Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus Course description

Course title	Sensors and Biosensors for Food Processing
Course code	44710
Scientific sector	ING-INF/01
Degree	Master in Food Sciences for Innovation and Authenticity
Semester	I
Year	II
Academic year	2020/21
Credits	6
Modular	No

Total lecturing hours	36
Total exercise hours	24
Attendance	Preferred but not mandatory
Prerequisites	General notions of basic chemistry and physics
Course page	

Specific educational objectives	The course aim is to provide the attendants theoretical and practical fundamentals of the operation principles of sensor systems. Particular emphasis will be devoted to chemical, physical and biosensors used in food technology and agriculture. The aim of the course is to offer a general overview of scientific contents combined with specific professional skills and knowledge. In addition, the student will acquire soft skills connected to scientific presentations or reports.

Lecturer	Prof. Paolo Lugli, E-Mail: paolo.lugli@unibz.it https://www.unibz.it/de/faculties/sciencetechnology/academicstaff/person/37195-paolo-lugli Dr. Martina Aurora Costa Angeli: MartinaAurora.CostaAngeli@unibz.it https://www.unibz.it/en/faculties/sciencetechnology/phd-in-food-engineering-and-biotechnology/phd-students-feb/person/44155-martina-aurora-costa-angeli
Scientific sector of the lecturer	ING/INF-01 – ELECTRONICS
Teaching language	English
Office hours	After consultation and agreement with lecturers

Teaching assistant (if any)	
Office hours	After consultation and agreement with lecturers
List of topics covered	1. Sensor materials and technologies 2. Basics of sensors and measurement techniques
	3. Overview and operational principles of chemical, physical and biosensors 4. Applications of sensor systems to food science and agriculture 5. Outlook in future sensor technologies
Teaching format	The hours are divided in: • Presentations and theoretical classroom lessons, • Exercises on the blackboard and laboratory sessions. The material (lecture notes, presentations, videos, reading and learning materials…) for lectures, exercises and labs will be available on the OLE platform and Teams.

Assessment	The assessment is carried out via a written and oral examination aimed to check the knowledge, the presentation skills and the practical know how acquired in the course. The oral part (30 minutes) consists of a scientific presentation (using power point) on a given topic to be prepared individually at home followed by one or two questions. The written part (15 minutes) includes a short scientific report to be prepared individually at home and some review questions and/or exercises.

Assessment language	English

Learning outcomes	The learning outcomes need to refer to the Dublin Descriptors: Knowledge and understanding of how sensors work, of the advantages/disadvantage of competing technologies and of the potential application fields. Applying knowledge and understanding in scientific and professional environments. Making judgments when assessing different solutions for a given scientific or technical problem on the basis of performance and on the trade-off with cost. Communication skills in presenting scientific results in written and oral form, in particular using an appropriate English language. Learning skills concerning the ability to find information on the web and access their validity, to use and transmit the technical knowledge acquired in the course.

Evaluation criteria and criteria for awarding marks	The criteria for the assessments are clarity of answers, mastery of oral and written presentations (also with respect to the teaching language), depth of the acquired knowledge, as well as skills in critical thinking. The oral and written parts contribute each to 50% of the total assessment.

Required readings	Material provided on the OLE platform and Teams.
Supplementary readings	Material provided on the OLE platform and Teams.