

Title: *Fondamenti di Sensoristica, sensori chimici e biosensori /
Basics of Sensors, chem- & bio-sensors*

Academic field: Chim/01 Chimica Analitica

Academic year: 2016-2017

Faculty: Department of Chemistry

Study courses: Chemistry Degree

Study plans/Curricula:

Type: esame complementare

Total Credits: 5 (40 hours)

Didactic Methods: classroom-taught lessons

Didactic Period: II semester, March-June 2017

Exam type: oral examination (at the end of the semester) or 3 midterm (short) exams based on a multiple choice questionnaire, implemented by a few essay questions.

Professor in charge: Nicola Cioffi

Training objectives

The course provides the fundamentals of sensors and sensor technology. An overview of the most diffused chemical sensors is presented, along with a brief mention about biosensing devices (more detailed information on biosensors is given by other courses from the same Dept.)

Prerequisites

Basic knowledge of Analytical chemistry; basic knowledge of electromagnetisms and Physics

Didactic Methods

classroom-taught lessons

Course programme

Introduction and definitions

Electrochemical sensors (potentiometric, amperometric, biosensing devices)

Chemiresistors,

Capacitive sensors,

Brief mention of field effect sensors

Metal oxide semiconductor (MOS) and related (MIS, MISFET, etc.) sensors

Mass-sensitive sensors (QCM, SAW, BAW)

Humidity sensors

Calorimetric sensors

Optical sensors and biosensors
Cases of study & applications

Reference Texts

Slides, Lecture notes, selected papers and reviews.