

## SENSORS FOR FOOD TECHNOLOGY APPLICATIONS

### 1.1. Identification

University:	Universidad Politécnica de Valencia											
School:	Escuela Técnica Superior de Ingeniería del Diseño											
Course:	Sensors for Food Technology 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:	Ángel Maquieira; Luís A. Tortajada											
Language:	<i>English</i>	X	<i>Italian</i>		<i>Swedish</i>		<i>Spanish</i>				X	

### 1.2. Learning-outcomes

- knowledge about the basis of modern food analysis.
- knowledge about the fundamentals of sensing for the food industry including process control.

### 1.3. Competencies

#### ▪ General

- to have critical understanding of technical and scientific tools
- to know how to use the different types of sensor systems in the food industries.
- to work and manage teams
- communication skills

#### ▪ Specific

- to design sensors systems
- to understand the basis of sensing in food matrices.
- to develop criteria for applying the sensors advantages.
- to use adequately (sample treatment, calibration, multianalyte, etc.) the sensing potentials.

### 1.4. Contents

1. Biosensor systems for food and beverages industry quality control. 2. Biosensors for fermentation control and monitoring. 3. Enzymatic electrodes for food analysis. 4. Optical-fibre biosensors. 5. Biosensors for microbiological applications. 6. Residue determination applications. 7. Practical approaches to on-line monitoring using sensor systems. 8. In-situ biomonitoring. 9. Practical examples in food industry. 10. Miniaturisation. Future trends.

### 1.5. Teaching Methodology

- lecture sessions
- laboratory sessions

### 1.6. Evaluation

- written exams
- continuous evaluation of the laboratory work

### 1.7. Bibliography

**Optical Sensors. Industrial, Environmental and Diagnostic Applications**

Springer Series on Chemical Sensors and Biosensors, Vol. 1

R. Narayanaswamy, O. S. Wolfbeis (Eds.). Springer Verlag, Berlin, 2004

**Instrumentation and Sensors for the food industry.**

E. Kress-Rogers, C. Brimelow (Eds). 2<sup>nd</sup> Edition.

Woodhead Publishing, England, 2001

**Biosensors for Food Analysis**

A. O. Scott (Ed), Royal Society of Chemistry, London, 1998.

**Food Biosensor Analysis**

G. Wagner, G. G. Guilbault. Marcel Dekker, Inc., N. Y. 1993

**Rapid and On-Line Instrumentation for Food Quality Assurance**

(Woodhead Publishing in Food Science and Technology). I.E. Tothill (Editor)

2000. Woodhead Publishing, England