

SENSORS FOR ENVIRONMENTAL APPLICATIONS

1.1. Identification

University:	Universidad Politécnica de Valencia											
School:	Escuela Técnica Superior de Ingeniería del Diseño											
Course:	Sensors for Environmental Applications											
ECTS:	3											
Semester:	<i>Winter</i>					<i>Summer</i>				X		
Category	<i>Fundamental course</i>					<i>Specialisation course</i>				X		
Module	<i>MFI</i>		<i>MFII</i>		<i>MFIII</i>		<i>MSI</i>		<i>MSII</i>		<i>MSIII</i>	X
Teachers:	Juan Soto ,Pilar Aragón, Julia Atienza											
Language:	<i>English</i>	X	<i>Italian</i>		<i>Swedish</i>		<i>Spanish</i>					X

1.2. Learning-outcomes

- knowledge about sophisticated and intelligent control systems
- knowledge about the physical, chemical and technological fundamentals of sensors
- knowledge about production and products

1.3. Competencies

▪ General

- to design and use any type of sensor system
- to have critical understanding of technical and scientific tools
- to work and manage teams
- communication skills (both written and oral)
- to work in an international context
- knowledge of different European languages

▪ Specific

- to understand the basis for the design and use of air sensors.
- to understand the basis for the design and use of water sensors.
- to understand the basis for the design and use of soil sensors.
- to be able to prepare and sensors for environmental applications

1.4. Contents

1. Air sensors: air quality, chemical and physical pollutants (gases, vapours and solid particles), meteorological sensors and remote sensing. 2. Water sensors: conductivity, pH, ORP, dissolved gases, turbidity, ISE. 4. Surface and groundwater quality monitoring. 5. Waste water control. 6. Soil sensors: subsurface and surface characterization and pollution. 7. Flow and transport monitoring.

1.5. Teaching Methodology

- lecture sessions
- laboratory sessions

1.6. Evaluation

- written exams
- evaluation by designing sensors for environmental monitoring
- oral evaluation of laboratory work

1.7. Bibliography

- **Fundamentals of Electrochemical Analysis.** *Zbigniew Galus. Ellis Horwood. N.Y. (1994).*
- **Handbook of Chemical and Biological Sensors.** *Taylor, R.F., Schultz, J. N. Ins. Phys.; Bristol 1996*
- **Instrumental Methods in Electrochemistry.** Southampton Electrochemistry Group. Ellis Horwood. N.Y. (1990).