ACADEMIC PROGRAM

INTRODUCTION TO PROGRAMMING

B.F.A. IN **INTERACTIVE PRODUCT DESIGN**

MODALITY: ON CAMPUS

ACADEMIC YEAR: 2023-2024

Name of the course:	Introduction to Programming	
Degree :	Interactive Product Design	
Location:	Centro Universitario de Tecnología y Arte Digital	
Modulo:	Art, Science and Technology	
Area:	Foundations of development	
Year:	1º	
Teaching period:	2º	
Type:	OB	
ECTS credits:	6	
Teaching modality:	On campus	
Language:	English	
Lecturer / Email	Adrián Rodríguez Follente/adrian.follente@u-tad.com	
Web page:	http://www.u-tad.com/	

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.

COMPETENCIES AND LEARNING OUTCOMES

Competencies

Basic and general competences

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

GC18 - Manage information appropriately.

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

CB1 - That students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.

CB2 - Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defence of arguments and problem solving within their field of study.

CB3 - Students have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgements that include reflection on relevant social, scientific or ethical issues.

CB4 - Students are able to communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

CB5 - That students have developed those learning skills necessary to undertake further study with a high degree of autonomy.

Specific competences

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 - Evaluate the ethical, technical and creative implications of technology in the design of interactive products.

Learning outcomes

Use elementary technical knowledge in the creative design process.

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

Apply the elements of kinematics and dynamics to the design.

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

Manage the most common operating systems and work environments

Develop simple games in scripting languages

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

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.

TRAINING ACTIVITIES AND TEACHING METHODOLOGIES

TRAINING ACTIVITIES

LEARNING ACTIVITIES	Total hours	Hours of presence
Theoretical classes	40,77	40,77
Seminars and workshops	3,08	3,08
Practical classes	11,54	11,54
Tutorials	5,38	5,38
Evaluation Activities	6,92	6,92
Group work and study	20,00	1,00
Autonomous and individual study and work	62,31	0,00
TOTAL	150	69

Teaching methodologies

Expository method/Master lecture

Case studies

Exercise and problem solving

TEMPORAL DEVELOPMENT

Topic 0. Fundamentals and methodology of programming: 3 weeks

Topic 1. Programming environment and language: 3 weeks

Topic 2. Data and operations. Types, expressions and variables: 3 weeks

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

Topic 4. Introduction to algorithms and OOP: 3 weeks

EVALUATION SYSTEM

ASSESSMENT SYSTEM	MINIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)	MAXIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)
Assessment of participation in class, exercises or projects of the course	10	30
Assessment of assignments, projects, reports, memos	30	60
Objective test	30	70

GRADING CRITERIA

ASSESSMENT SYSTEM	ORDINARY EVALUATION	EXTRAORDINARY EVALUATION
Assessment of participation in class, exercises or projects of the course	10	10
Assessment of assignments, projects, reports, memos	60	60
Objective test	30	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.

• "Any detection of plagiarism, copying or use of malpractice (such as the use of AIs) in a paper or exam will result in the failure of that paper with a zero, a report to the faculty and academic coordinator and the application of the current regulations, which can lead to very serious penalties for the student."

• The use of smartwatches or mobile phones is not permitted during the exams. These devices must be put away and out of sight during the exam.

• The use of mobile phones is not permitted during lessons.

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. FirstEdition.

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 (HelpforProgrammers), 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

REQUIRED MATERIALS, SOFTWARE AND TOOLS

Type of classroom
Projection equipment and whiteboard

Materials:
Laptop computer

Software:

Unity