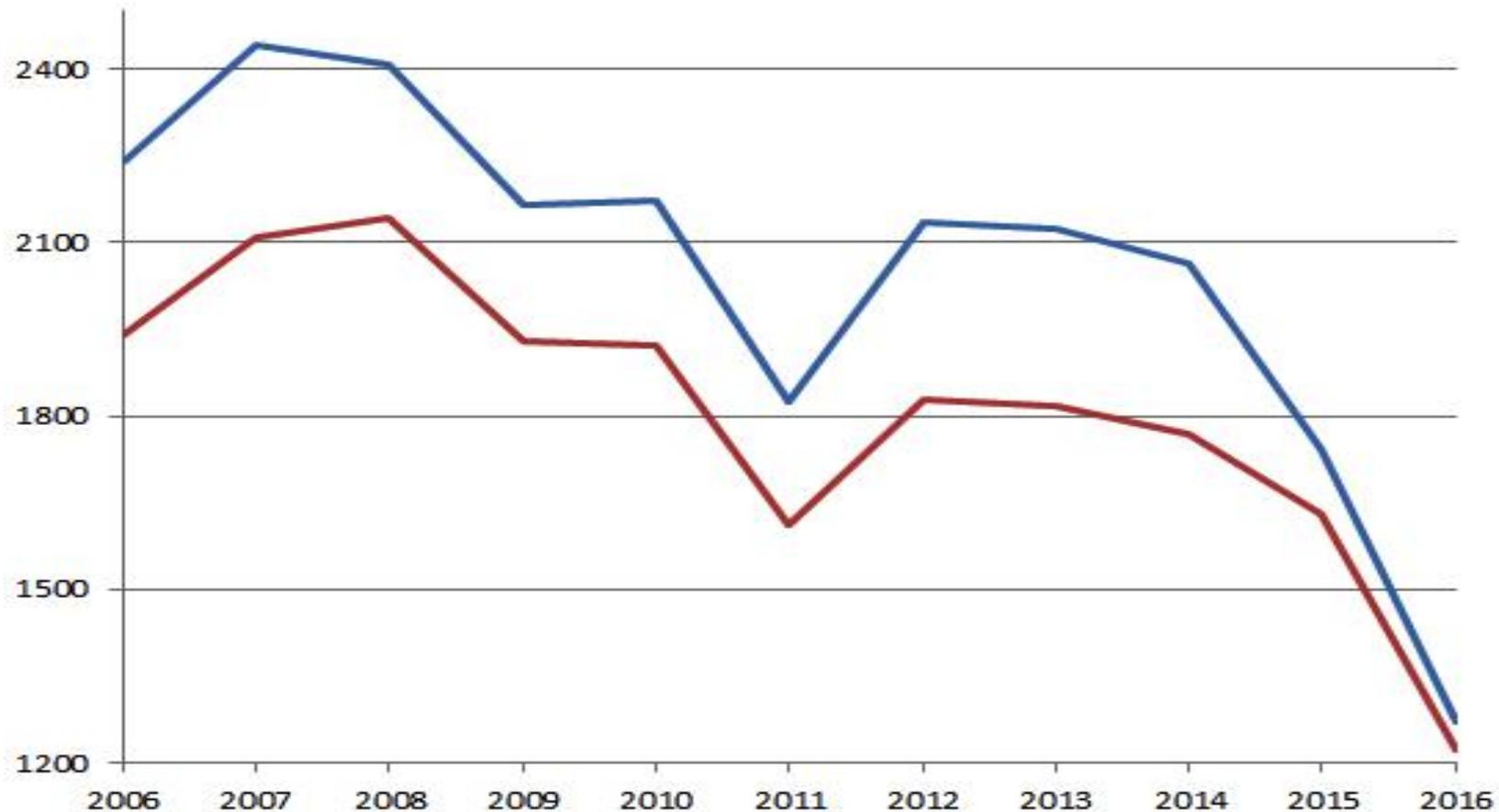
# Other Leading Universities to Train Environmental Specialists in Ukraine

- ▶ V.N. Karazin Kharkiv National University
- ▶ National Aviation University (Kyiv)
- ▶ National Technical University of Ukraine 'Kiev Polytechnic Institute'
- ▶ National University of Life and Environmental Sciences of Ukraine (Kyiv)
- ▶ National Forestry and Wood-Technology University of Ukraine (Lviv)
- ▶ Lviv Polytechnic National University





# Dynamics of the Rate for State Budget Funding of Training in Environmental Science (Ukraine)



- the total annual admission to the undergraduate (BSc) courses in Environmental Science **funded from the state budget** (full-time + extra-mural studies)
- total annual admission to full-time studies



# Development of Higher Environmental Education in Ukraine

This field of training is one of the youngest not only in Ukraine – the professional higher environmental education dates back to just the early 1970s

- ▶ The 1st period of development: prior to 1986 (before the Chernobyl Accident)
- ▶ The 2nd period: 1986 through 2000 (new challenges for the new Ukraine, development of scientific and methodological fundamentals)
- ▶ The 3rd period: 2000 through 2014 (coordination of the approaches originated by various scientific and pedagogical schools of thought)
- ▶ The 4th period – implementation of the new Law on Higher Education



# Directions of Particular Importance for Development of Higher Environmental Education in Ukraine

- ▶ Development of scientific and methodological fundamentals of the training
- ▶ Coordination of the approaches originated by various scientific and pedagogical schools of thought, which had already taken shape
- ▶ Benchmarking, including exchange of international experience and its dissemination.



# The Standing Commission

- ❑ These tasks have been effectively solved by the **Standing Commission for Environmental Science, Environmental Control and Sustainable Nature Management** in the Scientific and Methodological Council of the Ministry of Education and Science of Ukraine
- ❑ The Commission worked on the premises of Odessa State Environmental University and combined the efforts of the representatives of about 35 leading higher educational institutions, the Ministry of Ecology and Natural Resources of Ukraine, and non-governmental environmental organizations





# Principal Functions of the Commission

- ▶ Development of educational and professional programmes for training of environmental experts at all the levels of higher education (BSc, Specialist and MSc), including the diagnostic tools for the quality of training
- ▶ Development of guidelines to improve curricula for training of the specialists in accordance with educational and professional programmes approved by the Ministry of Education and Science of Ukraine
- ▶ Development of guidelines for origination of the syllabi of academic disciplines, comprising the 'core' of environmental profile specialities



# Principal Functions of the Commission

- ▶ Development of proposals on long-term plans for preparation and publication of textbooks, tutorials and instructional materials, assessment and review of manuscripts for appropriateness of publication, setting up authors' groups on writing syllabi for the normative academic disciplines and the textbooks
- ▶ Scientific and methodological assessment of textbooks, tutorials and other educational materials planned for publication
- ▶ Scientific and methodological assessment of diagnostic tools for quality assurance of the training



# Principal Functions of the Commission

- ▶ Development of guidelines for enhanced organization of self- and individual study of students, and improved evaluation criteria for student performance
- ▶ Development of proposals for Curricula and Syllabi of teachers' professional development and retraining
- ▶ Study and dissemination of the experience of training specialists at Ukrainian and foreign institutions of higher learning
- ▶ Drawing conclusions on the equivalence of higher education qualification levels and academic degrees obtained abroad in course of the process of their recognition and nostrification of the relevant documents in Ukraine



# Bachelor of Science

At the higher education level of Bachelor, the standard of training in the field of Environmental Science and Environmental Control is 240 ECTS credits, 4 years of study, and consists of 3 units:

- ▶ Socio-humanitarian training, 24 credits (10% of the total for the training programme)
- ▶ Mathematical and natural-scientific training, 60 credits (25% of the total for the training programme)
- ▶ Professional training unit, 156 credits (65% of the total for the training programme). This unit also includes obligatory practical training of the students totalling at least 14 ECTS credits



# Bachelor of Science

The feature of this standard is that, apart from the academic disciplines which are common for all the programmes (with their share being not more than 50 percent of the total study time), it is required of higher educational institutions and students to select the remaining 50 percent of the disciplines from all of the three aforementioned units to complete the 240 credits.

The common disciplines are aimed at formation of students' competences, which are defined as mandatory for all the graduates under the study profile.



# List of BSc Professional Disciplines in Common for all the Higher Educational Institutions

- ▶ Biology (Chemistry being a part of the Natural Science unit)
- ▶ Classical Ecology
- ▶ Fundamentals of Landscape Ecology
- ▶ Fundamentals of Environmental Monitoring
- ▶ Fundamentals of Modelling and Prognostication of the State of the Environment
- ▶ Fundamentals of Technical Ecology
- ▶ Fundamentals of Urban Ecology



# List of BSc Professional Disciplines in Common for all the Higher Educational Institutions

- ▶ Regulation of Anthropogenic Load on the Natural Environment
- ▶ Fundamentals of Environmental Safety
- ▶ Fundamentals of Environmental Assessment
- ▶ Fundamentals of Organization and Management in Environmental Activity
- ▶ Nature Conservation Legislation and Environmental Law
- ▶ Fundamentals of Environmental Economics
- ▶ Fundamentals of Protected Area Science



# BSc Final Certification

**Final certification of a graduate** is conducted as a **comprehensive qualification examination**, aimed primarily at determining the level of theoretical training, and the subsequent **defense of a certification paper**, which is to demonstrate the graduate's ability to solve specific sectoral problems



# Master of Science

- ▶ A similar approach is used in setting the standards of training at the Master level.
- ▶ The programmes may range from 90 (for training of profession-oriented Master students) to 120 ECTS credits (for training Master students with an enhanced research constituent).
- ▶ The principal distinctive feature of this level is a reduced percentage of the disciplines which are common for all the programmes and a proportional increase in the volume of training to be jointly formed by the higher educational institution and the student.



# Master of Science

Up to 87% of the total of the training programme is provided for professional training of Master students.

The disciplines which are common for all Master Degree programmes are as follows:

- ▶ Basics of the Strategy for Sustainable Development
- ▶ Methodology and Engineering of Research
- ▶ Environmental Inspection
- ▶ Environmental Management and Audit
- ▶ Research-and-Development and Pre-Graduation Practical Placements under the selected research topic



# MSc Final Certification

**Final certification** of a graduate is conducted as a **defense of a MSc certification thesis**, preparation of which requires:

- ❑ 18 ECTS credits for profession-oriented programmes
- ❑ 24 ECTS credits for research-oriented programmes



# Development of New Standards

Under the changes that are currently taking place in the training in Environmental Science and Environmental Control in Ukraine, greater academic autonomy of higher educational institutions in the first place, the Commission gives special consideration to **development of new standards of higher education at the levels of BSc, MSc and PhD**



# Sectoral Qualifications Framework

The sectoral qualifications framework in the field of Environmental Science and Environmental Control, being efficiently developed within the framework of the **international project of 544524-TEMPUS-1-2013-1-PL-TEMPUS-SMHES 'Qualifications Frameworks for Environmental Science at Ukrainian Universities'**, serves as a good basis.



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# Sectoral Qualifications Framework

- ▶ In 2015 the draft of this sectoral framework was presented, actively debated, and finally given resounding support at the Commission meeting
- ▶ A preliminary version of the sectoral qualifications framework has already formed the basis for the drafts of higher education standards in the speciality of 'Environmental Science' for BSc and MSc cycles which were developed in the first half of 2016



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# Thank You!



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