School of Education  
Course Unit Syllabus

Level of qualification:  
First cycle (EQF level 6) - Bachelor  
Study cycle:  
Multimedia Education and Communication

Course Unit: **935414 - 2D and 3D Animation**

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Semester 1</th>
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<tbody>
<tr>
<td>ISCED Code: 213</td>
<td>ECTS: 7,0</td>
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**Type of Course Unit:** Compulsory  
**Delivery Mode:** Face-to-face  
**Language of Instruction:** Portuguese

**COURSE COORDINATOR:** Aldo Passarinho / Cristina Santos

**HOURS OF WORK**

<table>
<thead>
<tr>
<th>Theory</th>
<th>Theory and practice</th>
<th>Practical and laboratory work</th>
<th>Field work</th>
<th>Seminar</th>
<th>Internship</th>
<th>Tutorial guidance</th>
<th>Other</th>
<th>Hours in autonomous work</th>
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<tr>
<td>90</td>
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Prerequisites (if applicable): <<Max 500 characters with spaces>>

**LEARNING OUTCOMES (knowledge, skills and competence)**

1. Understand the basic concepts inherent in modeling and digital animation;
2. Use tools and 2D animation techniques;
3. Understand basic concepts related to the modeling and 3D animation (notions of space and scale);
4. Use tools and modeling techniques and 3D animation;
5. Produce digital objects using 2D / 3D modeling techniques.

**CONTENTS**

1. History of animation;
2. Basic principles of traditional animation;
3. Basic concepts inherent in modeling and digital animation: introduction to the techniques and applications of animation and 2D / 3D modeling;
4. The animation 2d and 3d as a resource for educational simulation and virtual environments support materials;
5. 2D animation techniques:
   5.1. Animation clippings (analog and digital);
   5.2. pixilation;
   5.3. Stopmotion animation;
6. Models with volumetric scale, representing a space like feature supporting the CGI technology;
7. Modeling 3D: techniques and methodologies:
   7.1. Two-dimensional design: the point, the line and the plane. Transitional forms -dimensional to three-dimensional shapes;
7.2. Three-dimensional design: the modifiers and the compound objects;
7.2. Rendering images and animations;
7.3. Materials and textures;
7.4. Lights and cameras;
7.5. Effects;
7.6. Post-production.

DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT’S LEARNING OUTCOMES

1. History of animation (Objective 1);
2. Basic principles of traditional animation (Objective 1)
3. Basic concepts inherent in modeling and digital animation: introduction to the techniques and applications of animation and 2D / 3D modeling (Objective 2 and 4)
4. The animation 2d and 3d as a resource for educational simulation and virtual environments support materials (Objective 5)
5. Technical 2D Animation (objective 2)
   5.1. Animation clippings (analog and digital)
   5.2. pixilation
   5.3. stopmotion animation
6. Models with volumetric scale, representing a space like feature supporting the CGI technology (objective 3)
7. Modeling 3D: techniques and methodologies (Objective 4)
   7.1. Two-dimensional design: the point, the line and the plane. Transitional forms
   7.2. Three-dimensional design: the modifiers and the compound objects
   7.2. Image rendering and animations
   7.3. Materials and textures
   7.4. Lights and Cameras
   7.5. Effects
   7.6. Post-production

TEACHING METHODOLOGIES

Emphasis will be experimenting with techniques and concepts. A project and four exercises, linking them with adequate research and discussion in the classroom are made.

Methodology:
1. Lectures and experimental classes of understanding these concepts taught
   1.1. Exercises in the context of class using techniques and tools for 2D animation (animation clips, pixilation, stopmotion animation)
   1.2. Exercises in the context of class using techniques and tools for 3D animation (using a specific software - 3D Studio Max)
2. Research and literature references in the field of 2D and 3D animation
3. practical development lessons of work and monitoring by the teachers
4. Presentation and discussion of the work performed.

DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES

1. Lectures and experimental classes of understanding these concepts taught (Objective 1, 2, 3 and 4);
   1.1. Exercises in the context of class using techniques and tools for 2D animation (animation clips, pixilation, stopmotion animation) (Objective 1 and 2);
   1.2. Exercises in the context of class using techniques and tools for 3D animation (using a specific software - 3D Studio Max)
(Objective 3 and 4):
2. Research and literature references in the field of 2D and 3D animation (Objective 1, 2, 3, 4 and 5);
3. Practical development classes accompanied by teachers (objective 5);
4. Presentation and discussion of the work performed (Objective 5).

In 2D module are proposed several works, where students have to put into practice the principles of animation and concepts such as loop, walking cycle and lip sync. Animation with analog and digital scrapbook has preponderance in this animation module. With booktrailer project students must demonstrate competence in the area of writing, the storyboarding, sound capture and image, animation and editing in order to realize a promotional film quality.

In the 3D module, it applies in the first stanza, the materialization of an idea from the construction of a physical model (idealization of outer space and interior, and the thematic itinerary of an exhibition) and subsequently the "construction" of this idea in 3D Studio Max software (modeling of space and exposure path animation). Objective is thus to understand concepts associated with the three-dimensional representation (range, volume and space) for use in the creation and animation of virtual threedimensional models, possible to be applied to future multimedia projects in education.

This is intended to one transverse learning the practice of 2D and 3D animation, and the exercises and design developed in the classroom context and in self-employment in order to be a significant monitoring by teachers in the development of the work. Through a theoretical approach, looking a practical applicability in the seizure of powers, reflected in several proposed work.

**EVALUATION METHODS**

Realization of practical projects in order to exercise the practice of the principles of animation (2D and 3D component). Perform the work during and outside of class context for evaluation of UC, according to the internal school regulations.

**MAIN BIBLIOGRAPHY**


Year of implementation: 2011/2012 | Date of approval by the Technical-Scientific Board: 2015-09-01