UNIVERSITY of NICOSIA

Course Code	Course Title	ECTS Credits
ENVM-380	Air Quality and Waste Management	6
Department	**Semester**	**Prerequisites**
Life and Health Sciences	Spring	None
Type of Course	**Field**	**Language of Instruction**
Major Elective	Environmental and Energy Management	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	3rd	Dr Marios Valiantis
Mode of Delivery	**Work Placement**	**Co-requisites**
face-to-face	N/A	None

Course Aim

The purpose of this course is for students to explore, expand, integrate, and assess their knowledge of air pollution and waste management

Learning Outcomes:

After successfully completing this course, you will be able to:

- List the major types of indoor and outdoor air pollutants.
- Describe the impacts of air pollution on human health and welfare, fish and wildlife resources, and the ecosystem.
- Explain the chemical and physical processes that transform and transport pollutants in the atmosphere.
- Assess the effectiveness of current air quality regulations and international treaties and agreements in limiting the degradation of air resources.
- Describe the control technologies used to measure, quantify, and control air pollution emissions
- Analyze pollution prevention and select appropriate technologies for specific controls.

Course Content:

In this course, the student will examine types of outdoor and indoor air pollutants, their sources, health effects, environmental and aesthetic effects, and methods of measurement and control. An in-depth review of the regulatory framework for air quality in European. and related international treaties and agreements will be explored.
This course will investigate the sources, human and ecological health effects, control and challenges of air pollution. The student will learn the fundamental earth science processes associated with the atmosphere, the USA and international regulations governing air pollution sources and air pollution control processes. In addition to the textbook readings, case studies will be explored to illustrate some of the main air quality management concepts. The student will be required to understand the science behind air pollution and regulatory programs and to evaluate the effectiveness of these programs.

Introduction to various sources of hazardous, non-hazardous, biodegradable, and non-biodegradable waste materials. Focus areas are landfill systems, geosynthetics, geotextiles, geomembranes, geonets, single clay liner, single geomembrane liner, composite liner systems, leak detection and leachate collection, removal and treatment of leachate, and capping and closure systems. The recycling segment will explore natural resources of raw materials including origin and use, and potential and limitation for recycling of materials. Focus on various applications of recycling recyclable and non-recyclable materials. Discussion of methods of manufacture and compositions of such materials will concentrate on advanced industrial applications for the reuse of non-recyclable waste materials. Application areas include production of new materials, materials with superior qualities for special purposes, and materials with high level of resistance against certain environmental conditions. The course will also touch on the political aspect of recycling including consumer attitude and government incentives to encourage recycling.

Teaching Methods:

PPT Lectures, Videos, Readings, In-class discussions

Assessment Methods

Assignments, mid-term exam, final exam

Required Textbooks:

Authors	Title	Publisher	Year	ISBN
Worrell, W., and Vesilind, P.A.	*Solid Waste Engineering (2nd Edition)*	Cengage Learning	2012	

Godish T.	*Air Quality 4th Edition*	Lewis Publishers	2004	

Suggested references:

- Ackerman, Frank. (1997). Why do we recycle: markets, values, and public policy. Washington, D.C.: Island Press.
- Albertsson, Anne-Christine. (1995). Degradable Polymers, Recycling, and Plastics Waste Management. CRC.
- Curlee, Randall T. (1994). Waste-to-energy in the United States: a social and economic assessment. Westport, Conn: Quorum Books.
- De, Sadhan K., Isayev, Avraam, and Khait, Klementina. (2004). Rubber Recycling. CRC.
- Farrelly, E. M. (2008). Blubberland: the dangers of happiness. Cambridge, Mass.: MIT Press.
- Gandy, Matthew. (1994). Recycling and the politics of urban waste. New York: St. Martin's Press.
- Hegberg, Bruce A. et al. (1992). Mixed Plastics Recycling Technology. Noyes Publications.
- Kanti L. Shah (2000). Basics of Solid and Hazardous Waste Management Technology. Prentice Hall.
- Kharbanda, Om Prakash. And Stallworthy, E.A. (1990). Waste management: towards a sustainable society. New York: Auburn House.
- Kreith, Frank and Tchobanoglous, George. (2002). Handbook of Solid Waste Management. McGraw-Hill Professional; 2nd edition.
- Lund, H.F. (2001). The McGraw-Hill Recycling Handbook. Second Edition, McGraw-Hill.
- Luton, Larry S. (1996). The politics of garbage: a community perspective on solid waste policy making. Pittsburgh, Pa: University of Pittsburgh Press.
- Porter, Richard C. (2002). The economics of waste. Washington, DC: Resources for the Future.
- Rathje, William L. and Murphy, Cullen. (2001). Rubbish!: the archaeology of garbage. Tucson, AZ: University of Arizona Press.
- Rogers, Heather. (2005). Gone tomorrow: the hidden life of garbage. New York; London: New Press: Distributed by W.W. Norton & Company.
- Tchobanoglous, George, Theisen, Hilary, and Vigil, Samuel A. (1993). Integrated Solid Waste Management. McGraw-Hill Publishing Co.; International edition.
- Williams, Paul T. (2006). Waste treatment and disposal, Chichester, West Sussex, England; Hoboken, NJ, USA: Wiley, 2nd ed.
- Young, Mitchell (ed.). (2007). Garbage and recycling. Detroit: Greenhaven Press.