Course guide
804129 - AGPC - Generative Art and Processing

Unit in charge: Image Processing and Multimedia Technology Centre
Teaching unit: 804 - CITM - Image Processing and Multimedia Technology Centre.

Degree:
- BACHELOR’S DEGREE IN MULTIMEDIA STUDIES (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN VIDEO GAME DESIGN AND DEVELOPMENT (Syllabus 2014). (Optional subject).
- BACHELOR’S DEGREE IN DESIGN, ANIMATION AND DIGITAL ART (Syllabus 2017). (Optional subject).

Academic year: 2023  ECTS Credits: 6.0  Languages: Catalan

LECTURER

Coordinating lecturer: Bilurbina Camps, Marcel

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
5. Apply new theoretical and practical knowledge related to the creation of content and interactive multimedia applications for use in the areas of: training, health, leisure and entertainment and business and professional activities.
3. Analyse the evolution and state of the art and identify probable and/or desirable future scenarios, based on the application of multimedia technologies to the areas of: training, health, leisure and entertainment and business and professional activities.

Transversal:
1. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
2. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.
4. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

TEACHING METHODOLOGY

It is a subject that is basically practical but also theoretical in order to understand the foundations of "generative art” and its practice. The basis of the work is programming in P5JS (Processing).

The course will be organized in 2 major blocks:
In the first block, the initial one, you will learn the basics of programming with P5Js. There will be a weekly individual practice as a follow-up to the exercises done in class. Recommended internships will be proposed according to each person's prior programming knowledge.

The second block will present concepts related to generative art and explain related algorithms. An individual internship must be carried out fortnightly, applying the corresponding concept.

Conceptual and programming explanations will be given in both blocks and practices will be carried out with follow-up during the class schedule.
A 30-minute session will be held throughout the course and weekly for students, in small groups, to present a reference author and an analysis of one of their works.
LEARNING OBJECTIVES OF THE SUBJECT

- The main objective of the subject is to provide students with knowledge of the language and concepts of "generative art".
- Relate theoretical concepts with algorithms and analyze their graphical result.
- Acquire the skills and knowledge to participate in multidisciplinary projects that mix programming and design.
- Provide generic knowledge that gives greater creative freedom to creators and artists in the use of the computer, beyond the commercial programs.
- Contribute, with programming skills, to structuring processes and projects in order to solve complex problems in an orderly manner.
- Apply to the projects solutions of generative graphics, automation of processes and visualization of data in order to take advantage of the specificities and advantages of the programming in the field of the art, the multimedia and the games.
- Plan generative projects and be able to cure and choose the most appropriate end result in the proposal.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group</td>
<td>60.0</td>
<td>40.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90.0</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

1. INTRODUCTION TO GENERATIVE ART

Description:
Continguts i organització de l'assignatura
Introducció a l'art “generatiu”

Full-or-part-time: 3h
Practical classes: 2h
Self study : 1h

2. INTRODUCTION TO PROGRAMMING

Description:
Introduction to programming: syntax, variables, basic drawing functions
Coordinates, geometry and color.
Control structures and comparative operators.

Full-or-part-time: 8h
Practical classes: 2h
Self study : 6h

3. REPETITION STRUCTURES

Description:
Variables and repeat loops.
Arrays

Full-or-part-time: 10h
Practical classes: 2h
Self study : 8h
### 4. COLOR

**Description:**
Color models and palette creation

**Full-or-part-time:** 8h
Practical classes: 2h
Self study : 6h

### 5. SHAPES AND CURVES

**Description:**
Drawing basic shapes
Types of curves

**Full-or-part-time:** 16h
Practical classes: 4h
Self study : 12h

### 6. AUTO-SIMILITY

**Description:**
Introduction to the concept of "self-similarity" and fractals.
Functions
Recursive functions

**Full-or-part-time:** 20h
Practical classes: 8h
Self study : 12h

### 7. RANDOMNESS

**Description:**
Introduction to the concept of "randomness and noise"
Random, noise and introduction to different noise libraries

**Full-or-part-time:** 20h
Practical classes: 8h
Self study : 12h

### 8. COMPLEX SYSTEMS AND EMERGENCY. CA

**Description:**
Introduction to the concept of "emergency"
OOP. Object Oriented Programming
Cellular automata

**Full-or-part-time:** 20h
Practical classes: 8h
Self study : 12h
## 9. COMPLEX SYSTEMS AND EMERGENCY. AA

**Description:**
Introduction to self-employed agents  
Vectors

**Full-or-part-time:** 20h  
Practical classes: 8h  
Self study: 12h

## 10. NFT ECOSYSTEM AND CRYPTOART

**Description:**
Introduction to Cryptoart  
Introduction to the NFT ecosystem

**Full-or-part-time:** 25h  
Practical classes: 10h  
Self study: 15h

## ACTIVITIES

### Exercices

**Description:**
During the course, 8 internships corresponding to each of the topics worked on will be in charge, which will allow progress to be made in the contents taught during the course.

**Full-or-part-time:** 34h 30m  
Practical classes: 15h 30m  
Self study: 19h

### Assignments

**Description:**
There will be small exercises that will not be scored but will allow the correct follow-up of the subject on a weekly basis

**Full-or-part-time:** 35h 30m  
Practical classes: 10h 30m  
Self study: 25h

### Theoretical group presentation

**Description:**
There will be a theoretical group work that will consist of the study of an artist and the analysis of one of his works that will be mandatory for the achievement of the course.

**Full-or-part-time:** 10h  
Practical classes: 5h  
Self study: 5h
GRADING SYSTEM

GENERAL
- The correct realization and presentation of the autonomous practices will value each one out of 10
- The correct realization and presentation of the theoretical exposition will be valued on 20.
- Attendance and participation in class sessions, work outside the classroom and effort will be valued at over 10.

SPECIFIC
There will be 8 individual programming practices to complete and a group presentation.
The final grade will be calculated as follows:
(practical score (80) + group work score (20) + attendance and participation (10)) / 11

Undelivered internships may be submitted one week later and will have a maximum rating of 6.

EXAMINATION RULES.
Practices failed or not delivered at the end of the semester may be recovered. The practices presented during these periods will be evaluated on 6 points and not on 10.

Why a 6 only? Well, for two reasons.
1) because the course is progressive and in crescendo (continuous assessment). What you will learn on the first day you will use to the end. By delivering the practices when it is time to assimilate the contents and enjoy more of the following content and project.
2) So that the 1st delivery week 3 will cost you a lot. And instead, at the end of the semester it can be done with eyes closed. It does not have the same merit AND value to do it when it touches that when we have already mastered it.

Submit everything in time and pass. If you don't hand in some practice, get it back!

BIBLIOGRAPHY

Basic: