MODULE INFORMATION SHEET

Name of Module Unit	**Odour Abatement Techniques**
Name in polish language	Techniki zwalczania odorów
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	Andrzej Kulig, D.Sc. Ph.D. prof. WUT

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

Learning outcomes (knowledge, skills, competences)

The student has in-depth **knowledge** of the technological processes that cause the emission of odour as well as the solutions to minimize this nuisance. Student has **skill** to identify potential sources of odour impact, both in technical and technological aspects of the selected installation. Student is able to propose technical and technological solutions that reduce the odour nuisance of the selected installation. Student has social **competences** - Is aware of the need to constantly deepen knowledge and improve professional qualifications as well as is aware of the responsibility for performing of tasks in group.

Prerequisites

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Rules for integrated grade setting

Lectures (50%), laboratory (20%), project (30%)

Recommended readings

1. Odour impact assessment handbook (2013). Ed. Belgiorno V., Naddeo V., Zarra T. John Wiley & Sons Ltd. Chichester.
2. Odours in Wastewater Treatment. Measurement, Modelling and Control (2007). Ed. Stuetz, Frechen F-B. IWA Publishing. London.
3. Petts J., Eduljec G. (1996): Environmental Impact Assessment for Waste Treatment and Disposal Facilities. John Wiley & Sons Ltd. Chichester.
4. Odors and deodorization in the environment (1994). Ed. Martin G., Laffort P. VCH Publishers, Inc. New York.

Contents of lectures (syllabus)

	Topics	**Time** (hrs.)	**Scope** (S / Ex)
1	Basic concepts and definitions in odorimetry	1	S
2	Projects, installations and objects as potential odour sources	2	S
3	Methods of examining and assessing emissions and imission of odorants and odour	2	S
4	Emission of odorants and odour as well as odour nuisance of facilities	2	S

5	Limiting the spread of odours - methods of hermetisation of installations	2	S
6	Reduction of odour emissions - deodorization methods	2	S
7	Other methods to abatement of odour nuisance	2	S
8	Examples of technical and technological solutions to abatement of odours	2	S
	Total	**15**	**hours**

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

Lecturers

Andrzej Kulig, D.Sc. Ph.D. prof. WUT

Assessment method

Exam

Contents of laboratory

	Topics	**Time** (hrs.)	**Scope** (S / Ex)
1	Evaluation of olfactory sensitivity of investigators: SST test	4	S
2	Use of Scentroid SM-100 olfactometer, use of Nasal Ranger olfactometer	3	S
3	Use of Nasal Ranger olfactometer	4	S
4	Olfactory sensitivity assessment of researchers: 3-AFC test	4	S
	Total	**15**	**hours**

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

Persons responsible for laboratory

Mirosław Szyłak-Szydłowski, PhD, DSc

Assessment method for laboratory

Laboratory reports

Contents of guided projects

	Topics	**Time** (hrs.)	**Scope** (S / Ex)
1	Implementation of a project to assess and abatement of the odour nuisance of chosen object	4	S
2	Development of a research plan	4	S
3	Specification of sources of nuisance	4	S
4	Remedial measures, including minimization of the emission of odorous compounds	3	S
	Total	**15**	**hours**

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

Persons responsible for guided projects

Mirosław Szyłak-Szydłowski, PhD, DSc

Assessment method for guided projects

Project tasks assessment