MODULE INFORMATION SHEET

Name of Module Unit	**Energy Audit of Buildings and Industry**
Name in polish language	Auditing Energetyczny w Budownictwie i Przemyśle
Module type	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	Heating and Gas Systems Department
Responsible person	Dr inż. Jerzy Kwiatkowski

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

Objectives (summary)

The aim of the lectures is to introduce an issues of energy audit, as document accompanying every investment, constituting the economic and technical evaluation of solutions chosen. Lectures present state of the art of energy auditing in Poland and Europe, identification of possible technical measures and economics of undertakings. Some basics of calculation of related emissions will be provided. The ways to reduce heat energy consumption in buildings are also given.

Prerequisites

Thermodynamics, Economics and law in environmental eng., Energy systems and environment

Rules of integrated grade setting

Arithmetic average of the test from lectures and tutorials

Recommended readings

Turner “Energy Management Handbook”
Thurmann, Menta “Handbook of Energy Engineering”
Schueman “The Residential Energy Audit Manual”
Directives on renewable energy sources, energy efficiency and building performance
CIBSE – CIBSE Guide F – Energy Efficiency in Buildings
NEDO – Japanese Technologies for Energy Savings/GHG Emissions Reduction

Contents of lectures (syllabus)

	Topics	Time (hrs.)	Scope (S / Ex)
1	The terminology related to energy audits. European directives.	2	Ex
2	The methodology of calculation of energy needs for heating and cooling and hot water preparation	2	Ex
3	The methodology of choosing of the best modernization variant. Economic parameters.	4	Ex
4	Modernization of building envelope; heating, cooling and ventilation installation; energy source	2	Ex
5	Modernization of district heating system	2	Ex
6	Modernization of lighting	2	Ex
7	Test	1	S
	Total	**15**	**hours**

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

Lecturers

Dr inż. Jerzy Kwiatkowski

Assessment method

Over 50% of the points in the multiple-choice test

Contents of tutorials

	Topics	Time (hrs.)	Scope (S / Ex)
1	Calculation of energy needs for heating and cooling	6	Ex
2	Calculation of energy needs for hot water preparation	2	Ex
3	Calculation of energy use and primary energy	2	Ex
4	Calculation of heat losses from hot water installation	2	Ex
5	Analysis of building modernizations related to: envelope, installations and energy sources	8	Ex
6	Calculation of heat losses from district heating	4	Ex
7	Calculation of energy use for lighting	2	Ex
8	Oral examination of project	4	S
	Total	**30**	**hours**

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

Persons responsible for tutorials

Dr inż. Jerzy Kwiatkowski

Assessment method for tutorials

The presence on the course, test audit execution and oral examination