

## MODULE INFORMATION SHEET

<b>Name of Module Unit</b>	<b>Waste Recycling and Reuse Technology</b>
Name in polish language	Technologie recyklingu i ponownego użycia
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. Anna Rolewicz-Kalińska, dr inż. Krystyna Lelicińska-Serafin

Semester	Lectures(E)	Tutorials	Laboratory	Computer Exercises	Projects	ECTS
7	15				30	3

### Objectives (summary)

The aim of the course is to provide students with knowledge in the field of mechanisms, innovative solutions and advanced technologies regarding to reuse and recycling. The course will discuss issues related to the circular economy and important role of secondary raw materials . Recycling and reuse techniques and technologies that can be applied in a modern economy will be discussed.

### Prerequisites

1. Solid Waste Management

### Rules for integrated grade definition

integrated grade: lecture (40%), project (60%),

### Recommended readings

1. Environmental Engineers' Handbook, by David H.F. Liu (Editor), Bela G. Liptak (Editor), ISBN-10: 0849399718, CRC Press 1997
2. Recycling and reuse of materials and their products; Grohens, Sadasivuni & Boudenne. Apple Academic Press, 2013
3. 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 – supply chain and its role in the economy	1	
2.	Secondary raw materials and their role for modern economy, the concept of a Circular Economy and Urban Mining.	2	
3.	The role of secondary raw materials in the context of a limited amount of natural resources.	3	
4.	The use of secondary raw materials in the traditional economy and bioeconomy	2	
5.	Example techniques and technologies reuse	4	
6.	Market conditions for the use of secondary raw materials.	2	
7.	Test	1	
<b>Total</b>		<b>15</b>	<b>hours</b>

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

Ex – extended topics

### Lecturers

dr inż. Krystyna Lelicińska, dr inż. Anna Rolewicz-Kalińska

### Assessment method

**lecture:** Positive assessment of the written test;

## Contents of guided projects

	Topics	Time (hrs.)	Scope (S / Ex)
1	Introduction and project rules. Handing out project topics and discussing them.	4	
2	Waste segregation technology (preliminary preparation prior recycling). Case study analysis.	8	
3	Technologies and techniques for recycling selected raw materials (glass, plastic, paper, metals). Case study analysis.	10	
4	Consultation and defence	8	
<b>Total</b>		<b>30</b>	<b>hours</b>

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, dr inż. Anna Rolewicz-Kalińska

### Assessment method for guided projects

project: attendance on classes, positive grade from the project, positive grade from project defence.