

Course Unit	Interaction Technologies	Field of study	Computer Science
Bachelor in	Multimedia	School	School of Public Management, Communication and Tourism
Academic Year	2023/2024	Year of study	2
Type	Semestral	Semester	2
Workload (hours)	162	Contact hours	T - , TP 60 , PL - , TC - , S - , E - , OT - , O -
		Level	1-2
		ECTS credits	6.0
		Code	9213-656-2205-00-23

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s)

### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Know and understand the concepts related to the context of interaction in the field of computer science.
2. Know the different interface styles of man-machine and machine-machine interaction in physical and virtual environments.
3. Develop project with computational methods for processing different forms of human and machine interaction, and produce answers in the context of multimedia to real-time variables
4. Possess practical skills in the use of develop tools low code and no code.

### Prerequisites

Before the course unit the learner is expected to be able to:  
Knowledge of programming languages

### Course contents

Concepts, Interface styles, IDEs and microcontrollers, No code and low code online platforms for creating interactive products

### Course contents (extended version)

1. Concepts:
  - Interaction, technology, unimodal vs multimodal, physical-virtual integration and context-aware
  - Ubiquitous, mobile and pervasive computing
  - Internet of Things
  - Intelligent Ambient
  - Virtual worlds
  - Extended Reality - XR
  - Metaverse
  - Spatial computing
2. Interfaces styles:
  - Command Line Interface
  - Graphical User Interface
  - Natural Language User Interface
  - Physical user interface
  - Voice User Interface
  - Haptic Interfaces
  - Wearable Interfaces
  - Touch User Interface
  - Tangible User Interfaces
3. IDEs and microcontrollers:
  - P5.js
  - Opensimulator
  - A-FRAME
  - Arduino
4. No-code and low-code online platforms for creating interactive products

### Recommended reading

1. Baruah, R. (2021). AR and VR using the WebXR API: learn to create immersive content with WebGL, Three.js, and A-Frame. Apress.
2. Stern, N. (2013). Interactive Art and Embodiment: The Implicit Body as Performance. Gylphi Limited. ISBN: 9781780240091
3. Margolis, M. (2017). Arduino Cookbook. O'Reilly Media. ISBN: 9781449313876
4. Filimowicz, M. e Tzankova, V. (2018). New Directions in Third Wave Human-Computer Interaction: Volume 1 - Technologies. Springer International Publishing. ISBN: 9783319733555.
5. Noble, J. (2012). Programming Interactivity: A Designer's Guide to Processing, Arduino, and openFrameworks. O'Reilly Media; Second edition. ISBN: 9781449311445

### Teaching and learning methods

Contact hours: Explanation of concepts, conducting practical exercises to apply the concepts. Non-contact hours: Exercises, research work.

### Assessment methods

1. Final evaluation - (Regular, Student Worker) (Final, Supplementary, Special)
  - Practical Work - 75% (Individual and group work to apply the knowledge learnt during the semester.)
  - Final Written Exam - 25% (Evaluation of concepts. Minimum grade 7 values.)
2. Exchange students - (Regular, Student Worker) (Final, Supplementary, Special)
  - Practical Work - 100% (Practical works to apply the knowledge learned during the semester.)

### Language of instruction

Portuguese, with additional English support for foreign students.

## Electronic validation

Arlindo Costa dos Santos	Ana Lucia Jesus Pinto	Anabela Neves Alves de Pinho	Luisa Margarida Barata Lopes
05-05-2024	05-05-2024	06-05-2024	08-05-2024