

ACADEMIC YEAR: **2019-2020**COURSE: **SENSORI E METODOLOGIE ANALITICHE AVANZATE
(Sensors and advanced analytical methodologies)**TYPE OF EDUCATIONAL ACTIVITY: **Characterizing**TEACHER : Prof. Dr. **Antonio Guerrieri**e-mail: **antonio.guerrieri@unibas.it**

Web

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Language : **ITALIAN**

ETCS: 7 (6 lessons /1 practical lab activities)	n. of hours: 60 (48 for lessons and 12 for practical lab activities)	Campus: Potenza Dept: Dipartimento di Scienze CdS: Laurea Magistrale in Biotecnologie per la Diagnostica Medica, Farmaceutica e Veterinaria (LM9)	Semester: II (tentatively, from 02/03/2020 to 31/05/2020-20/06/2020, exact dates to be defined)
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EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

- **Knowledge and understanding:** the student should demonstrate to know and understand the notions about the modern analytical instrumentation, particularly biosensors, electrochemical sensors and QCMs as well as sensor arrays.
- **Ability to apply knowledge and understanding:** the student should demonstrate to be able to face the most common analytical problems regarding the build-up, the analytical characterization and application of the modern analytical instrumentation as used in clinical, medical, food, industrial and environmental applications.
- **Autonomy of judgment:** the student should demonstrate to be able to make an independent judgment using the knowledge learned from the subject.
- **Communication skills:** the student should have the ability to summarize and explain using the terminology of the subject.
- **Learning skills:** the student should be able to understand critically scientific publications and follow specialized seminars, masters and scientific meetings.

PRE-REQUIREMENTS

- ✓ **attendance of lectures: HIGHLY suggested**
- ✓ **attendance of lab activities: COMPULSORY**
- ✓ **preparatory exams: Biologia Molecolare Avanzata (BIO/11)**

SYLLABUS**Sensors. Electrochemical sensors. Biosensors. Microgravimetric sensors. Sensor arrays.****Biomolecules, microbes, cells and tissues as signal transducers in biosensors: principles of actions, kinetics of signal transduction.****Surface modifications in sensor and enzyme immobilization.****Immobilised enzyme biosensors. Immunosensors. Genosensors. Quartz crystal microbalance as novel sensors.****TEACHING METHODS**

- The course includes 60 hours of teaching between lessons and laboratory. In particular, 48 hours of classroom lessons and 12 hours of laboratory exercises are planned.

EVALUATION METHODS

- Final oral exam to ascertain the actual acquisition by the student of the knowledge and skills described in the section " EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES" and discussion of reports on laboratory exercises.
- The final evaluation will be expressed with a mark of thirty and possible praise.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL**lecture notes; lesson slides; lab activity notes**

INTERACTION WITH STUDENTS***Conventional approaches (e.g. student welcome) as well as internet ones (e.g. email) for discussions and deepening of lectures and lab activities.***

TIMETABLE FOR STUDENT WELCOME

DAY	FROM	TO	LOCATION
MONDAY	17.30	20.30	Professor Office
TUESDAY	17.30	20.30	Professor Office
WEDSNEDAY	18.00	20.30	Professor Office
THURSDAY	16.00	18.00	Professor Office

CALLS FOR EXAMINATION (exact dates to be defined)

Month	Year	Expected Call
February	2020	18
March	2020	17
June	2020	23
July	2020	14
September	2020	22
October	2020	20
December	2020	15

EXAMINATION PANEL:President: **prof. dr. Antonio Guerrieri**Member: **prof.ssa Anna Maria Salvi**Member: **dr.ssa Rosanna Ciriello**Member: **dr.ssa Giuliana Bianco**

Member: **dr. Fausto Langerame**

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION
