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804225 - M3D - 3D Modelling

Coordinating unit: 804 - CITM - Image Processing and Multimedia Technology Centre

Teaching unit: 804 - CITM - Image Processing and Multimedia Technology Centre

Academic year: 2019

Degree: BACHELOR'S DEGREE IN VIDEO GAME DESIGN AND DEVELOPMENT (Syllabus 2014). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN VIDEO GAME DESIGN AND DEVELOPMENT (Syllabus 2014). (Teaching unit Compulsory)

ECTS credits: 6 Teaching languages: Catalan, Spanish, English

Teaching staff

Coordinator: Casas Torres, Llogari
Belmonte Martínez, Pablo

Degree competences to which the subject contributes

Specific:

1. (ENG) Dissenyar, modelar, texturitzar i animar objectes, personatges i escenes 2D i 3D per la seva inclusió en projectes digitals, seqüències audiovisuals i videojocs.
2. (ENG) Dominar el gran abanico de herramientas profesionales del sector para la elaboración de contenidos digitales de todo tipo.
3. (ENG) Representar de forma esquemàtica i visual conceptes, idees i / o dades complexes a partir d'habilitats personals i referències externes, amb l'objectiu de transmetre atractiu, originalitat i creativitat.

Transversal:

4. 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.
5. 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.
6. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

Teaching methodology

(eng)

Learning objectives of the subject

(eng)

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Study load

Total learning time: 150h	Hours large group:	24h	16.00%
	Hours medium group:	16h	10.67%
	Hours small group:	0h	0.00%
	Guided activities:	20h	13.33%
	Self study:	90h	60.00%

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Content

1. 3D Software introduction

Learning time: 12h 30m

Practical classes: 3h
Guided activities: 2h
Self study : 7h 30m

Description:
· DDC.
· 3D Software history.
· Professional Software.
· Software interface.
· Menus Customization.
· Viewing Menus.
· Standar primitives creation.
· 3D software management.

Specific objectives:
P01

2. Poly modelling

Learning time: 10h 30m

Practical classes: 3h
Guided activities: 2h
Self study : 5h 30m

Description:
? Copy / Instance / X Ref.
? Basic compound objects (loft, booleans).
? Components selection.
? Loops & rings.
? Poly modelling tools.
? Polycount.
? Modelling history.
? Lowpoly work.
? Work management techniques.
? HyperGraph and node working.

Related activities:
P02

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3. Poly modelling techniques

Learning time: 12h 30m

Practical classes: 3h
Guided activities: 2h
Self study : 7h 30m

Description:
? 2D blueprints setup and usage.
? Advanced modelling tools.
? Simple props modelling.
? Attach and basic deformators (Shell, simmetry...)
? NURBS modelling.
? Modelling with deformators.
? Level of detail (LODs).

Related activities:
P03

4. Character modelling

Learning time: 12h 30m

Practical classes: 3h
Guided activities: 2h
Self study : 7h 30m

Description:
· Character modelling.
· Blueprints and preproduction.
· Anatomy, topology, volumes, syluethe, polygon flow and quads.
· T-shapes, non manifold geometry, nGons.
· Modelling from basic topologies.
· Human body modelling.
· Poly by poly modelling.
· Face modelling.

Related activities:
P04

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5. Character modelling 2 + hard edge geometries	Learning time: 12h 30m Practical classes: 3h Guided activities: 2h Self study : 7h 30m

Description:
? Human body modelling ? Body, legs, arms and hands.
? Hair modelling, hi poly and low poly techniques.
? Hi poly modelling techniques.
? Hard surfaces.
? Poly subdivision.
? Subdivision surfaces and poly objects.
? Poly reduction remeshing.

Related activities:
P05

6. Digital sculpture	Learning time: 12h 30m Practical classes: 3h Guided activities: 2h Self study : 7h 30m

Description:
? Digital sculpture tools in 3dsMAX.
? Brief history of digital sculpture softwares.
? Modelling method changed.
? Autodesk Mudbox / Pixologic zBrush / Sculptor de Maya
? Preparing geometry for avoiding problems.
? Subdivision levels.
? Modelling brushes.
? Layers.
? Viewport filters.
? Scene rendering.

Related activities:
P06

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7. Materials

Learning time: 12h 30m

Practical classes: 3h
Guided activities: 2h
Self study : 7h 30m

Description:
? Materials and shading tree.
? Materials editor.
? Multimaterials.
? Procedural textures.
? Texture editor.
? Texture maps and simple wrapping.
? Texture layers.
? Vertex colors.

Related activities:
P07

8. UV Unwrapping

Learning time: 12h 30m

Practical classes: 3h
Guided activities: 2h
Self study : 7h 30m

Description:
? UVs understanding.
? UV unfolding.
? UV packing.
? UV sets.
? Unfold and relax.
? Transfer maps.
? UVs exporting to photoshop.
? Multi tile texturing.

Related activities:
P08

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9. Character texturing	Learning time: 12h 30m Practical classes: 3h Guided activities: 2h Self study : 7h 30m

Description:
? Advanced unwrapping.
? UV right packing.
? Size and quantity of textures per model.
? Hide UV seams.
? UV Layout.
? Ambient Occlusion painting.
? Rendermaps.
? Photoshop texture painting.

Related activities:
P09

10. Normal mapping	Learning time: 12h 30m Practical classes: 3h Guided activities: 2h Self study : 7h 30m

Description:
? Normal maps.
? Normal map extraction.
? Normal maps application.
? Normal maps visualization.
? Other non texture maps: color, displacement, occlusion.
? Vector displacement maps.
? Parallax mapping.

Related activities:
P10

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11. Digital painting	Learning time: 12h 30m Practical classes: 3h Guided activities: 2h Self study : 7h 30m

Description:
? Mudbox / Zbrush for digital painting.
? Painting brushes.
? Painting layers.
? Blending modes.
? Working without UVs: PTEX
? Model transfer mapping.
? Mudbox - Zbrush/3dsMAX.

Related activities:
P11

12. Retopology	Learning time: 12h 30m Practical classes: 3h Guided activities: 2h Self study : 7h 30m

Description:
? Hipoly vs Lowpoly.
? Videogames poly limitation.
? Clean geometry.
? Animation modelling.
? 3dsMAX retopology.
? Mudbox / Zbrush retopology.
? Other retopology softwares.

Related activities:
P12

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Planning of activities

P1 - Characters	Hours: 8h Self study: 8h

Description:
Final practice 15% - Basic full body character creation, symetric and skinning, rigging and animation ready.

name english	Hours: 10h Self study: 10h

Description:
Final practice 30% - P1 model finishing. Unwrapping, texturing, and clothes and props modelling. Normal and displacement maps creation.

Qualification system

(eng)

Bibliography

Basic:

Mediactive. Aprender 3ds Max 2017 con 100 ejercicios prácticos. 2016. Marcombo, ISBN 9788426724014.

Derakhshani, D.; Derakhshani, R.L.. . Autodesk 3Ds Max 2016 Essentials. 2015. Autodesk Official Press, ISBN 9781119059769.

Mediactive. El gran libro de 3DS Max 2017. 2017. MArcombo, ISBN 9788426724250.

Complementary:

Birn, J. Iluminación y render. 2017. Anaya Multimedia, ISBN 9788441520912.

Others resources: