2016 Suite

OCR
Oxford Cambridge and RSA

Cambridge **TECHNICALS LEVEL 3**

Cambridge TECHNICALS 2016

DIGITAL MEDIA

Unit 11

3D digital modelling

A/507/6397

Guided learning hours: 60

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LEVEL 3

UNIT 11: 3D digital modelling

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Guided learning hours: 60

Essential resources required for this unit: 3D modelling software

This unit is internally assessed and externally moderated by OCR.

UNIT AIM

3D modelled characters and environments are becoming more common; from architects designing buildings and landscapes to computer games and full length feature films. Characters and environments come to life, from the imagination of the designer to a fully rendered product, 3D modelling opens up endless possibilities.

By completing this unit you will understand 3D modelling techniques for computer-generated characters and environments. You will gain skills in the design, planning and production of an animated 3D character and its environment.

TEACHING CONTENT

The teaching content in every unit states what has to be taught to ensure that learners are able to access the highest grades.

Anything which follows an i.e. details what must be taught as part of that area of content Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples in their work, although these do not need to be the same ones specified in the unit content.

For internally assessed units you need to ensure that any assignments you create, or any modifications you make to an assignment, do not expect the learner to do more than they have been taught, but must enable them to access the full range of grades as described in the grading criteria.

Learning outcomes **The Learner will:**	**Teaching content** **Learners must be taught:**
1. Understand how 3D modelling technologies are used in creating assets for media products	1.1 how 3D characters and environments are used and the techniques used in their creation, i.e. • types (e.g. polygon modelling, NURBS modelling, sub-divisional modelling, spline modelling, extruding 3D shapes, the form/shape of the 3D object/character and placement in the 3D environments, the form/shape of the 3D environment, polygons, faces, edges, extruding and lofting, spline-based modelling) • how the objects/characters move within the 3D environment (e.g. use of lights, cameras, properties of surfaces and textures, rendering) • how the 3D environment changes (e.g. use of lights, cameras, properties of the 3D environment – surfaces and textures, rendering). 1.2 where 3D characters and environments are used (e.g. computer/console games, animations and/or live action animation for film, television and advertising) • animation, DreamWorks studios.
2. Be able to plan 3D modelled characters and a 3D environment for a client brief	2.1 character 3D modelling, i.e. • comedy, horror, superhero, children's animation • physical and/or emotional attributes, description of the character, special characteristics, gender, age, clothing, props • sequence of industry-standard images, storyboard depicting the characters' movement and interaction with their surroundings • target audience (e.g. appeal, lifestyle, age, gender). 2.2 environment 3D modelling, i.e. • visual style, terrain, landscape, cityscape, spacescape, abstract • science fiction, sport, comedy, horror, superhero, children's animation • vehicles, weapons, props, devices, foliage • game level sketch, plan view/map (use images and photographic references if appropriate)

Learning outcomes	Teaching content
The Learner will:	**Learners must be taught:**
	• initial environment development visuals, initial sketches, mood board of other suitable game environments including: • static prop, i.e. o non-moving or physics prop • moving prop, i.e. o moves when hit by another object or dynamic prop, i.e. - user moves the prop/models - textures - audio • 3D models. 2.3 planning for the flow of animation and type of animation to be used, e.g. • an industry-standard series of panels or rough sketches which outline the sequence of the scenes, the action and the plot of the game including sound • vertex animation, cluster-based animation, bones-driven animation. 2.4 evaluation of formats for export for 3D models (e.g. export ratios, compressions, channels, formats (PAL, NTSC, HD, 4K), AVI RAW, AVI JPEG, DPX, QuickTime) • SWOT analysis, (e.g. audience, cross-platform opportunities, competitors, uniqueness of animation, expansion of audience, further marketing opportunities that could be exploited).
3. Be able to create a 3D modelled character and a 3D environment to a client brief	3.1 character 3D modelling, i.e. • polygon to mesh, NURBS modelling, sub-divisional modelling, spline modelling, extruding • mapping texture onto the 3D model, skinning splines • low, medium and high resolution • adjust intensity of lights, camera angles, shadows, focal length, aperture • key frame elements of each scene, camera, lights and character movement, expressions, the characters' interaction with their props, final render to appropriate format. 3.2 environment 3D modelling, i.e. • polygon to mesh, faces, edges, extruding and lofting, spline-based modelling • terrain, track or course, mapping texture onto the 3D environment, bump map • buildings, obstacles, natural features, foliage, planets, vehicles, equipment • low, medium and high resolution • adjust intensity of lights, camera angles, shadows, focal length, aperture • key frame elements of each scene, camera, lights and movement, final render to appropriate format • could be viewer or character point of view.

GRADING CRITERIA

LO	Pass	Merit	Distinction
	The assessment criteria are the Pass requirements for this unit.	To achieve a Merit the evidence must show that, in addition to the Pass criteria, the candidate is able to:	To achieve a Distinction the evidence must show that, in addition to the pass and merit criteria, the candidate is able to:
1. Understand how 3D modelling technologies are used in creating assets for media products	P1: Describe 3D digital modelling techniques for media products		
	P2*: Explain how 3D modelling is used for different media products *(*Synoptic assessment from Unit 1 Media products and audiences)*		
2. Be able to plan 3D modelled characters and a 3D environment for a client brief	P3*: Create a plan for a 3D modelled character *(*Synoptic assessment from Unit 2 Pre-production and planning)*	M1: Evaluate the available formats for export to ensure the 3D models can be used in multiple media products	
	P4*: Create a plan for a 3D modelled environment *(*Synoptic assessment from Unit 2 Pre-production and planning)*		
3. Be able to create a 3D modelled character and a 3D environment to a client brief	P5: Create the planned 3D character	M2: Combine the character model within the 3D environment	D1: Justify the formats used for an export across multiple media products
	P6: Create the planned 3D environment		

*SYNOPTIC ASSESSMENT

When learners are taking an assessment task, or series of tasks, for this unit they will have opportunities to draw on relevant, appropriate knowledge, understanding and skills that they will have developed through other units. We've identified those opportunities in the grading criteria (shown with an asterisk). Learners should be encouraged to consider for themselves which skills/knowledge/understanding are most relevant to apply where we have placed an asterisk.

ASSESSMENT GUIDANCE

LO1 Understand how 3D modelling technologies are used in creating assets for media products

P1: Learners must research 3D modelling techniques that are used for media products as outlined in the teaching content. They must look at a minimum of three ways of modelling characters and environments. The evidence for this could be as a formal written report or a presentation with detailed speaker notes.

P2: Learners must explain how 3D modelling is used for different media products as outlined in the teaching content. The evidence for this could be a formal written report or a presentation with detailed speaker notes, and could be an extension of the evidence presented for P1.

LO2 Be able to plan 3D modelled characters and a 3D environment for a client brief

P3/P4: Learners must create a design and plan for a 3D modelled character and environment for use in a game or animation. There should be multiple ideas created in rough formats to enable final choices to be made as to the best character and environment that will be produced. The evidence for this could be in the form of a portfolio of work comprising the storyboard with animation techniques and camera directions, developed sketches, drawings from different angles with annotations, computer mock-ups, stills of the 3D modelled character and environment developments and mood boards; it could include screen captures, audio-visual presentations and written evidence.

M1: Learners must be able to evaluate formats that are available to them for export of a 3D model to ensure that the model can be used in multiple multimedia products. Evidence for this can be in the form of a formal written report and could be an extension of P2/P3.

LO3 Be able to create a 3D modelled character and a 3D environment to a client brief

P5/P6: Learners must construct their planned 3D animated character that demonstrates realistic movement and environment. This can be evidenced with a screen recording with a commentary or a written report with screen captures showing the construction process.

M2: Learners combine their character model into the 3D environment, illustrating how they have used 3D modelling tools to construct the game or animation; they must clearly illustrate the use of different camera angles, movements and mises–en-scène. The animation should contain lighting and shadow to enhance the game or animation appeal. This can be evidenced by extending the evidence provided in P4/P5.

D1: Learners must be able to export the 3D model for use across multiple media products with some justification as to reasons for this format. Evidence for this can be in the form of a formal report with screen captures of the export process or a screen recording with audio commentary on the export process.

Feedback to learners: you can discuss work-in-progress towards summative assessment with learners to make sure it's being done in a planned and timely manner. It also provides an opportunity for you to check the authenticity of the work. You must intervene if you feel there's a health and safety risk.

Learners should use their own words when producing evidence of their knowledge and understanding. When learners use their own words it reduces the possibility of learners' work being identified as plagiarised. If a learner does use someone else's words and ideas in their work, they must acknowledge it, and this is done through referencing. Just quoting and referencing someone else's work will not show that the learner knows or understands it. It has to be clear in the work how the learner is using the material they have referenced **to inform their** thoughts, ideas or conclusions.

For more information about internal assessment, including feedback, authentication and plagiarism, see the centre handbook. Information about how to reference is in the OCR *Guide to Referencing* available on our website: http://www.ocr.org.uk/i-want-to/skills-guides/.

MEANINGFUL EMPLOYER INVOLVEMENT - a requirement for the Foundation Diploma, Diploma and Extended Diploma (Tech Level) qualifications

The 'Diploma' qualifications have been designed to be recognised as Tech Levels in performance tables in England. It is a requirement of these qualifications for centres to secure for every learner employer involvement through delivery and/or assessment of these qualifications.

The minimum amount of employer involvement must relate to at least one or more of the elements of the mandatory content. This unit is a pathway optional unit in the Digital Content for Interactive Media specialist pathway.

Eligible activities and suggestions/ideas that may help you in securing meaningful employer involvement for this unit are given in the table below.

Please refer to the *Qualification Handbook* for further information including a list of activities that are not considered to meet this requirement.

Meaningful employer involvement	Suggestion/ideas for centres when delivering this unit
1. Learners undertake structured work-experience or work-placements that develop skills and knowledge relevant to the qualification.	Learners could undertake work-experience at an animation studio to gain relevant knowledge of the production processes that occur for a commercial animation.
2. Learners undertake project(s), exercises(s) and/or assessments/examination(s) set with input from industry practitioner(s).	A scenario/project could be set in coordination with industry practitioners to create characters for an already created environment, to practice 3D modelling techniques.
3. Learners take one or more units delivered or co-delivered by an industry practitioner(s). This could take the form of master classes or guest lectures.	Industry practitioners could deliver master-classes to groups of learners or co-deliver the unit, particularly in explaining the production processes wand techniques used to develop 3D digital models, either characters or environment.
4. Industry practitioners operating as 'expert witnesses' that contribute to the assessment of a learner's work or practice, operating within a specified assessment framework. This may be a specific project(s), exercise(s) or examination(s), or all assessments for a qualification.	

To find out more
ocr.org.uk/digitalmedia
or call our Customer Contact Centre on **02476 851509**

Alternatively, you can email us on **vocational.qualifications@ocr.org.uk**

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