

**CENTRO UNIVERSITARIO DE TECNOLOGÍA Y ARTE DIGITAL**



## **ACADEMIC PROGRAM**

### **INTRODUCTION TO PROGRAMMING**

# 1. BASIC INFORMATION/GENERAL INFORMATION.

Degree:	Bachelor in Interactive Product Design
Faculty or Centre:	Centro Universitario de Tecnología y Arte Digital (U-TAD)
Area:	Foundations of development
Course:	Introduction to Programming
Year:	First
Teaching period:	Second
Type:	Compulsory subject
ECTS credits:	6
Teaching modality:	classroom-based course
Language:	English
Lecturer/Teacher:	Adrián Rodríguez
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## 2. SUBJECT DESCRIPTION.

### Area description

This area refers to the study and practice of the set of fundamental concepts that allow the foundation of the concepts of video game development from the technological, programming and mathematical aspects.

### Subject description

This subject is a continuation of the theoretical contents of "Fundamentals of Mathematics and Physics" and is based on the theoretical knowledge of "Technology for Designers".

It is a fundamental subject for knowing and mastering the theoretical and practical bases that underpin the development of scripting, prototyping and the creation of

digital content. It will allow students to improve their theoretical and practical knowledge in the achievement of their competences for the creation of interactive design products.

## **3. SKILLS AND LEARNING OUTCOMES**

### **3.1 Skills**

GC1 - Lifelong learning through self-study and lifelong learning.

GC17 - Demonstrate the ability to analyse, synthesise and gather information from different sources.

GC18 - Manage information appropriately.

SC6 Apply the practical fundamentals of mathematics and physics to the creation of an interactive digital product.

SC7 Knowing the practical fundamentals of the use and programming of computers and interactive product development tools.

SC8 Assessing the ethical, technical and creative implications of technology in the design of interactive products.

### **3.2 Learning outcomes**

Evaluate the possibilities and restrictions imposed by technology in the construction of the videogame.

Know the syntax and basic use of the programming languages intended for the design of video games.

Develop basic programs accompanied by simple test batteries

## 4. CONTENTS

- Theoretical-practical concepts of videogame implementation
- Processes of conceptualization of programming in videogame engines according to the market.
- Basic concepts of programming in simple languages
- Basic scripting for the design of video games and interactive products
- Knowledge of technology in the field of video games and interactive products

## 5. SUBJECT SYLLABUS:

Topic 0. Fundamentals and methodology of programming

Topic 1. Programming environment and language.

Topic 2. Data and operations. Types, expressions and variables.

Topic 3. Flow control sentences. Loops, variables and arrays

Topic 4. Introduction to algorithms and OOP.

## 6. TRAINING ACTIVITIES AND TEACHING METHODS

### Teaching methods

The subject will be developed through the following general methods and techniques, which will be applied differently depending on the characteristics of the subject:

- **Expository method/Master lecture:** the lecturer will develop the contents of the syllabus through master classes and dynamic lectures.
- **Case studies:** analysis of real cases related to the subject.
- **Exercise and problem solving:** students will develop the appropriate solutions by applying transformation procedures to the information available and interpreting the results.

## Training activities

LEARNING ACTIVITIES	Total hours	Hours of attendance	% attendance
Theory classes	41	41	100
Seminars and workshops	3	3	100
Practical classes	12	12	100
Tutoring	5	5	100
Evaluation activities	7	7	100
Study and group work	20	1	5
Self-study and individual work	62	0	0

## 7. TEMPORAL DEVELOPMENT

Subject	Week
Topic 0. Fundamentals and methodology of programming	1,2,3
Topic 1. Programming environment and language.	4,5,6
Topic 2. Data and operations. Types, expressions and variables.	7,8,9
Topic 3. Flow control sentences. Loops, variables and arrays	10,11,12
Topic 4. Introduction to algorithms and OOP.	13,14,15

## 8. EVALUATION SYSTEM

ASSESSED ACTIVITY	MINIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)	MAXIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)
SE1 Assessment of participation in class, practicals or projects of the subject.	10%	30%
SE2 Evaluation of assignments, projects, reports, reports, reports	30%	60%
SE3 Objective assessment	30%	70%

## Grading criteria:

EVALUATION ACTIVITY	EVALUATION CRITERIA	EVALUATION CRITERIA ASSESSMENT IN RELATION TO THE FINAL GRADE (%)
SE1 Assessment of participation in class, practicals or projects of the subject.	Students will be valued for their active participation and the correct submission of the exercises in due time and form.	10%
SE2 Evaluation of assignments, projects, reports, reports, reports	Quality of the exercises, correctly commented, well-structured and optimised scripts.	60%
SE3 Objective assessment	- the quality of the work - the capacity for self-criticism and improvement - the presentation - the effort made	30%

## General comments on the evaluations/assessments:

- You must get a minimum of 4 in each of the parts to get an average and be able to pass the course.

## 9. LIST OF REFERENCES (BOOKS, PUBLICATIONS, WEBSITES):

### Key references

POWERS, Shelley, Learning JavaScript, 2nd Edition. Add Sparkle and Life to Your Web Pages. O'Reilly Media. 978-0-596-52187-5, 2008.

REAS, Casey and Fry Ben, Getting Started with Processing. Published June 2010, O'Reilly Media.

### Recommended references

ECKEL, Bruce, Thinking in Python. <http://www.mindview.net/Books/TIPython>

FLANAGAN, David, Matsumoto, Yukihiro. The Ruby Programming Language. O'Reilly. 2008. ISBN-10: 0596516177. First Edition.

GADDIS, Tony. Starting Out with C++. Addison-Wesley. ISBN-13: 978-0132576253

GILLETTE Jonathan, Why's Poignant Guide to Ruby (online).

<http://mislav.uniqpath.com/poignant-guide/>

LIBERTY, Jesse, C++ (Programación). Anaya Multimedia. ISBN-13: 978-844159793

LUTZ, Mark y Ascher, David. Learning Python (Help for Programmers), 4th edition. O'Reilly Media.

V.V.A.A, Programming Ruby 1.9 (3rd edition): The Pragmatic Programmers' Guide. 2009. ISBN: 978-1-93435-608-1

## 10. Required materials, software and tools

### Type of classroom:

Projection equipment and whiteboard

### Materials:

Laptop computer

### Software:

Unity