Waste management (IVnd Year of study, VIIIrd Semester)

Credit value (ECTS) 4

Course category
Domain (Imposed)

Course holder:
Prof. PhD. Daniel BUCUR

Discipline objectives (course and practical works)

The course aims to present the basic issues for the development of knowledge and skills specific to waste management in the context of the current legislative framework.

For this, the aim is for students to learn the specifics of different types of waste but also the particularities of the activities of collection, transport, treatment, recovery and disposal of waste.

At the practical works, students will acquire skills on methods of analyzing the structure of material waste, sizing the waste collection system for a community, identifying types of recyclable waste through cryogenic system and respectively arrangement and safe operation of compliant landfills.

Contents (syllabus)

Course (chapters/subchapters)
The object of study, the history and the importance of the waste management.
Impact of waste on the environment: the effect of waste on environmental factors (soil, water, air, flora, fauna) and human health; municipal waste treatment and recovery, sustainable use of natural resources.
Organizing the waste collection activity: primary and secondary waste collection; selective waste collection; containers and containers intended for selective collection, principles to be observed when choosing the locations of waste collection points.
Waste recovery methods: recycling of useful fractions from household waste; methods of biological and energy recovery of waste (composting of organic waste, incineration, co-incineration and pyrolysis of waste).
Transport and storage of waste: organization of transport of collected waste; responsibilities of sanitation operators in the waste management system, uncontrolled and controlled (ecological) waste storage.
Fungi: morphology, anatomy, nutrition, breeding and taxonomy.
Factors that condition the development and physiological activity of microorganisms: extrinsic factors; intrinsic factors; default factors (biological).
Obtaining and development control of microorganism cultures: pure cultures, ways of cultivation; stages of development of microorganisms in discontinuous and asynchronous cultures.
Legislative provisions in the waste management sector: European legislative provisions; Romanian legislative provisions.

European models of integrated household waste management: component description of waste management schemes; the investment need related to waste management schemes; evaluating the efficiency of integrated waste management schemes with the help of economic and financial efficiency indicators.

Practicum
Determination of bulk density, moisture and dry matter in the waste composition
Methods for analyzing of material waste structure
Waste sorting: economic and environmental impact
Waste composting
Sizing the waste collection system for a community
Constructive solutions for waste separation and extraction facilities
Functional and technological design of system parts
Estimating the energetic potential of waste
Examples of good practice in leachate treatment in Europe and Romania
Final colloquium of knowledge evaluation

References

1. Barbuta M., Bucur R.D., Cimpeanu S.M., Paraschiv G., **Bucur D., 2015** - *Wastes in building materials industry*, In: *Agroecology*, Pilipavicius V. ed., 81 - 100, Intech.
2. Burcea S. 2009 - Managementul deşeurilor urbane. Perspectiva europeană comparată", Ed. ASE, Bucureşti
3. Oros V., Drăghici C. 2002 - Managementul deşeurilor, Braşov, 2002;
4. Popescu Ch., Meglei V., **Bucur D., 2002** - *Protecţia mediului şi valorificarea în agricultură a unor deşeuri, reziduuri şi ape uzate*, Editura Tehnopress, Iaşi, 206 p, ISBN 973-8377-06-4
5. Negrea A., Cocheci L., Pode R. 2007. Managementul integrat al deşeurilor solide orăşeneşti, Ed. Politehnica, Timişoara
6. Bold O.V., Maracineanu G.A. 2004 - Depozitarea, tratarea şi reciclarea deşeurilor, Matrix Rom, Bucuresti

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Grid test	70%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	30%

Contact

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