COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Mineral Resources Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	MRE932	SEMESTER	9
COURSE TITLE	Air Pollution Control Technology		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	4
Laboratory exercises	1	1
Total	4	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	specialised general knowledge, skills development
PREREQUISITE COURSES:	604
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	https://eclass.uowm.gr/courses/MRE189/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon the successful completion of the course, the students should be able to:

- Describe the basic principles on which emission control technologies of gaseous and particulate pollutants are based
- Select the appropriate control technology / process.
- Design and select the appropriate technique for measuring pollutants at sources (emissions) and receptors
- Select and apply appropriate models of atmospheric dispersion
- Consider alternative scenarios for the location of industrial activities and activities of fugitive dust emissions in surface mining
- Use the models in the frame of Environmental Impact Assessments, decision-making systems, for the management of the air quality management in general

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, Project planning and management

with the use of the necessary technology	*Respect for difference and multiculturalism*
Adapting to new situations	*Respect for the natural environment*
Decision-making	*Showing social, professional and ethical responsibility and*
Working independently	*sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

Search for, analysis and synthesis of data and information with the use of the necessary technology
Working independently
Team work
Decision-making
Working in an interdisciplinary environment
Production of new research ideas

(3) SYLLABUS

Approaches to pollutant control
Control devices for particulate pollutants (settling chambers, cyclones, electrostatic precipitators, venturi scrubbers)
Control devices for gaseous pollutants (combustion, adsorption, absorption)
Fugitive emission: Sources and controls.
Fugitive dust control in surface mining activities
Air quality modeling.
Basic Gaussian Dispersion Model
AERMOD Dispersion Model
The Air Pollution Model (TAPM)
Applications

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face, Lectures, Tutorials
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	E-Class, communication with students via e-mail
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures — 100 Laboratory practice — 20 Essay writing — *30* Course total — ***150***
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Problem solving Short-answer questions, Written work, Laboratory work

(5) SUGGESTED BIBLIOGRAPHY

- Suggested bibliography:

- Γ. Τριανταφύλλου, «Αέρια Ρύπανση», Εκδ. Θαλής, Κοζάνη, 2017, σελ. 720
- Zhongchao Tan, Air Pollution and Greenhouse Gases: From Basic Concepts to Engineering Applications for Air Emission Control, Springer; 2014th edition (November 3, 2014)
- Noel De Nevers.: "Air Pollution Control Engineering". Waveland Pr Inc; 2nd edition (April 30, 2010)
- David Cooper, F.C. Alley, Air pollution control, A Design Approach, 4th , Waveland Press, 2010
- Heinsohn R.J. and R.L.Kabel : "Sources and Control of Air Pollution". Prentice Hall, Inc., New Jersey, 1998.
- William L. Heumann.: "Industrial Air Pollution Control Systems". McGraw Hill Professional, 1997.

Related academic journals:

- *Computers & Geosciences*
- *Environmental Pollution*
- *Global Nest Journal*
- *Int. J. of Coal Geology*

- *Journal of Air and Waste Management Association*
- *Journal of Env. Management*
- *Journal of Mining and Mineral Engineering*
- *Science of the Total Environment*
- *Theoretical and Applied Climatology*