



## **ACADEMIC PROGRAM**

### **PRINCIPLES OF BODY DYNAMICS**

### **B.F.A. IN ANIMATION**

***MODALITY: ON CAMPUS***

***ACADEMIC YEAR: 2023-2024***

<b>Name of the course:</b>	<b>Principles of body dynamics</b>
Degree :	Animation
Location:	Centro Universitario de Tecnología y Arte Digital
Area:	Animation
Year:	2º
Teaching period:	1
Type:	OB
ECTS credits:	3
Teaching modality:	On campus
Language:	English
Lecturer / Email	Jorge Izaguirre Marcos/jorge.izaguirre2@u-tad.com
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## SUBJECT DESCRIPTION

### Area description

The animation subject is oriented to enable students to acquire the skills that will allow them to convey emotions through the movement and performance of the characters using the 3D animation technique and acquiring the knowledge of other experimental animation techniques. They will apply the concepts of anatomy and mechanics of human body movement and the principles of traditional animation to 3D and experimental animation, transferring them to actions of increasing complexity, both in the physical simulation of movement and in the transmission of emotions through the attitude and gestures of the character.

### Subject description

The subject "Principles of Body Dynamics" aims to foster in the student the professional skills and competencies of an animator. Either by basing their learning on the tradition of 2D animation, as a pioneering technique that lays the foundations of the animation industry, as well as its translation into the current language of this form of cinema that is 3D. It develops skills of the student that go beyond the mere learning of techniques and working tools within the animation, and are essential for the proper exercise of the profession of animator. These include acting, secondary actions, overlapping, interactions between characters, the representation of emotions or the expansion of their ability to observe the environment as a basis for work.

## COMPETENCIES AND LEARNING OUTCOMES

### Competencies

#### BASIC AND GENERAL

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 - That students know how to apply their knowledge to their work or vocation in a professional manner and possess the competencies usually demonstrated through the development and defense of arguments and problem solving within their field of study.

CB3 - That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

CB4 - Students should be able to convey information, ideas, problems and solutions to both specialized and non-specialized audiences.

CB5 - That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

#### TRANSVERSALS

CT5 - Demonstrate versatility, flexibility and creativity in the development of projects, activities and works.

#### SPECIFIC

CE5 - Apply the traditional principles of animation to the digital animation of characters and other elements.

CE19 - Apply different techniques of experimental animation, for the realization of an animation according to the artistic and narrative style sought.

CE3 - Know and represent the anatomy, shape and proportion of the human body.

### Learning outcomes

At the end of the degree, the graduate will be able to:

- Recreate the anatomy of the human figure from digital or physical references applied to character animation.
- Apply knowledge of human and animal anatomy to the animation and rigging of human and animal figures in 2D and 3D.
- Reconstruct the anatomy and body mechanics of bipedal characters at the physiological and technical level.
- Master the basic laws of animation in both traditional and digital environments.
- Recreate fluid movements to generate believable animations in characters and objects.
- Reconstruct the anatomy and body mechanics of bipedal characters at physiological and technical level.
- Know experimental and less frequent techniques in the industry such as stop motion, cut out or sand animation to produce original and unexpected results.

- Integrate digital and analog animation techniques in the search for new visual and expressive solutions.
- Generate stop motion animations by using models, rigs, cameras and specific software.
- Generate acting, secondary actions, overlapping and interactions between characters for the representation of emotions in the narrative context.
- Optimize the programming code used in an animation scene using the necessary debugging tools.

## CONTENTS

· Character construction: Physics, equilibrium and pose · Actions, physical aspect and attributes · Simple and complex secondary actions. · Walking and running cycles

## SUBJECT SYLLABUS

Topic 1. Basic principles of animation.

1.1 Bouncing Ball (Timing, spacing, squash/stretch).

Topic 2. Body mechanics principles.

Understand how the body works in terms of weight shifts, balance, spacing and rhythm.

2.1 180º turn

2.2 Front jump.

Topic 3. Body mechanics

3.1 Pose construction: silhouette, line of action, weight, storytelling.

3.2 Baseball Throwing.

Topic 4. Final Practice: Demo reel\*We will learn the basics of creating a professional demo reel, where we will assemble all the practices done in the course.

## TRAINING ACTIVITIES AND TEACHING METHODOLOGIES

### TRAINING ACTIVITIES

LEARNING ACTIVITIES	Total hours	Hours of presence
<i>Theoretical / Expository classes</i>	10,00	10,00
<i>Practical classes</i>	17,78	17,78
<i>Tutorials</i>	2,22	1,11
<i>Independent study and autonomous work of the student</i>	16,11	0,00
<i>Elaboration of work (group or individual)</i>	26,67	0,00

<i>Evaluation Activities</i>	2,22	2,20
<b>TOTAL</b>	75	31,09

### Teaching methodologies

Expository method or master class

Case method

Problem-based learning

Cooperative or collaborative learning

Inquiry-based learning

Flipped classroom or inverted classroom methodology

Gamification

### TEMPORAL DEVELOPMENT

Introduction - 1 week.

Topic 1-2 weeks

Topic 2-8 weeks

Topic 3-3 weeks

### EVALUATION SYSTEM

ASSESSMENT SYSTEM	MINIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)	MAXIMUM SCORE RESPECT TO THE FINAL ASSESSMENT (%)
<i>Assessment of participation in class, exercises or projects of the course</i>	10	25
<i>Assessment of assignments, projects, reports, memos</i>	30	60
<i>Objective test</i>	30	60

### GRADING CRITERIA

ASSESSMENT SYSTEM	ORDINARY EVALUATION	EXTRAORDINARY EVALUATION
<i>Assessment of participation in class, exercises or projects of the course</i>	10	10
<i>Assessment of assignments, projects, reports, memos</i>	60	60
<i>Objective test</i>	30	30

### General comments on the evaluations/assessments

Students must understand the importance of communication and demonstrate this through the use of visual language in order to successfully complete the subject.

-Students must master the tool and medium we will use to generate visual content.

-It is crucial to deliver on time. Students will be given a 10-minute courtesy period during which they will be considered to have handed in on time. After this time, work may be handed in within 24 hours of the deadline, but with a penalty on the mark that will be determined by the teacher. No work will be accepted after 24 hours.

-Any detection of plagiarism in a paper or exam will result in the failure of that paper with a zero, the report to the faculty and academic coordinator and the application of the current regulations, which can lead to very serious penalties for the student.

-Final numerical grading will be from 0 to 10, with a 5 being the minimum grade to pass.

-A practical must be passed at the end of the course that brings together all the knowledge learnt in the subject.

- In the extraordinary call, a final practical must be handed in, which will be worth 100% of the mark.

### LIST OF REFERENCES (BOOKS, PUBLICATIONS, WEBSITES):

Basic:

Cantor, Jeremy & Valencia, Pepe (2004): Inspired 3D short film production.

Kerlow, Isaac (2009): The Art of 3D: Computer Animation and Effects.

Recomendada:

Blair, Preston (1994): Cartoon Animation. Walter Forster.

Clark, Kyle (2002): Inspired 3D character animation. Premier Press.

García, Raúl (2000): La magia del dibujo animado: Actores de lápiz. Ediciones dePonent.

Hooks, Ed (2004): Acting for animators. Heinemann.

Johnston, Ollie & Thomas, Frank (1997): The Illusion of Life. Hyperion.

Luhta, Eric (2013): How to cheat in Maya 2013. Focal Press.

Osipa, Jason (2010): Stop Staring. Sybex.

White, Tony (2012): Animation from Pencils to Pixels: Classical Techniques for the Digital Animator. Taylor & Francis.

White, Tony (2012): Tony White's Animator's Notebook: Personal Observations on the Principles of Movement. CRC Press.

Williams, Richard (2001): The Animator's Survival Kit. Faber and Faber

## **REQUIRED MATERIALS, SOFTWARE AND TOOLS**

### **Type of classroom**

Theory

### **Materials:**

Display - Digital whiteboard, Laptop

### **Software:**

Autodesk Maya