Learning objectives for the 3D Digital Artist Education

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COPENHAGEN ACADEMY OF DIGITAL ARTS

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Learning objectives

Formerly, animation films, VFX and computer games (digital 3D productions) always ended up as a movie in the cinema or as a PlayStation game.

But today, an animated film can also be an instructional video on the internet, for example about flight safety or first aid. VFX is not necessarily a big Hollywood-blockbuster movie, it can be an architecture visualization of a yet not existing building, which can show how it will look in an existing urban environment.

The tools are the same. The outputs are different.

The production process for 3D productions can be a real time or non-real time pipeline, depending on platform and audience. Traditionally, animation productions and post/VFX studies/productions will have a non-real-time pipeline, while games have a real time pipeline. Today, these boundaries get more and more fluid – especially post/VFX and animation films are picking up the real time technology.

The education's overall objectives for learning benefits

7 semesters, all in all 3,5 years (2.390 lessons)

Knowledge

The trained 3D Digital Artist has knowledge of:

- Methods and principles used in production processes, as well as the complexity in both real time and non-real-time pipelines and combinations of these, at a high level.

- Concrete high-level theories and techniques within:
    - 3D modelling
    - Texturing and Shading
    - Lighting
    - Rigging
    - Animation
    - Simulation
    - Scripting
    - Compositing
    - How this is included, planned, and managed in digital 3D productions

The trained 3D Digital Artist can understand and reflect on the above knowledge and on how to use it across the visual industry – creatively, artistically as well as technically.

Skills

The trained 3D Digital Artist can:

- Plan and project manage 3D asset production, including assessing common production practices.

- Independently participate in multidisciplinary production teams within the field of media production.

- Model, unwrap and texture complex hard surface and organic 3D assets.

- Light and shade 3D scenes in a real-time and non-real-time pipeline on a high level.

- Rig characters (body and face) and mechanical objects, for use in real-time and non-real-time pipelines at an advanced level. Rig muscle systems at a basic level.

- Create key frame and motion capture animation for use in real-time and non-real-time pipelines at an advanced level.

- Compositing at an advanced level, for use in a full 3D/CGI pipeline and at a basic level for a 2D/film pipeline.

- Basic level simulation, for use in real-time and pre-rendered pipeline.

- Use scripting at an intermediate level.

- Use industry standard software tools for general 3D production at an advanced level.

- Use industry standard software tools for specialised tasks in 3D production at a high level.
- Demonstrate and communicate in a specialist skillset relevant to their chosen field of study.

Competences

The trained 3D Digital Artist can:

- Act as a 3D generalist in a given digital 3D production.

- Work as a 3D model/graphic artist, texture artist, rigger/creature TD, sim TD/FX artist, animator, lighter/look Dev, render TD, set dresser/designer, compositor, roto artist, pipeline TD, previz artist – in a given animation film, VFX- or game production.

- Assist the production manager, line producer, R&D-, marketing- og SoMe-departments.

- Manage and take responsibility for the various methods and techniques as well as implement and plan these, in digital 3D productions within a given budget-, quality and artistical scope.

- Combine and balance art and technique in production processes in the visual industry.

- Receive and give constructive, professionally justified criticism of both work processes and production.

- Work in a team-oriented production environment and/or as a self-employed/freelancer.

Objectives for learning benefits per semester

1. semester, 3D foundation theory and practice

450 lessons

Knowledge

After 1. semester the student has knowledge of:

- Basic methods and techniques in a digital 3D production.
- modelling and the principles for good topology, UV mapping, texturing, rigging & skinning, lighting, rendering, and compositing.
- basic design principles and theories, image composition, and understanding of form and colour.

Skills

After 1. semester the student can:

- Develop concepts, create 3D models, texture, rig, skin, light, render and perform basic compositing.
- Use the following software at a basic level: 3DS Max, Maya, 3D Coat, Mudbox, Photoshop, Arnold.

Competences

After 1. semester the student can:

- Understand process and professional language in relation to create basic 3D elements.
- Receive and give professionally justified constructive criticism, within the artistic as well as the technical aspects of 3D elements.
- Relate to a given task and visual style within a given time frame.

2. semester, character animation and production

520 lessons

Knowledge

After 2. semester the student has knowledge of:

- Principles, concepts and applied theories within basic 3D animation, game production, and animated film production.

Skills

After 2. semester the student can:

- Plan and analyse, as well as perform all the basic sub-elements in a 3D animation film and game production.
- Can use the following software at a basic level: Da Vinci Resolve, Fusion, Unreal Engine.
- Can use the following software at an advanced level: Maya, 3D Coat.

Competences

After 2. semester the student can:

- Develop concepts and graphic expressions as part of a team.

- participate in the production of simple games and animated films.
- Evaluate and present own work.

3. semester, mastering theory and practice

375 lessons

Knowledge

After 3. semester the student has knowledge of:

- Anatomy, body structure in relation to sculpting, rigging, skinning, texturing, simulation, and character animation and how this is used in a 3D pipeline at an advanced level.
- Theory and principles in cinematography at an advanced level and how it can be used in a 3D production.
- Theory and principles within basic scripting.

Skills

After 3. semester the student can:

- Sculpt, rig, skin, and texture at an advanced level.
- Use theories and techniques in practice within character animation, cinematography, compositing, VFX and simulation at an advanced level.
- Script automation processes and simple tools (MEL, Python).
- use following software at a high level: Maya, Arnold.
- use following software at an advanced level: Z Brush. Fusion.
- use following software at a basic level: Substance Painter, Houdini, X gen, Ziva.

Competences

After 3. semester the student can:

- Implement, plan and apply sculpting, texturing, rigging, character animation, cinematography, scripting and simulation in a 3D production.
- Evaluate, document and argue for own work.

4. semester, animation and VFX film production

545 lessons

Knowledge

After 4. semester the student has knowledge of:

- Principles, concepts, and applied theories in advanced 3D animation film production.
- Historical development of animation, games and VFX, as well as dramaturgy and narrative communication.

Skills

After 4. semester the student can:

- As an individual and as part of a team: Plan, produce and manage the necessary elements, at an advanced level, based on pre-production such as manuscript and storyboard.
- Receive and translate instruction and criticism from outside relevant professional groups.
- Manage compositing and postproduction at an advanced level.
- Use the following software at a high level: ZBrush, 3D Coat.

Competences

After 4. semester the student can:

- Independently take part in interdisciplinary collaboration with other professional groups (instructors, producers, ADs, photographers, marketers, etc.).
- Pparticipate in the production of a more comprehensive 3D animation and/or VFX film at an advanced level.

5. semester, real-time 3D production

425 lessons

Knowledge

After 5. semester the student has knowledge of:

- Applied theories, principles and techniques within 3D game production and real-time film production in an iterative production environment.

Skills

After 5. semester the student can:

- Plan and carry through a real-time 3D production.
- Express him/herself in a clear visual language at a high level with an advanced understanding of strengths and limitations of a real-time production.
- Use the following software at an advanced level: Photoshop, Unreal Engine, Substance Painter.

Competences

After 5. semester the student can:

- Evaluate, plan, and manage 3D productions at a high level.
- Weigh and convey advantages and disadvantages of a pre-rendered versus a real-time based pipeline.

6. semester, thesis

75 lessons + thesis supervision

Knowledge

After 6. semester the student has knowledge of:

- Applied theories, principles, and techniques in a specific subject area within 3D games, animation film and VFX production as well as project management at a high level.
- The 3D industry, networking, and recruiting.

Skills

After 6. semester the student can:

- Plan, evaluate and perform project management at a high level.
- Collect knowledge, document, and communicate processes and project verbally and written.
- Master professionalism in width or depth.

Competences

After 6. semester the student can:

- Identify and further develop own skills.
- Independently be part of a professional production of a 3D game, an animation film or a VFX.

7. semester, practical internship

0 lessons

Knowledge

After 7. semester the student has knowledge of:

- The professional industries and their characteristics in the visual industry.

Skills

After 7. semester the student can:

- Master specialised skills acquired during the internship.
- Prepare a showreel, application and commit in a job interview.

Competences

After 7. semester the student can:

- Work professionally as part of a production team in the visual industry.