unibz
Fakultät für Informatik
Facoltà di Scienze e Tecnologie informatiche
Faculty of Computer Science

SYLLABUS
COURSE DESCRIPTION

COURSE TITLE	**Maker Lab**
COURSE CODE	76205
SCIENTIFIC SECTOR	ING-INF/05
DEGREE	Bachelor in Computer Science
SEMESTER	2nd
YEAR	1st
CREDITS	3

TOTAL LECTURING HOURS	30
TOTAL LAB HOURS	-
PREREQUISITES	none
COURSE PAGE	http://www.inf.unibz.it/~gennari/makerlab.html

SPECIFIC EDUCATIONAL OBJECTIVES	Type of course: “caratterizzanti” for L-31 Scientific area: “Discipline informatiche” for L-31 The course is designed for acquiring professional skills and knowledge. It gives general practical knowledge and skills necessary for designing and programming basic smart objects for IoT.

LECTURER	Rosella Gennari
SCIENTIFIC SECTOR OF THE LECTURER	INF/01
TEACHING LANGUAGE	English
OFFICE HOURS	Fridays, before/after class, by means of previous appointment via mail or taken in person during classes, Faculty of Computer Science, Piazza Domenicani, 3 – Office POS 1.12
TEACHING ASSISTANT	Mehdi Rizvi
OFFICE HOURS	Friday before/after class, via previous appointment taken in person or via mail, Faculty of Computer Science, Piazza Domenicani, 3 – Office POS 1.10

LIST OF TOPICS COVERED	Principles and basics of physical computing for creating smart objects for IoT, and specifically: • Basics of programming for physical computing: (1) atomic and basic compound data structures, such as lists; (2) conditionals, iterations; (3) functions; (4) text file handling for unstructured data (optional); (5) json file handling for web services. • Basics of electronics for physical computing; interruptors, sensors, actuators and hats. • Basics of interaction design and development for physical computing.
TEACHING FORMAT	Lectures and workshops. The course adopts a learning-by-doing approach with in-presence formative feedback. In practice, during classes, students can tackle numerous scaffolding exercises. In order to tackle exercises, students must attend classes and be equipped with their own computer. The formative feedback on resolutions is given by the course instructors in person, during class hours only (not via e-mail). Positive resolutions count towards the final exam (see the evaluation field below).

LEARNING OUTCOMES	**Knowledge and understanding:** • Know the main methods for the design of interactive smart objects for IoT. **Applying knowledge and understanding:** • Be able to apply interactive design principles and patters. • Be able to develop smart objects. **Making judgments** • Be able to plan and re-plan a technical project activity aimed at building an interactive smart object and to bring it to completion by meeting the defined deadlines and objectives. **Communication skills** • Be able to coordinate the work of a project team and to interact positively with members of the group. • Be able to interact and collaborate with peers and experts in the realization of a project or research. **Learning skills** • Be able to autonomously extend the knowledge acquired during the study course by reading and understanding scientific and technical documentation in Italian, German and English. • Be able, in the context of a problem-solving activity, to extend even incomplete knowledge taking into account the objective of the project.

ASSESSMENT	The assessment is related to the basics of physical computing for creating smart objects for IoT, and specifically: (1) knowledge of programmable micro-electronics for physical computing for IoT;

	(2) the ability to understand a program for physical computing for IoT; (3) the ability to analyse a program for physical computing for IoT; (4) the ability to write a program for physical computing for IoT.
ASSESSMENT LANGUAGE	English
EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS	The exam is written, closed-book and on paper, with exercises related to what listed in the assessment field. Criteria for evaluating resolutions will be: their clarity, correctness and completeness, besides their usability in case of smart objects. Students, who regularly attend the course and correctly resolve the majority of exercises during class hours, will need to tackle less exercises in order to pass the final exam.

REQUIRED READINGS	Downey, Think Python, 2nd Edition. Avalilabe via the Safari library. Shaw. Learn Python the Hard Way. Avalilabe via the Safari library.
SUPPLEMENTARY READINGS	-
SOFTWARE/HARDWARE USED	SOFTWARE: Python 3 or above. HARDWARE: Raspberry 3 or 4, available to groups of students during class hours only.