

COURSE DESCRIPTION – ACADEMIC YEAR 2023/2024

Course title	Fundamentals of Information Science and Microcontroller Programming
Course code	42174
Scientific sector	ING-INF/04
Degree	Bachelor in Industrial and Mechanical Engineering (L-9)
Semester	1
Year	1
Credits	6
Modular	No
Total lecturing hours	36
Total lab hours	24
Attendance	Attendance at assigned laboratory sections is required; lecture attendance is very strongly recommended.
Prerequisites	
Course page	Microsoft Teams and https://ole.unibz.it/
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	Marco Camurri (webpage)
Contact	Lab Office: FIRST Lab NOI Tech Building B5, via Toni Ebner 26 Campus office: Faculty of Engineering, Building L, Room 6.02 Email: marco.camurri@unibz.it Tel: +39 0471 017944
Scientific sector of lecturer	ING-INF/04
Teaching language	English
Office hours	By appointment to be arranged by email.
Lecturing Assistant (if any)	None.
Contact LA	
Office hours LA	
List of topics	<ul style="list-style-type: none"> • Basics of programming in the C language • Introductory electronics • Introductory motor control (servo and DC permanent magnet) • Introduction to computer architecture
Teaching format	Frontal lectures and lab exercises
Learning outcomes	Knowledge and understanding: <ul style="list-style-type: none"> • Basic software design procedures. • How to develop simple microprocessor programs. • How to interface a microprocessor with simple sensors and

	<p>actuators.</p> <ul style="list-style-type: none"> • How to implement simple electromechanical systems. <p>Applying knowledge and understanding:</p> <ul style="list-style-type: none"> • Reports for hands-on laboratory exercises that complement the lectures will require you to devise and sustain arguments <p>Making judgments:</p> <ul style="list-style-type: none"> • 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. <p>Communication skills:</p> <ul style="list-style-type: none"> • Lab reports will require you to present information, ideas, problems and solutions in clear and simple language. <p>Learning skills</p> <ul style="list-style-type: none"> • Basic foundations for further study in more advanced courses in Engineering
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Assessment	Written and lab: written exam with verification questions (ILO assessed: 1-4, 6, 8) reports on experiments conducted and result evaluation (ILO assessed 1-7)
Assessment language	English
Assessment Typology	Monocratic
Evaluation criteria and criteria for awarding marks	<p>Labs: Completeness and correctness of reports; quality of writing; level of observation of physical processes</p> <p>Written Final Exam: Completeness and correctness of answers.</p> <p>Students are required to receive an overall grade of greater than 60/100 points in order to pass the course.</p>

Required readings	<p>Smith, A. G. Introduction to Arduino: A piece of cake, CreateSpace Independent Publishing Platform, 2011. ISBN: 978-1463698348</p> <p>Hard copies available in library reserves, or can be downloaded here – http://www.introtoarduino.com/downloads/IntroArduinoBook.pdf</p> <p>Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it and Ilaria Miceli, Ilaria.Miceli@unibz.it</p>
Supplementary readings	Blum, J. Exploring Arduino: Tools and Techniques for Engineering Wizardry, John Wiley & Sons, 2013. ISBN: 978-1-118-54936-0
Software used	<p>Arduino IDE freely available at: https://www.arduino.cc/en/software</p>



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needs to be installed on the student's personal laptop.
The Ubuntu operating system is recommended, but MacOS or
Windows are also acceptable.