ACADEMIC PROGRAM

ADVANCED PROGRAMMING

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

MODALITY: ON CAMPUS

ACADEMIC YEAR: 2023-2024

Name of the course:	Advanced Programming
Degree :	Interactive Product Design
Location:	Centro Universitario de Tecnología y Arte Digital
Modulo:	Specialized Design
Area:	Technology for Interactive Products
Year:	4º
Teaching period:	2º
Type:	OP
ECTS credits:	3
Teaching modality:	On campus
Language:	English
Lecturer / Email	David Aragonés Mallén/david.aragones@u-tad.com
Web page:	http://www.u-tad.com/

SUBJECT DESCRIPTION

Area description

This subject belongs to the Specialized Design module and, within it, to the area of Technology for Interactive Products. This area refers to the study and practice of the set of techniques necessary for the acquisition of the necessary knowledge for the technological development of applications and video games, focusing on the most technical part of these.

Subject description

In this subject the student will develop an advanced knowledge of programming, taking further the objectives seen in the subjects "Introduction to programming" and "Scripting".

It is a subject that both brings together and exercises knowledge already acquired, and prepares the student for programming work at a higher level than the subjects already mentioned. It will provide the student with the knowledge to be more autonomous in the programming of interactive digital products.

COMPETENCIES AND LEARNING OUTCOMES

Competencies

BASIC AND GENERAL

GC2 - Knowing how to adapt to change and new situations with flexibility and versatility.

GC6 - Demonstrate motivation for quality.

GC8 - Demonstrate the ability to work in a team.

GC18 - Manage information appropriately.

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

SC1 - Know the language necessary to communicate and structure a coherent discourse in the field of sociology, philosophy and psychology in relation to the design of interactive products.

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.

SC18 - Apply theoretical and practical knowledge of product design for content development.

SC20 - Knowing the determining factors of the consumer market of interactive products, taking into account the knowledge and respect for social and cultural environments.

SC21 - Understand the principles of design applied to multiple consumer devices.

Learning outcomes

Use current game engines to create video games.

Use basic programming to improve the design of non-complex games.

Assessing the artificial intelligence techniques needed for a video game

Adapt a video game or interactive system to different cultures

Defining a game's localization strategy based on social influences

CONTENTS

- Software development methodologies applied to videogame development.
- Elements of agility in development.
- Automatic development processes.
- Implementation in development.

SUBJECT SYLLABUS

Topic 1 Introduction to RPGs.

Topic 2 Object-oriented programming.

Topic 3 Inheritance and Interfaces.

Topic 4 Generics and collections.

Topic 5 Events and delegates.

TRAINING ACTIVITIES AND TEACHING METHODOLOGIES

TRAINING ACTIVITIES

LEARNING ACTIVITIES	Total hours	Hours of presence
Theoretical classes	18,75	18,75
Seminars and workshops	2,50	2,50
Practical classes	6,25	6,25
Tutorials	1,50	1,50
Evaluation Activities	2,50	2,50
Group work and study	5,00	0,25
Autonomous and individual study and work	38,50	0,00
TOTAL	75	32

Teaching methodologies

Expository method/Master lecture

Case studies

Exercise and problem solving

Problem-based learning

TEMPORAL DEVELOPMENT

Topic 1 Introduction to RPGs: 1 week

Topic 2 Object-oriented programming: 3 weeks

Topic 3 Inheritance and Interfaces: 3 weeks

Topic 4 Generics and collections: 4 weeks

Topic 5 Events and delegates: 4 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	35	70
Objective test	30	60

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

- Practical exercises to be carried out in the classroom:

-The approach to the exercise, its execution and its final performance will be assessed.

-The weight in the final mark will be 10%.

- The final exam will account for 20% of the final grade.

- Practical exercises to be carried out at home:

-A practical exercise will be set at the end of subjects 2, 3, 4 and 5 and the approach to the exercise, its performance and its final operation will be assessed.

-The weight in the final mark will be 60%, with the last deliveries having more value).

-It is compulsory to present all the completed exercises in order to qualify for the final mark.

- Final test:

-A specific exercise that the student will have to carry out in a limited time and with limited resources. The time taken to complete the exercise and its final performance will be assessed.

-The weight in the final mark will be 30%.

-It is compulsory to take the final test.

- Recovery periods:

-If the final mark is not higher than 5, students will have to take a practical exam in the ordinary exam session.

- Attitude: Active involvement in the teaching process will be valued.

- "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

Empiece a programar, Un enfoque multiparadigma con C#. Miguel Katrib y grupo WEBOO

Unity 2017.x Adrián Dominguez, Fernando Navarro, Javier M. Castro. RA-MA 2017.

ISBN: 978-84-9964-713-5

Webgrafía:

Tutoriales de programación de Unity: https://learn.unity.com/tutorials

Recursos:

Recursos de videojuegos en 2D: https://www.spriters-resource.com/https://opengameart.org/ https://itch.io/game-assets/free

Ejemplo juego de rol textual:

http://textadventures.co.uk/games/view/em15b32xd0o-y-ysvgrtcg/deeper

Reglamento básico de D&D :

https://media.wizards.com/2018/dnd/downloads/DnD_BasicRules_2018.pdf

Recommended references

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

Programming Ruby 1.9 (3rd edition): The Pragmatic Programmers' Guide. Dave Thomas, with Chad Fowler y Andy Hunt. 2009. ISBN: 978-1-93435-608-1

Why's Poignant Guide to Ruby (online). Jonathan Gillette. http://mislav.uniqpath.com/poignant-guide/

Thinking in Python. Bruce Eckel. http://www.mindview.net/Books/TIPython

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

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

REQUIRED MATERIALS, SOFTWARE AND TOOLS

Type of classroom
Projection equipment and whiteboard

Materials:
Laptop computer

Software:
Visual Studio

Unity

World Machine