Syllabus
Course description

<table>
<thead>
<tr>
<th>Course title</th>
<th>Sensors and Biosensors for Food Processing</th>
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</thead>
<tbody>
<tr>
<td>Course code</td>
<td>44710</td>
</tr>
<tr>
<td>Scientific sector</td>
<td>ING-INF/01</td>
</tr>
<tr>
<td>Degree</td>
<td>Master in Food Sciences for Innovation and Authenticity</td>
</tr>
<tr>
<td>Semester</td>
<td>1st</td>
</tr>
<tr>
<td>Year</td>
<td>I</td>
</tr>
<tr>
<td>Academic year</td>
<td>2022/23</td>
</tr>
<tr>
<td>Credits</td>
<td>6</td>
</tr>
<tr>
<td>Modular</td>
<td>No</td>
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| Total lecturing hours | 30             |
| Total exercise hours  | 30             |
| Attendance            | Preferable     |
| Prerequisites         | General notions of basic chemistry and physics |

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, as well as practical skills related to sensors use and implementation.

Lecturer
Dr. Pietro Ibba, e-mail: pietro.ibba@unibz.it, https://www.unibz.it/it/faculties/scicetech/academic-staff/persyny/38503-pietro-ibba

Scientific sector of the lecturer
ING-INF-01 – ELECTRONICS

Teaching language
English

Office hours
After consultation and agreement with lecturers

Teaching assistant (if any)
T. B. A.

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, optical, 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 and laboratory sessions.

The material (lecture notes, presentations, videos, reading and learning materials...) for lectures, exercises and labs will be provided by the lecturer and will be available before the lecture.

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

The assessment is carried out via an oral examination aimed to check the knowledge, the presentation skills and the practical know-how acquired in the course.

The oral part consists of a scientific presentation (using power point) on a given topic to be prepared individually at home, followed by specific questions on the course and on the laboratory topics.

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<thead>
<tr>
<th><strong>Assessment language</strong></th>
<th>English</th>
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<tr>
<td><strong>Evaluation criteria and criteria for awarding marks</strong></td>
<td>The criteria for the assessments are clarity of answers, mastery of oral presentations (also with respect to the teaching language), depth of the acquired knowledge, as well as skills in critical thinking.</td>
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<table>
<thead>
<tr>
<th><strong>Required readings</strong></th>
<th>Material provided by lecturers</th>
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<tbody>
<tr>
<td><strong>Supplementary readings</strong></td>
<td>Material provided by lecturers</td>
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