ACADEMIC PROGRAM

SCRIPTING (II)

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

MODALITY: ON CAMPUS

ACADEMIC YEAR: 2023-2024

Name of the course:	Scripting (II)	2
Degree :	Interactive Product Design	
Location:	Centro Universitario de Tecnología y Arte Digital	
Modulo:	Art, Science and Technology	
Area:	Foundations of development	
Year:	2º	
Teaching period:	2º	
Type:	OB	
ECTS credits:	6	
Teaching modality:	On campus	
Language:	English	
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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 "Scripting I", "Introduction to programming" and is based on the theoretical knowledge of "Fundamentals of Mathematics and Physics". It is a fundamental subject for knowing and mastering the theoretical-practical bases that underpin the development of scripting, in the creation of interactive digital 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

Unreal:

Unit 1: Creating a third person game

    - Gamemode

    - Pawn and Character - definition, differences and uses

        - Character physical properties

    - Player controller and camera

Unit 2: Creating your own character

    - Basic resources

        - SkeletalMesh

        - Animation set - animation types and specifications

        - Inputs and movement

Unit 3: Animation blueprint 1

    - Relationship of states and animations

    - Eventgraph and Animationgraph

    - Conditions for switching between states

    - Blend of animations and transitions

    - Animation notifications

Unit 4: Animation blueprint 2

    - Normal mode and Strafe mode

    - Bone control and advanced blending

    - Linkedanimgraphs

    - Sockets

    - Combos system (animationmontage)

    - Animation retarget

Unity:

Unit 1: Charater controller

      - Parameters.

      - Functions.

      - Uses.

      - Movement, jumping, sliding, camera control.

Unit 2: Smart Enemies with Navigation Grids

      - Navigation Grids.

      - Routes.

      - Player tracking.

Unit 3: Movement and combat with Animations

      - Integration of movement animations with CC and AI.

      - Integration of attack animations with game logic.

Unit 4: Skill system with dynamic UI.

      - Creation of class hierarchy for player skills.

      - Integration of skill system with dynamic UI.

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

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Universidad
Camilo José Cela

Teaching methodologies

Expository method/Master lecture

Case studies

Exercise and problem solving

TEMPORAL DEVELOPMENT

Unit 1: Creating a third person game: 2 weeks

Unit 2: Creating your own character: 2 weeks

Unit 3: Animation blueprint 1: 2 weeks

Unit 4: Animation blueprint 2: 2 weeks

Unit 1: Charater controller: 1 weeks

Unit 2: Smart Enemies with Navigation Grids: 2 weeks

Unit 3: Movement and combat with Animations: 2 weeks

Unit 4: Skill system with dynamic UI: 2 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	40	40
Objective test	50	50

General comments on the evaluations/assessments

• The subject is composed of two parts: Unreal and Unity. To pass the subject it will be necessary to obtain an arithmetic average between both parts greater than 5, as long as the minimum evaluation of each part is greater than 4. In the event that any of the parts is failed with an evaluation lower than 4, the final grade for the subject will be the lowest grade between both parts. If both parts are approved, the final grade for the subject will be the average between both parts.

Unreal: Grade x 50% (minimum grade: 4)

Unity: Grade x 50% (minimum grade: 4)

• Ordinary call: It is required to obtain an average grade of 5 or more to pass both the practices and assignments and the objective test (exam)

• To pass the subject in the extraordinary call, the presentation of the final failed or undelivered work and the passing of the subsequent exam/work will be required. In extraordinary activities the activities will be worth 40% and the exam 60%. The exam will account for 60% of the final grade and the assignments will account for 40%. Both parts must have a grade higher than 5 to pass the subject.

• 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 allowed during the exams. These devices will have to be stored and out of sight of the student during the exam.

• The use of cell phones is not allowed during classes.

• Ordinary Call:

o In each part of the subject, Unreal and Unity, 3 exercises will be carried out, which be a total of 40% of the subject. Each exercise will include an extra section, where the student will have the opportunity to obtain extra score, which will be weighted with the rest of the exercises, but not with the objective test. The exam will account for 50% of the final grade, the assignments will account for 40% and class participation/student development will account for 10%.

o Both the assignments and the objective test must have a minimum evaluation of 5 to pass each part of the subject (Unreal / Unity)

o The objective test consists of developing an exercise/exam in person.

LIST OF REFERENCES (BOOKS, PUBLICATIONS, WEBSITES):

Key references

Unreal:

https://docs.unrealengine.com/5.0/en-US/animation-blueprints-in-unreal-engine/

https://docs.unrealengine.com/5.0/en-US/setting-up-a-character-in-unreal-engine/

Unity:

ALBAHARI, J. (2021), C# 9.0 in a Nutshell: The Definitive Reference.

O'REILLY.Buttfield-Addison, P. Manning, J. and Nugent, T. (2019), Unity Game Development Cookbook:Essentials for Every Game. O'Reilly.

NYSTROM, R. (2014), Game Programming Patterns. Genever Benning.

Recommended references

MARTIN Series, R.C. (2009), CleanCode, A Handbookof Agile Software Craftsmanship. Addison-Wesley

REQUIRED MATERIALS, SOFTWARE AND TOOLS

Type of classroom
Projection equipment and whiteboard

Materials:
Laptop computer

Software:
Unreal

Unity