# Syllabus

## Course description

<table>
<thead>
<tr>
<th>Course title</th>
<th>Fundamentals of Information Science and Microcontroller Programming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course code</td>
<td>42174</td>
</tr>
<tr>
<td>Scientific sector</td>
<td>ING-INF/04</td>
</tr>
<tr>
<td>Degree</td>
<td>Bachelor in Industrial Mechanical Engineering</td>
</tr>
<tr>
<td>Semester</td>
<td>I</td>
</tr>
<tr>
<td>Year</td>
<td>I</td>
</tr>
<tr>
<td>Academic Year</td>
<td>2020-2021</td>
</tr>
<tr>
<td>Credits</td>
<td>6</td>
</tr>
<tr>
<td>Modular</td>
<td>no</td>
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</tbody>
</table>

| Total lecturing hours            | 36 hrs                                                             |
| Total lab hours                  | 24 hrs                                                             |
| Total exercise hours             |                                                                    |

**Attendance**

Attendance at assigned laboratory sections is required; lecture attendance is very strongly recommended.

**Prerequisites**

Registration for the course of Bachelor in Industrial and Mechanical Engineering

**Course page**

http://www.unibz.it/en/sciencetechnology/progs/bachelor/industrial/courses/default.html

**Specific educational objectives**

The course will provide an introduction to basic concepts in information and computer science (hardware and software), particularly those topics of fundamental importance to Engineering.

**Lecturer**

Prof. Karl von Ellenrieder  
Facoltà di Scienze e Tecnologie, Building K, Room 2.08  
Tel.: +39 0471 017172  
E-mail: karl.vonellenrieder@unibz.it  
Web:  

**Scientific sector of the lecturers**

ING-INF/04 - Automatica

**Teaching language**

English

**Office hours**

As listed on Cockpit or by appointment

**Laboratory Instructor**

TBD

**Teaching Assistant**

TBD

**Office hours**

As listed on Cockpit or by appointment

**List of topics covered**

The course covers the following topics:
1. Basic programming syntax and structure in C
2. Functions
3. Conditional control structures
4. Arithmetic, comparison and Boolean operators
5. Pointers and addressing
6. Data types
7. Interrupts
8. Simple electronic circuits

Teaching format
Classroom lectures and laboratory exercises

Learning outcomes (ILOs)

Knowledge and understanding
1. Basic software design procedures.
2. How to develop simple microprocessor programs.
3. How to interface a microprocessor with simple sensors and actuators.
4. How to implement simple electro-mechanical systems.

Applying knowledge and understanding
5. Reports for hands-on laboratory exercises that complement the lectures will require you to devise and sustain arguments.

Making judgements
6. On the choice of the right tools such as data types, programming approaches, or electrical components. The labs will also require you to gather and interpret relevant data.

Communication skills
7. Lab reports will require you to present information, ideas, problems and solutions in clear and simple language.

Learning Skills
8. Basic foundations for further study in more advanced courses in Engineering.

Assessment

Formative assessment

<table>
<thead>
<tr>
<th>Form</th>
<th>%</th>
<th>Length / duration</th>
<th>ILOs assessed</th>
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</thead>
<tbody>
<tr>
<td>Labs</td>
<td>40</td>
<td>24 hours total</td>
<td>1-7</td>
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</table>

Summative assessment

<table>
<thead>
<tr>
<th>Form</th>
<th>%</th>
<th>Length</th>
<th>ILOs</th>
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</table>

<table>
<thead>
<tr>
<th>Assessment language</th>
<th>English</th>
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</thead>
</table>
| Evaluation criteria and criteria for awarding marks | Labs: Completeness and correctness of reports; quality of writing; level of observation of physical processes  

Written Final Exam: Completeness and correctness of answers.  

Students are required to receive an overall grade of greater than 60/100 points in order to pass the course. |

Hardcopies available in library reserves, or can be downloaded here – http://www.introtarduino.com/downloads/IntroArduinoBook.pdf |