

MODULE INFORMATION SHEET

Name of Module Unit	Integrated Waste Management in Urban Areas
Name in polish language	Zintegrowane systemy gospodarki odpadami na terenach zurbanizowanych
Module type	compulsory / elective
Form of studying	full-time day courses
Level of study	graduate course (M.Sc. level)
Type of study (for extra-mural courses)	-
Programme	Environmental Engineering
Speciality	Environment Protection Engineering
Responsible department	Chair of Environmental Protection and Management
Responsible person	dr inż. Piotr Manczarski

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

Learning outcomes (knowledge, skills, competences)

The aim of the course is to provide students with knowledge in the field of waste management in various regions of urban areas, taking into consideration different waste streams (including construction and demolition waste, waste of electrical and electronic equipment, bulky waste, food and gastronomy waste etc.).

The course will discuss issues related to the basic problems concerning proper waste management, hierarchy of waste management, circular economy, smart city and minimalization of waste generation etc.

Prerequisites

Pro-ecological technologies, Municipal Solid Waste Treatment Technology

Rules for integrated grade setting

Lecture: The written test

Guided projects: The presence, the realization of the project, passing the project

Integrated grade = lecture grade x 40% + project grade x 60%

Recommended readings

Environmental Engineers' Handbook, by David H.F. Liu (Editor), Bela G. Liptak (Editor), ISBN-10: 0849399718, CRC Press 1997

Christensen Thomas H., Solid Waste Technology and Management, A John Wiley and Sons, Ltd, Publication, United Kingdom, 2011.

Recycling and reuse of materials and their products; Grohens, Sadasivuni & Boudenne. Apple Academic Press, 2013

Sustainable solid waste management : a systems engineering approach, Ni-Bin Chang; Ana Pires 2015

Contents of lectures (syllabus)

	Topics	Time (hrs.)	Scope (S / Ex)
1	Introduction (waste management system, hierarchy of waste management - summary)	1	S
2	Smart city, circular economy – the basics	2	Ex
3	Zero waste idea, minimalization of waste generation – the basics	2	Ex
5	Construction and demolition waste.	2	Ex
5	Waste of electrical and electronic equipment	2	Ex
6	Bulky waste	2	Ex
7	Food and gastronomy waste	2	Ex
8	Other streams of waste	1	Ex
8	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. Piotr Manczarski / dr inż. Krystyna Lelicińska-Serafin / dr inż. Anna Rolewicz-Kalińska

Assessment method

Written test

Contents of guided projects

	Topics	Time (hrs.)	Scope (S / Ex)
1	The discussion of rules and the range of the project	1	Ex
2	Principles of the circular economy in the urban areas.	4	S
3	The discussion of technological calculations – balance calculations of individual waste streams, proposals of appropriate technological solutions to minimize waste generation, proposals of appropriate technological solutions of waste recovery and treatment (for individual waste streams)	17	Ex
5	Technological projects made by students (in teams) – for chosen town or region and for chosen (individual) waste streams. Consultations.	8	Ex
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. Piotr Manczarski / dr inż. Krystyna Lelicińska-Serafin / dr inż. Anna Rolewicz-Kalińska

Assessment method for guided projects

The presence, the realization of the project, passing the project.