Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Fundamentals of Information Science and Microcontroller Programming
Course code	42174
Scientific sector	ING-INF/04
Degree	Bachelor in Industrial and Mechanical Engineering
Semester	I
Year	I
Academic Year	2022-2023
Credits	6
Modular	no

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 L, Room 6.02 Tel.: +39 0471 017172 E-mail: karl.vonellenrieder@unibz.it Web : https://next.unibz.it/en/faculties/sciencetechnology/academic-staff/person/37038-karl-dietrich-von-ellenrieder
Scientific sector of the lecturer	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**

Form	**%**	**Length /duration**	**ILOs assessed**
Labs	40	24 hours total	1-7

	Summative assessment **Form** | **%** | **Length /duration** | **ILOs assessed** Final Exam | 60 | 4 hours | 1-4,6,8
Assessment language	English
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.

Required readings	Smith, A. G. *Introduction to Arduino: A piece of cake*, CreateSpace Independent Publishing Platform, 2011. ISBN: 978-1463698348 Hardcopies available in library reserves, or can be downloaded here – http://www.introtoarduino.com/downloads/IntroArduinoBook.pdf
Supplementary readings	Blum, J. Exploring Arduino: Tools and Techniques for Engineering Wizardry, John Wiley & Sons, 2013. ISBN: 978-1-118-54936-0