UAB
Universitat Autònoma de Barcelona

Creation of Digital Objects

2026/2027

Code: 104756
Credits: 6

Degree programme	Type	Course
Interactive Communication	OP	4

Contact lecturer

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Group languages

You can consult this information at the end of the document.

Prerequisites

It is recommended to bring your own laptop.

Objectives

- Learn to use the modeling and lighting tools of a 3D creation software (such as Blender) to model objects and present them properly.
- Develop a high-quality portfolio piece that demonstrates technical and artistic mastery of video game and interactive environment industry standards.

Learning outcomes

1. Interpret and discuss documents on the main theories on virtual environments.
2. Plan and execute academic projects in the field of virtual environment theory.
3. Present a summary of the studies made, orally and in writing.
4. Show expertise in operating the relevant computer programmes.
5. Use the virtual spaces created as narrative contexts.
6. Design objects that combine aesthetic norms with perfect technical functionality.
7. Identify the specific features of the design, creation, integration and animation of digital objects (2D and 3D) and specific tools from both a conceptual and a practical perspective.
8. Distinguish the salient features in all types of documents within the subject.
9. Cross-check information to establish its veracity, using evaluation criteria.
10. Form part of groups working on virtual-production projects.
11. Submit course assignments on time, showing the individual and/or group planning involved.
12. Propose new methods or well-founded alternative solutions.
13. Propose projects and actions that are in accordance with the principles of ethical responsibility and respect for fundamental rights and obligations, diversity and democratic values.
14. Propose projects and actions that incorporate the gender perspective.
15. Communicate using language that is not sexist or discriminatory.
16. Analyse a situation and identify its points for improvement.
17. Weigh up the risks and opportunities of both one's own and other people's proposals for improvement.

Contents

CONTENTS

- TOPIC 1: Introduction to the 3D procedure and production pipeline
- TOPIC 2: Object modeling
- TOPIC 3: UVWMap
- TOPIC 4: Unwrap and projection
- TOPIC 5: Modeling and texturing from textures
- TOPIC 6: Introduction to 3D sculpting
- TOPIC 7: Retopology
- TOPIC 8: Lighting and compositing

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Project	21	0.84	1, 2, 3, 5, 6, 10, 11, 12, 13, 14
Theory sessions	15	0.6	1, 8, 9
Practicum	12	0.48	1, 2, 4, 5, 6, 7, 10, 11
Working on project	39	1.56	2, 5, 6, 10, 11, 13, 14, 17
Study for theorical exams	15	0.6	1, 7, 8, 9, 15, 16
Solving practical exercises	12	0.48	3, 4, 5, 6, 11, 12, 17

METHODOLOGY

This course places greater weight on the practical and project components compared to the theoretical component. The practical and project parts will be carried out in work sessions tutored by the instructor, work demonstration sessions, submissions of reports and documentation, and autonomous work carried out by the student individually.

- THEORY: Lectures with material that will be previously provided on the Virtual Campus, where theoretical concepts regarding work methodologies and the use of the specific course software (Blender) are introduced. Despite being theory classes, a large part of the session will be dedicated to individually solving problems posed by the instructor. It is recommended to have a laptop available for these sessions.
- PRACTICALS: Short practical cases and modeling challenges will be posed, combining individual exercises and dynamics in teams of 4 people. In these exercises, a prompt will be provided and students must quickly apply the concepts explained in the theory classes, working on blocking, topology, and 3D asset optimization.
- PROJECT: Mid-course, each student will individually develop their own project consisting of the creation, optimization, texturing, and final presentation of a portfolio piece of high technical and artistic demand over 6 weeks. The instructor will guide and tutor each student's progress in a personalized manner during class sessions, where periodic monitoring submissions must be made. On the last day of class, each student will give an oral and visual presentation of their final piece, having previously submitted a technical portfolio and the project files.

SOFTWARE

Blender, Krita.

The detailed calendar with the content of the different sessions will be displayed on the presentation day of the course and will also be available on the course Virtual Campus, where students can find the various teaching materials that the teaching staff deems appropriate and all the information necessary for the proper monitoring

of the course. In the event of a change in teaching modality due to force majeure according to the competent authorities, the teaching staff will report the changes that will occur in the programming of the course and in the teaching methodologies.

NOTE: The content of the course will be sensitive to aspects related to the gender perspective and the use of inclusive language.

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Assistance and participation in project sessions	0.1	24	0.96	5, 9, 10, 11, 12, 15, 16, 17
Individual evaluation on theory	0.2	3	0.12	1, 3, 8, 9
Practicum evaluation	0.2	3	0.12	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
Project	0,5	6	0.24	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17

EVALUATION

1. Continuous Evaluation Activities The evaluation activities graded out of 10 are the following:

- a) Theoretical test (20% of the final grade)
- b) Submission of practical assignments and challenges (20% of the final grade)
- c) Final Project (Individual Portfolio Piece) (50% of the final grade)
- d) Monitoring of production milestones for the piece (10% of the final grade)

2. Criteria to Calculate the Final Grade

- To calculate the final grade of the course, a minimum grade of 5.0 will be required in the Theoretical test, the Submission of practical assignments, and the Global Grade of the Final Project.
- Activity *d) Monitoring of production milestones* does not require a minimum grade to be factored into the average.
- To pass the course, students must obtain a minimum global final grade of 5.0.

3. Criteria for the Assignment of a "Non-Assessable" (No Avaluable) According to point 9 of article 266 of the UAB Academic Regulations, when it is considered that the student has not been able to provide sufficient evidence of evaluation, this course must be graded as non-assessable. In this course, a "Non-Assessable" grade will be assigned if the student does not take the theoretical test and, at the same time, does not submit the final portfolio piece (Project).

4. Reassessment / Recovery Process

- Students will be entitled to reassessment in the course if they have been evaluated on a set of activities accounting for at least two-thirds of the total course grade (article 261.2 of the UAB Academic Regulations).
- The reassessable activities are the Theoretical test and the Submission of practical assignments. Due

to its nature as an artistic production tutored over 6 weeks, the Final Project (50%) is defined as a non-reassessable activity.
- To participate in the reassessment activities, the teaching staff requires students to have obtained a minimum grade of 3.5 in the corresponding failed activity.
- The maximum grade that can be obtained in the reassessment process of a failed activity will be 8.0. Reassessment is not provided for passing students who wish to raise their grade.

5. Single Evaluation This course/module does not provide for a single-evaluation system.

BREAKDOWN AND DETAIL OF ACTIVITIES

- a) THEORETICAL TEST: Individual theoretical exam on the fundamentals of 3D, UV coordinates, PBR workflows, and lighting techniques.
- b) SUBMISSION OF PRACTICAL ASSIGNMENTS AND CHALLENGES: Set of short exercise submissions based on the challenges and topologies worked on during the first half of the year.
- c) PROJECT (Portfolio Piece): The final evaluation of the piece will be based on a single individual grade awarded by the teaching staff, taking into account the following instruments:
- Technical and Artistic Quality of the Model: Geometric accuracy, retopology, optimized UV maps, PBR texture quality, and finish of graphic materials.
- Final Presentation and Render: Quality of lighting, composition of the piece, and framing that highlights the model for a professional portfolio.
- Technical Report and Oral Presentation: Brief documentation of the methodology used, resolution of topological problems, and exhibition on the last day of the course.

Evaluation Calendar:

- Monitoring of milestones: Continuously throughout the 6 weeks of production in the classroom.
- Submission of the piece, report, and individual presentation: The last week of class.

Use of the Virtual Campus: The UAB Virtual Campus will be the vehicle of communication for the submission of assignments and course documentation. It will also be used to publish project milestones, as well as for urgent communication in the event of any incident or absence from face-to-face classes.

REGULATIONS ON SANCTIONS AND USE OF ARTIFICIAL INTELLIGENCE

Restricted Use of Artificial Intelligence (AI) For this course, the use of Artificial Intelligence (AI) technologies is permitted exclusively for searching for artistic references, programming auxiliary support scripts under their own responsibility, support tasks such as bibliographic or information searches, text correction, or translations. The use of generative AI for the creation of geometric meshes or complete texturing that must be evaluated as the student's own authorship is excluded. Students must clearly identify any parts supported by this technology, specify the tools used, and include a critical reflection. Failure to disclose the use of AI in this evaluated activity will be considered a breach of academic integrity and may result in a partial or total penalty to the activity grade, or more serious sanctions in severe cases.

Mention of Academic Irregularities In the event that a student commits any irregularity (academic fraud, plagiarism, or improper use of AI, unless such use is expressly authorized in this guide) that could lead to a significant variation in the grade of an evaluation act, this evaluation act will be graded with a 0, regardless of the disciplinary process that may be instructed. If several irregularities occur within the evaluation acts of the same course, the final grade for this course will be 0.

Action in Cases of Suspected Irregularities Any student suspected of submitting assignments that have been generated by AI, written by others or copied; include unattributed AI-generated content, or fall outside the permitted scope, may be asked to provide preliminary work or other materials (such as save history, native *.blend* files with previous steps, or original texturing layers) that can demonstrate it is original work and the result of their own authorship. They may also be asked to separately explain or justify their work. Teachers may also use AI detection systems or carry out any verification tasks they deem appropriate. If, after review,

the instructor detects irregularities, the assignment may be graded zero, and the student may be subject to further disciplinary action.

Bibliography

3D Modeling, Topology, and Prop Design

- Vaughan, W. (2012). *Digital Modeling*. New Riders.
- *Application:* Fundamental theory of polygonal structure, professional workflows, and mesh optimization applicable across any 3D software.
- Murdock, K. L. (2022). *Blender 3D Bible*. John Wiley & Sons.
- *Application:* A comprehensive technical reference manual covering everything from basic asset creation to advanced Blender toolsets.

Texturing, Shading, and Color Theory

- O'Hailey, T. (2018). *Hybrid Animation: Integrating 2D and 3D Assets* (2nd ed.). Routledge.
- *Application:* Written by a prominent university professor, this text provides crucial insights on how to integrate and match visual styles across various assets and props.
- Akenine-Möller, T., Haines, E., & Hoffman, N. (2018). *Real-Time Rendering* (4th ed.). CRC Press.
- *Application:* The industry-standard academic textbook for understanding the physical interaction of light with materials (PBR) within render engines.

Industry Workflow and Production Pipeline

- Alexander, L. (Ed.). (2019). *The Game Design Deep Dive Series: Props and Environment Design*. CRC Press.
- *Application:* A compilation of practical analyses focusing on environmental storytelling through assets within an interactive space.
- Sommer, S., & Blender Foundation. (2024). *Blender Studio Production Pipeline*. Blender Foundation.
- *Application:* Reference documentation detailing asset file organization, naming conventions, and production methodologies used in professional animation projects.

Composition, Lighting, and Portfolio Presentation

- Robertson, S., & Bertling, T. (2014). *How to Render: The Fundamentals of Light, Shadow and Reflectivity*. Design Studio Press.
- *Application:* Essential reading for students learning to light and showcase their props photorealistically or stylistically for their academic portfolios.

Software

Blender

Krita

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this link. To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	6	Spanish	first semester	afternoon
(PAUL) Classroom practices	61	Spanish	first semester	afternoon
(PLAB) Practical laboratories	61	Spanish	first semester	afternoon