

MODULE INFORMATION SHEET

Name of Module Unit	Waste Treatment Engineering
Name in polish language	Inżynieria przetwarzania odpadów
Module type	compulsory / elective
Form of studying	full-time day courses
Level of study	undergraduate course (B.Sc. level)
Type of study (for extra-mural courses)	-
Programme	Environmental Engineering
Speciality	Environmental Engineering
Responsible department	Chair of Environmental Protection and Management
Responsible person	dr inż. Krystyna Lelicińska

Semester	Lectures(E)	Tutorials	Laboratory	Computer Exercises	Projects	ECTS
6	15				30	3

Objectives (summary)

The aim of the course is to provide students with knowledge in the field of the unit operations and the use of various devices in waste management, including waste treatment - at various stages of waste management system. The course will discuss issues related to the basic problems concerning the purpose for which these unit operations and devices are used, principles of their application, selection, parameters, technological calculations and designing.

Prerequisites

1. Solid Waste Management

Rules for integrated grade definition

Final integrated grade: lecture 40%, project 60%

Recommended readings

Environmental Engineers' Handbook, by David H.F. Liu (Editor), Bela G. Liptak (Editor), ISBN-10: 0849399718, CRC Press 1997
 Hagerthy Joseph D., Pawoni Joseph L., Heer John E., Solid Waste Management, Litton Educational Publishing, Inc., New York, 1973.
 Jordening Hans-Joachim, Winter Joseph, Environmental Biotechnology, Wiley-VCH Verlag GmbH, Weinheim (Germany), 2008.
 Christensen Thomas H., Solid Waste Technology and Management, A John Wiley and Sons, Ltd, Publication, United Kingdom, 2011.

Contents of lectures (syllabus)

	Topics	Time (hrs.)	Scope (S / Ex)
1.	Introduction (waste management system).	2	
2.	Storage and pre-treatment of waste (grinding, mixing, sifting/sieving, compaction, separation etc.). Characteristics of unit operations, types of devices (at the treatment plants).	8	
3.	Internal transport (at the treatment plant) in waste treatment facilities - equipment and unit operations (conveyors). Devices and unit operations used in waste processing.	2	
4.	Devices and unit operations used during the collection and transport of waste.	2	
5.	Written test	1	
Total		15	hours

S – topics listed in the legal study programme standards from 12.07.2007

Ex – extended topics

Lecturers

dr inż. Krystyna Lelicińska

Assessment method

lecture: Positive assessment of the written test

Contents of guided projects

	Topics	Time (hrs.)	Scope (S / Ex)
1	Introduction	2	
	Technological calculations of individual unit operations - introduction	2	
	Technological calculations of grinding and sifting, device selection	3	
	Technological calculations of separation, device selection (electromagnetic, pneumatic, opto-electronic, ballistic separators)	3	
	Technological calculations of internal transport, device selection (belt conveyors and others).	3	
	Technological calculations of other unit operations	5	
	Design topics - discussion	2	
	Design consultations (office hours) and project defense	10	
Total		30	hours

S – topics listed in the legal study programme standards from 12.07.2007

Ex – extended topics

Persons responsible for guided projects

dr inż. Krystyna Lelicińska

Assessment method for guided projects

Class attendance and project defense