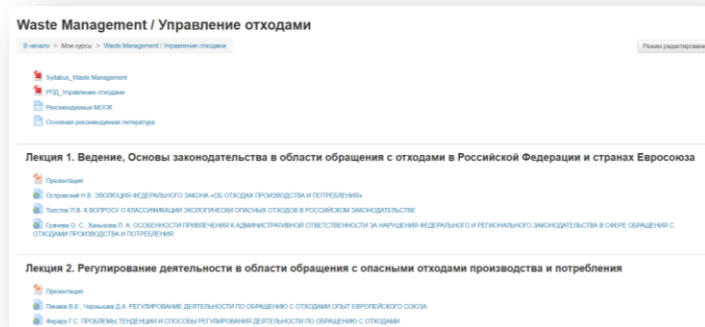


Outline

- 01. Course description and objectives
- 02. Assessment objectives
- 03. Questionnaire for students and its results
- 04. Questionnaire for a teacher and conclusions



01. The course "Waste Management" (3 ECTS) is intended for MSc in the field of training 05.04.06 Ecology and Environmental Management, profile Geoecology (1st year). The resource is designed to support a blended learning model using the GASU EEE (based on Moodle platform <http://moodle.gasu.ru/>).

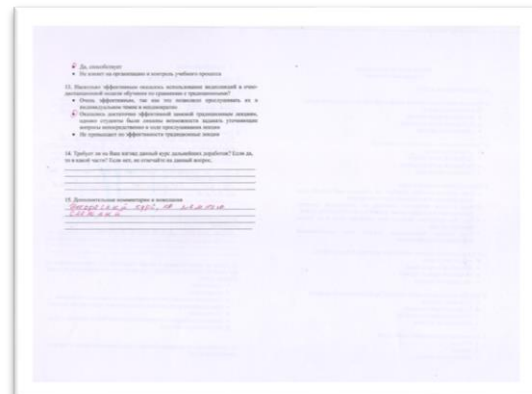
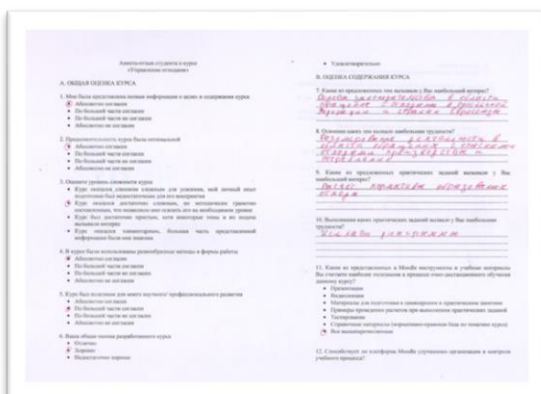
The aim of the course is to provide students with systematic knowledge about the system of production and consumption waste management, including the activity in developing draft waste generation standards and waste disposal limits, and the activity in studying and introducing new approaches to waste treatment.

The course objectives are:

- ✓ introducing to the legislation relevant to production and consumption waste management;
- ✓ studying the approaches to organization of waste management schemes;
- ✓ revealing specific features of various methods of waste recycling and processing;
- ✓ studying specific features of technical decisions for working out the scheme of production and consumption waste management; and
- ✓ introducing to the methods aimed at reducing the amount of production and consumption waste.

02. The assessment was conducted in order to collect the students' comments and feedback about the course, compare them to the students' actual achievements, and carefully analyze obtained results to make necessary amendments to the course content or teaching methodology.

03. The questionnaire for students consisted of 15 questions. It was a fully anonymous paper-based survey. PDF copies of the completed questionnaires can be presented upon request. Totally 11 students out of 12 provided their feedback.



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A. GENERAL EVALUATION OF THE COURSE

1. I was provided with sufficient information about the aims and the content of the course

- Absolutely agree – 100%
- Mostly agree – 0%
- Mostly disagree – 0%
- Absolutely disagree – 0%

2. The length of the course was optimal

- Absolutely agree – 45%
- Mostly agree – 55%
- Mostly disagree – 0%
- Absolutely disagree – 0%

3. Assess the level of complexity of this course

- The course was too complicated; my personal background knowledge was not sufficient to understand it – 0%
- The course was rather difficult, but well developed, allowing me to study it at the required level – 64%
- The course was quite easy, though some themes and the way they were taught aroused my interest – 36%
- The course was elementary; most information was familiar to me – 0%

4. Various forms and methods of teaching were used in this course

- Absolutely agree – 36%
- Mostly agree – 64%
- Mostly disagree – 0%
- Absolutely disagree – 0%

5. The course was interesting and useful for the further development of your skills as a (future) professional

- Absolutely agree – 91%
- Mostly agree – 9%
- Mostly disagree – 0%
- Absolutely disagree – 0%

6. What is your overall assessment of the course?

- Excellent – 64%
- Good – 36%
- Not good enough – 0%
- Satisfactory – 0%

B. EVALUATION OF THE COURSE CONTENT

7. Which theme(s) was the most interesting? (only the themes indicated by the students are listed below)

- Legal framework in the sphere of waste management in the Russian Federation and EU countries – 9%
- Hazardous production and consumption waste – 45%
- Prevention of harmful effects of production and consumption waste on human health and environment – 36%
- All themes were interesting – 9%

8. Which theme(s) was the most difficult for understanding? (only the themes indicated by the students are listed below)

- Regulation of activities in the sphere of hazardous production and consumption waste management – 55%
- None – 45%

9. Which practical task(s) was the most interesting? (only the tasks indicated by the students are listed below)

- Calculation of norms for waste generation – 27%
- Drawing Ishikawa diagrams to reveal root causes of discrepancies when handling industrial wastes – 18%
- Determination of waste composition, degree, and hazard class – 27%
- Individual project "Variants for placement and calculation of potential capacity and surface area of a solid wastes landfill" – 27%

10. Which practical task(s) was the most difficult to perform? (only the tasks indicated by the students are listed below)

- Drawing Ishikawa diagrams to reveal root causes of discrepancies when handling industrial wastes – 36%
- Revealing of generated waste with a help of schemes of material flows in technological processes – 27%
- All tasks were feasible – 36%

11. Which tools and learning materials presented in the Moodle do you consider most useful for you in the process of blended learning (concerning this course)?

- PowerPoint Presentations
- Video lectures
- Preparation materials for seminars and practical assignments – 9%
- Examples of calculations – 9%
- Tests
- Reference materials (links to official normative documents and additional literature)
- All of the above-mentioned – 82%

12. Does the Moodle platform help to improve the organization and control of the learning process?

- Yes, it does – 100%
- It does not affect the organization and control of the educational process – 0%

13. How effective do you think the use of video lectures in a blended learning model is as compared to traditional ones?

- Very effective, as it allows listening to them at your own pace and several times (if necessary) – 0%
- Proved to be an effective substitute for traditional lectures, though the students were deprived of the opportunity to ask clarifying questions directly during the lecture – 36%
- Do not exceed traditional lectures in their efficiency – 64%

14. Does this course require improvement? If so, in what part?

- Yes, it does – 0%
- No, it does not – 100%

15. Do you have any wishes or recommendations concerning this course?

- Only 6 students answered this question, but all their answers were positive (good; interesting; very useful course; interesting, but a little difficult; excellent).

04. The questionnaire for the teacher/course developer (Olga Zuravleva) consisted of 11 questions and was filled out after receiving and analyzing student's feedback.

1. What is your overall assessment of the course?

- Excellent
- Good
- Not good enough

- Satisfactory

2. Does the content of this course contribute to a more efficient process of acquiring the competencies provided by the Curriculum?

- Yes, it does
- Yes, but not to a large extent
- Efficiency is the same

3. How do you assess the impact of the online module for self-study on the process of teaching students this new course?

- There were significant advantages, including increased interest in the course and the quality of learning in general compared to traditional courses
- Despite general interest in the course the students did not show due responsibility while studying online module
- The students studied online module with greater interest
- Had no impact (did not differ significantly from traditional courses)

4. The effectiveness of the new course has increased in terms of ...

- Improvement in perception level (interest) of the course material by students
- Improvement of a student involvement degree in the learning process
- Improvement in the methodology for monitoring students' assignments
- Improvement of students' study of the course sections (modules) intended for self-study

5. What methodological aspects of the new course do you find most useful?

- Blended learning mode!
- Support for individual learning paths
- Availability of feedback from students during the course
- Possibilities of using Moodle tools

6. Which teaching materials (themes, practical tasks) were the most interesting for the students and contributed to a more efficient process of acquiring the required competencies?

Almost all teaching materials were in demand and all themes were equally interesting.

7. Which teaching materials (themes, practical tasks) were the most difficult for the students to understand/perform?

Students experienced the greatest difficulties when studying the theme "Regulation of activities in the sphere of hazardous production and consumption waste management." That was mainly due to the specificity of its content – a large number of legal acts regulating such activities, which change very often in today's Russia. As for practical assignments, drawing Ishikawa diagrams to reveal root causes of discrepancies when handling industrial wastes and revealing of generated waste with a help of schemes of material flows in technological processes turned out to be the most challenging.

8. Which tools and learning materials presented in the Moodle were mostly demanded in the process of blended learning (concerning this course)?

- PowerPoint Presentations
- Video lectures
- Preparation materials for seminars and practical assignments
- Examples of calculations
- Reference materials (links to official normative documents and additional literature)

9. Does the Moodle platform help to improve the organization and control of the learning process?

- Yes, it does



- It does not affect the organization and control of the educational process

10. How effective do you think the use of video lectures in a hybrid learning model is as compared to traditional ones?

- Very effective, as it allowed students to listen to them at their own pace and several times (if necessary)
- Proved to be an effective substitute for traditional lectures, though the students were deprived of the opportunity to ask clarifying questions directly during the lecture
- Do not exceed traditional lectures in their efficiency, but require special conditions and equipment to produce high quality videos

12. Does this course require improvement? If so, in what part?

- Yes, it does. Some changes should be made with regard to teaching the theme "Regulation of activities in the sphere of hazardous production and consumption waste management." The material should be more clearly structured to make it easier to understand. While teaching how to draw Ishikawa diagrams to reveal root causes of discrepancies when handling industrial wastes it is necessary to present the methodology for constructing the diagram in more detail and to show the algorithm for its creation by using simple examples. It is also necessary to provide more examples for the practical task "Revealing of generated waste with a help of schemes of material flows in technological processes."
- No, it does not.