

экономического развития Республики Беларусь и тенденциями зеленой экономики в отраслях народного хозяйства.

ЛИТЕРАТУРА

1. Концепция образования в области окружающей среды. Республиканская программа совершенствования образования в области окружающей среды. - Минск, 2001.
2. Мамедов, Н.М. Основы экологического образования / Н.М. Мамедов. – М., 2005.
3. Национальный план действий по внедрению принципов зеленой экономики в отраслях народного хозяйства Республики Беларусь до 2020 года [Электронный ресурс]. – 2016. – Режим доступа: <http://www.government.by/upload/docs/fileb9cfb7e9401807aa.PDF>. – Дата доступа: 22.03.2019.
4. Национальная стратегия устойчивого социально-экономического развития Республики Беларусь на период до 2020 г. [Электронный ресурс]. – 2015. – Режим доступа: http://un.by/images/library/thematic-publications/sustainable-development/OON_sMall_Rus.pdf. – Дата доступа: 22.03.2019.

УДК 378.147:004:663 (476.6)

ENVIRONMENTAL DISTANCE LEARNING COURSE ON AGRICULTURE AND POLLUTION

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Summary. Distance learning (DL) course “Agriculture and Pollution: Environmental Problems and Practical Solutions” is aiming at developing knowledge and understanding of principle environmental problems in agriculture as well as impacts of industrial pollution upon agriculture. Practical skills in identification of adequate solutions are also developed using a number of case studies. The course is designed for professionals dealing with problems of environmental pollution and students involved in the related programmes.

Key words: distance learning, agriculture, pollution, soil contamination.

ЭКОЛОГИЧЕСКИЙ КУРС ДИСТАНЦИОННОГО ОБУЧЕНИЯ ПО ВОПРОСАМ СЕЛЬСКОГО ХОЗЯЙСТВА И ЗАГРЯЗНЕНИЯ ОКРУЖАЮЩЕЙ СРЕДЫ

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Аннотация. Курс дистанционного обучения (ДО) "Сельское хозяйство и загрязнение окружающей среды: Экологические проблемы и практические решения" направлен на развитие знаний и понимания принципиальных экологических проблем в сельском хозяйстве, а также влияния промышленного загрязнения на сельское хозяйство. Практические навыки по поиску адекватных решений также развиваются с использованием ряда тематических исследований. Курс предназначен для специалистов, занимающихся проблемами загрязнения окружающей среды, и студентов, участвующих в соответствующих программах.

Ключевые слова: дистанционное обучение, сельское хозяйство, загрязнение, загрязнение почвы.

Introduction. In the past main attempts to improve environmental quality in the Baltic region were mostly directed towards air and water pollution control and industry as the basic source of pollution, urban environmental problems always having priority against rural. This concerned not only legislation, but also education – no courses were suggested in the interdisciplinary field of agriculture and pollution. Trying to change this situation, an AGRIPO project (full name - Agriculture and Pollution: Environmental Problems and Practical Solutions) was initiated by Lithuanian University of Agriculture, later acting as a project coordinator; other project partners – Bournemouth University (UK), Riga Technical University (Latvia) and Kaunas Technological University (Lithuania). The project was funded by the EU Phare Multi-country Programme for Distance Education. The main objective of this project was to create distance learning materials for students and professionals in the general area of agriculture and pollution.

Aim of the Course. APEPPS DL course was designed for students as well as professionals (decision makers, executives and technical managers of agro-companies, etc.) who wish to keep up-to-date with contemporary thinking and developments in the general area of agriculture and pollution – this includes both pollution caused by agriculture and the impact of other anthropogenic sources of environmental pollution upon agriculture. This course was designed as a traditional distance education (DE) course using textbook-based learning materials as the basic medium. The course delivery was supported by the printed student and tutor guides as well as video material which demonstrate the most recent methods used for elimination of impact of soil pollution. The delivery combines face-to-face sessions with self-study supported by asynchronous and synchronous consultations to support the students' learning. The APEPPS Moodle version was developed to provide relevant information about the course including electronic version of student guide and APEPPS textbook in PDF format, number of links to other Internet resources, discussion groups for various topics and upload/download area for additional materials. After completion the successful students get credits. Successful external learners are awarded the formal Certificate as a proof of expertise in the subject field.

APEPPS Course aims to provide learners with a clear understanding of the major pollution issues associated with the agricultural industry and the potential for their amelioration. This includes:

- the nature of the relationship between agriculture and the environment;
- the potentially polluting effects of intensive agricultural activity upon the environment;
- the various mechanisms available for reducing these effects, including new technologies, the improvement and more effective enforcement of statutory controls, the use of agri-environmental policy to encourage the extensification of agricultural production and the development of 'alternative' agricultural systems;
- finally – the potentially negative impact of environmental pollution (notably soil contamination) upon agriculture, and the strategies and practical measures for reducing this risk.

Objectives of the Course. Upon completion of APPEPS course, learners should be able to:

- describe the various factors that have contributed to the intensification of the agricultural industry over the last 50 years;
- give examples and describe how agricultural intensification has created environmental problems in the following areas: pesticide pollution, nitrate pollution, livestock wastes;
- to identify the main sources of soil contamination, to understand behaviour of inorganic and organic pollutants in soils and to get acquainted with different soil remediation methods and technologies as well as soil clean-up criteria;
- demonstrate an understanding of the development, promotion and implementation of the following mechanisms for reducing these problems: information and advice to encourage good agricultural practice, new technologies, statutory control and regulation, financial incentives, agri-environmental policy;
- give an insight into the emergence of 'alternative' agricultural systems, such as organic farming;
- evaluate the strengths and weaknesses of these various options and discuss their potential role in the development of more sustainable food production systems.

Structure of the Course. APEPPS is a 6-credit course during which learners are introduced to some of the key environmental problems associated with agriculture, as well as the related practical solutions and policy options. The overall study load is equivalent to 12 weeks of studying of 3 hours per day (15-18 hours per week). Students should undertake a minimum of 160 hours of study. This breaks down into approximately 120 hours of reading and self-assessment activity, plus 30 hours of formal assessment activities and 10 hours of face-to-face tutorials. The course mainly relies on self-study of written material in English or Lithuanian language. Student support is mainly provided through Internet tutoring. Learners are also invited to see their tutor and to discuss their learning problems during face-to-face tutorials after reading each Chapter of the APEPPS textbook. The final evaluation consists of:

- 50% marked assessment activities (5 coursework assignments, 10% each);
- 30% final written examination;
- 20% final oral examination.

All three evaluation components are obligatory. In case the student fails, he/she can get the Certificate of Attendance of APEPPS course. Successful students get Certificate of Competence (as proof of their knowledge and expertise in the subject field) or otherwise APEPPS Course modules can be included as a part of usual university degree studies in case of formal education.

Course Components. The main APEPPS Course components are as follows:

- Original developed APEPPS course textbook.
- Original developed Learner guide (including indicative answers to the SAQs set in the textbook).
- Video material supporting Chapter 6 on Soil Contamination.
- Number of links to other internet sources, discussion groups, etc.
- APEPPS course tutors get an original developed Teacher guide.


Structure of the Textbook. Course authors have prepared 8 chapters in APEPPS DL study textbook for learners to work through. These are as follows:


1. Introduction to Agriculture and Pollution.
2. Nitrates.
3. Pesticides.
4. Organic Farm Wastes.
5. Sewage Sludge and Other Organic Soil Amendments.
6. Agricultural Soil Contamination.
7. Pollution Control Policies.
8. Sustainable Farming Systems.

Each chapter has six main components:

1. Overview - this opens the chapter by explaining the rationale for studying the subject material, the general purpose of the chapter (aims) and the specific outcomes student should achieve by studying the chapter (objectives).
2. Main Text - the sections and sub-sections which introduce and address the subject material of the chapter.

3.  'Conclusions' - summarises the important points covered by the chapter.

4.  'Boxes' - containing supplementary information to support or expand upon points made in the main text.

5.  'Case Studies' - giving relevant and contemporary examples from EU Member States or neighbouring countries.

6. Assessment Activities - learners will encounter four different types of assessment question:

'In-text Questions' which learners are invited to answer before proceeding to the next idea in the text (it is advised that all in-text questions are attempted before proceeding from one chapter to the next).

'Activities' which learners are invited to undertake before proceeding to the next idea in the text (it is advised that all activities are attempted before proceeding from one chapter to the next).



‘Self-Assessment Questions’ (SAQs) to help learners assess their own understanding (preliminary answers are given in the Learner Guide).



‘Coursework Assignments’ - which are marked by tutors as a measure of learners’ academic performance and understanding of the course material.

Needs Analyses, Piloting and Marketing. An important phase of the project was to identify what issues would be the most relevant to the defined target groups. The analysis revealed that special needs and interests are concentrated on the issues of agri-environmental policy, EU legislation, also sustainable agricultural systems and soil pollution problems.

The APEPPS DL Course was tested before dissemination during pilot delivery in Lithuania and Latvia. Over 30 learners evaluated and provided feedback in the form of questionnaires to the course developers. According to the feedback data APEPPS course material was finally modified and improved.

APEPPS was offered as a formally accredited course as a part of BSc degree programme at a former Lithuanian University of Agriculture and Kaunas University of Technology, also was suggested as an optional course for incoming Erasmus students.

LITERATURE

1. Agriculture and Pollution: Environmental Problems and Practical Solutions. ETF, Italy/LUA, Lithuania. M. Redman, V. Paulauskaset..al., 2001. – 275 p.
2. AGRIFO Learner Guide. ETF, Italy/LUA, Lithuania, 2001. – 14 p.
3. AGRIFO Tutor Guide. ETF, Italy/LUA, Lithuania, 2001. – 9 p.
4. AGRIFO Course Guide. ETF, Italy/LUA, Lithuania, 2001. – 16 p.

УДК 008:37.013.43:502.1

ФОРМИРОВАНИЕ ЭКОЛОГИЧЕСКОГО МЫШЛЕНИЯ СТУДЕНТОВ ПРИ ИЗУЧЕНИИ БИОХИМИИ В МЕДИЦИНСКОМ ВУЗЕ

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Аннотация. Рассмотрены аспекты формирования экологического мышления при изучении биохимии в медицинском университете.

Ключевые слова: экологическое мышление, биохимия.