

Course guide

804129 - AGPC - Generative Art and Processing

Last modified: 18/03/2025

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: 2025 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Molins Pitarch, Carla

Others:

REQUIREMENTS

Computation Basics

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 course that is primarily practical but also theoretical in order to understand the foundations of "generative art" and its practice.

The foundation of the work is programming in P5JS (Processing).

The course will be organized into 2 main blocks:

In the first block, the initial one, the fundamentals of generative art will be learned in parallel with the fundamentals of programming with p5js. Multiple small practices ("sketches") on the current theme will be required weekly. Additional resources and challenges will be proposed to create more complex sketches.

The first block will conclude with a gallery-style presentation of some of the sketches elaborated week by week.

In the second block, concepts related to generative art, different types of visual explorations, and related algorithms will be presented. The second block will provide conceptual challenges that will be worked on weekly until identifying a concept/technique to explore in more depth. This will become the final project.

In both blocks, conceptual and programming explanations will be provided, and practical exercises with guidance will be conducted during class hours, which must be complemented with self-directed learning.

Throughout the course, and weekly, there will be a 20-minute session for students, in small groups, to present a reference author.

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

Type	Hours	Percentage
Hours medium group	60,0	40.00
Self study	90,0	60.00

Total learning time: 150 h



CONTENTS

BLOCK A. FOUNDATIONS

Description:

In this first part of the course, we will combine a weekly theme with the learning of introduction to programming (syntax, variables, functions, repetition loops, conditionals...)

- 1 Pseudo-code - Tiles
- 2 Randomness - Randomness
- 3 Noise
- 4 Parameters
- 5 Tactics
- 6 Pixel

Full-or-part-time: 75h

Practical classes: 25h

Self study : 50h

BLOCK B EXPLORATION

Description:

The second block will focus on exploring different techniques that will allow us to see generative art from different perspectives and mediums.

Description:

- 8 Vectors
- 9 Turtle graphics
- 10 Animation
- 11 Microgames
- 12 Special

Full-or-part-time: 75h

Practical classes: 35h

Self study : 40h

ACTIVITIES

Independent work

Description:

Throughout the course, it is expected that multiple sketches are done weekly (minimum 3). The dedication for each sketch will be 30 minutes to 1 hour.

Full-or-part-time: 55h

Self study: 45h

Practical classes: 10h



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: 30h

Self study: 10h

Practical classes: 20h

Theoretical group presentation

Description:

A theoretical group work will be carried out, consisting of studying references of generative art from both the past and today.

Full-or-part-time: 10h

Self study: 5h

Practical classes: 5h

GRADING SYSTEM

- Weekly individual sketches - 30%*
- Partial Gallery - 20%
- Group Case Studies - 10%
- Final Project: presentation - 20%
- Final Project: Individual Report - 10%
- Participation and learning attitude - 10%

*Unsubmitted practices (sketches) can be turned in one week later and will have a maximum rating of 6.

Weekly sketches will not have individual value; there will be a weekly grade. It's not about creating 1 perfect sketch, it's about making 3 or more to explore different options on the chosen theme.

EXAMINATION RULES.

Uncompleted or failed assignments can be resubmitted at the end of the semester. Assignments submitted during these periods will be evaluated on a scale of 6 points instead of 10.

Why only a 6? Well, for two reasons.

Because the course is progressive and in crescendo (continuous assessment). What you learn on the first day, you'll use until the end. If you submit assignments on time, you assimilate the content and enjoy the next content and project more.

Because the first submission in week 3 will be challenging. However, towards the end of the semester, you could do it with your eyes closed. It doesn't have the same merit and value to do it when it's due as when we already have it mastered.

SUMMARY: Submit everything as and when it should be done, pass, and enjoy the course more. If you miss submitting any assignment, RESUBMIT IT! ;)



BIBLIOGRAPHY

Basic:

- Shiffman, Dan. The nature of code. [S.l.]: l'Autor, 2024. ISBN 9780985930806.
- Gross, Benedikt [et al.]. Generative design: visualize, program, and create with JavaScript in p5.js. Princeton Architectural Press, 2018. ISBN 9781616897581.
- Maeda, John. Design by numbers. Cambridge: MIT Press, 1999. ISBN 9780262278867.
- McCarthy, Lauren [et al.]. Introducció a P5.js. Processing Foundation, 2018. ISBN 9780999881309.
- Maeda, John. Creative code. London: Thames & Hudson, 2004. ISBN 0500285179.
- Reas, Casey; Fry, Ben. Processing: a programming handbook for visual designers and artists. 2nd ed. Cambridge: MIT Press, 2014. ISBN 9780262028288.
- Reas, Casey. Form+Code in design, art, and architecture (Design briefs). Princeton Architectural Press, 2010.

RESOURCES

Other resources:

<https://thecodingtrain.com/> /><https://www.codecademy.com/learn/learn-p5js> /><https://natureofcode.com/> /><https://compform.net/> />