

MANAGEMENT, TREATMENT AND USE OF WASTE

(Management and environmental protection, 1st Year of study, 2st Semester)

Credit value (ECTS): 7

Course category: Further study (mandatory)

Course holder: Assist. Prof. Georgiana-Diana GABUR, PhD

Objectives of the discipline (course and practical activity)

The course aims to provide a solid foundation for future environmental professionals to develop skills in waste management and also to reduce resource consumption and environmental impact.

Specific objectives:

- Knowledge of the main waste classes and their sources.
- To establish theoretical and practical interrelationships between the internal structure, properties, processing and in-use performance for each class of waste.
- To provide an amount of knowledge about waste minimization, recovery, recycling, reuse, reuse, treatment technologies, use of modern technologies as alternatives to landfilling.
- Methods of final utilization or disposal of waste, pollution generated by waste and its improper management, impact of waste on the environment.

Contents (syllabus)

Course (chapters/subchapters)
1. Introduction: an overview of waste.
2. National and international institutional, legislative and regulatory framework of waste management: regulations and laws related to the management of different categories of waste.
3. Green landfills: general design scheme for green landfills. Integrated waste management in the context of the circular economy.
4. Household waste management. Aerobic and anaerobic composting of organic waste.
5. Management of construction and demolition waste: examples of valorization of construction and demolition waste.
6. Hazardous waste. Types of hazardous waste. Properties of hazardous waste.
7. Hazardous waste management: the importance of proper hazardous waste management.
8. Waste incineration: modern incineration methods, reduction of pollutants resulting from waste incineration; Co-incineration of waste in the cement industry: co-incineration furnaces, advantages of using co-incineration; Other methods of thermal treatment of waste.
9. Pollution minimization, acid water treatment, ecological reconstruction of mining waste dumps; long-term monitoring of mining waste.
10. Waste from manufacturing and other economic sectors; implementation of the zero waste concept in the waste prevention strategy.
11. Life Cycle Assessment (LCA).
12. Summary course, general conclusions. Discussion.

Practical activity
1. Labor protection notions on waste handling.
2. Using specific legislation in waste management.
3. The main components of environmentally sound landfills. Landfill monitoring and landfill costs.

4. Waste management plans at national, regional, county, city, county and city level. Their importance and necessity. Correlation of management plans with the types and quantities of waste produced by the community.
5. Calculation of the quantities of waste produced by the community. Emissions from landfills. Estimation. Alternative organic waste management methods: composting and anaerobic digestion.
6. Waste codification according to the European Waste Catalog. The importance of coding and recording waste produced in different sectors (households, industry, agriculture, etc.).
7. Construction and demolition waste and other municipal waste in need of proper management. Case studies.
8. Hazardous waste. Urban hazardous waste. Hazardous waste management.
9. Incineration of hazardous and non-hazardous waste. Coincineration of waste. Other methods of thermal treatment of waste. Estimation of incineration emissions. Case study.
10. Environmental impacts and risks from different types of landfills. Waste management plan for an industrial enterprise.
11. Life Cycle Assessment (LCA) in the field of waste management
12. Colloquium

Bibliography

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*** www.eea.europa.eu

*** www.jrc.cec.eu.int

*** www.unep.org

*** <https://legislatie.just.ro/Public/DetaliiDocument/245846>

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Final exam	Written examination	60%
Evaluation of the activity during the semester	Written and oral assessments during the semester	40%

Contact

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