Standard in development

L6: VFX artist or technical director

Title of occupation **VFX artist or technical director**

UOS reference number **ST0902**

Core and options **Yes**

Option title/s

- VFX Simulation
- VFX Assets
- VFX Lighting, Shading and Look Development
- VFX Environments

Level of occupation **Level 6**

Route **Creative and design**

Typical duration of apprenticeship **18 months**

Occupation summary

This occupation is found in the British and International visual effects (VFX) industries, providing digital content for film, television, advertising, games, corporate and immersive reality industries. Visual effects (VFX) companies and studios vary in size and they can be small, medium or large companies. They are to be found across England and the UK. The output and remit of a visual effects (VFX) studio is varied, and they will produce work for a range of clients across advertising, film, television and immersive reality. Some studios specialise in one area, particularly feature films which is the largest area of the industry.
Visual effects (VFX) is the term used to describe any imagery created, altered, or enhanced for moving media. They involve the integration of live-action footage and computer generated imagery to create images, which look realistic but would be dangerous, costly, or simply impossible to capture during live-action shooting. The broad purpose of the occupation is to create content, by producing Computer Generated (CG) objects, images or scenes that are rendered together with live action footage in order to create the final image that appears on the screen. The visual effects (VFX) Artist or Technical Director (TD) create CG renditions of naturalistic, physical and magical phenomena. Typically, a VFX Artist or TD is a combination of an artist and a programmer, responsible for the more technical aspects of VFX production, such as developing character rigs and animation setups, performing complex simulation tasks and setting up the pipeline (how the data is passed from one stage in the film production to the next).
VFX Artists or TD's require high level Science, Technology, Engineering, Arts and Maths (STEAM) skills, good computer literacy, coding skills, and to be able to apply these creatively.
The VFX created may vary and can include computer graphic models, rigs, environments, special effects (FX), crowds, lighting, hair cloth or fur. These effects can be created using various processes including: Sculpting, simulation, rendering, painting and/or compositing.

In their daily work, an employee in this occupation interacts with the Animator, VFX Lead, CG or VFX Supervisors, VFX production team and/or clients and team members. The line management and reporting structure of the team will vary according to the size of the employer.
They must be able to take direction and feedback from the CG or VFX Supervisor, in order to create the effects required, according to the story and the client's wishes.

An employee in this occupation will be responsible for

• managing their own workload with the VFX production team and/or their lead
• generating the required work on time and to meet the creative brief from their supervisor/client
• attending dailies/review sessions in order to gain feedback on their work and responding appropriately to that feedback
• working within the particular pipeline/toolset of the company that they are working for
• resolving technical problems the VFX team encounter and developing custom tools to improve the artists' workflow.

This role may include out of hours or irregular working patterns when collaborating on international projects.
This Standard is a core and options apprenticeship, with four options and the option taken is dependent on the VFX specialism of the employer.

• Option 1 – VFX Simulation
The VFX Simulation Artists or TD's are responsible for designing and creating FX animation, procedural simulation, dynamic simulation, particle and fluid systems. This option includes work undertaken in Crowd Effects, FX and Creature Effects/Groom TD roles.
Crowd effect Artists or TD's are responsible for producing complex crowd shots and crowd simulations such as those needed to replicate sports and arena events.
Creature effects Artists or TD's are responsible for providing a wide variety of dynamic simulations for character based work; including clothing, hair, muscle and skin, as well as any post simulation sculpting and finagling e.g fur or hair for characters such as bears/dinosaurs.
FX Artists or TD's are responsible for creating a wide variety of dynamic simulations for physical based work; including rain, fire, explosions, dust, debris and also supernatural phenomena such as magical FX.

• Option 2 – VFX Rigging
This option includes work undertaken as a Rigging Artist or TD. Rigging TD's are responsible for designing, creating and maintaining highly accurate and efficient rigs for high end visual effects projects. Riggers work closely with Modellers and Animators to develop and refine rigs that meet the specific requirements of a VFX pipeline. The Rigging Artist or TD is responsible for creating objects in 3D which could be anything from a character to a whole environment.

• Option 3 – VFX Lighting, Shading and Look Development
VFX Lighting Artists or TD's are responsible for creating CG scene assembly, lighting and rendering for diverse projects. In the real world, lighting determines how we perceive objects and the environment around us, and the same is true of 3D objects and environments. Lighting artists adjust the colour, placement and intensity of CGI lights to create atmosphere and, add realism, tone and depth. Lighting TD's use photographic and aesthetic skill to produce CG images that could be photo-realistic or stylised in nature.

• Option 4 – VFX Environments
VFX Environments Artists or TD's are responsible for assembling models, digital matte paintings, textures, projections and lights into a CG scene to meet technical and artistic requirements. They work closely with the Lead Environment Artist to create high quality, high resolution 3D environment art, including natural environments and architecture.

Typical job titles

Crowd Technical Director Lighting Technical Director FX Technical Director Environment Technical Director Creature FX Technical Director Rigging Technical Director Texture Artist Look Development Artist

Are there any statutory/regulatory or other typical entry requirements? No

Core occupation duties

DUTY	KSBS
Duty 1 Interpret and implement a creative brief or script under the direction of a lead or supervisor, determine the technical resources needed to deliver the visual effects (VFX) content within production parameters.	K1 K2 K3 S1 S2 B1
Duty 2 Plan, estimate and prioritise time frames for the completion of content and track progress using the designated tracking tools, working with lead or supervisor and production.	K4 K5 S3 B1 B2
Duty 3 Build effective working relationships with Artists, VFX Lead, VFX or CG Supervisor, Production Team, clients and own team members to facilitate effective collaboration during the production process to deliver the required VFX content.	K6 K7 S4 B1 B2
Duty 4 Work within workflow templates and method documentation for the software package/tool being used and suggest improvements/developments where appropriate.	K1 K4 K8 K9 S5 S6 B4
Duty 5 Receive, evaluate and action feedback on VFX simulations produced, adapting outputs and implementing continuous improvement procedures.	K4 K10 K12 K13 S3 S4 S7 S9 B3 B5
Duty 6 Analyse, research and resolve technical challenges in collaboration with leads, other departments and the VFX or CG supervisor.	K2 K3 K4 K11 S9 B1 B4
Duty 7 Apply scripting and coding skills to develop visual effects, using pipeline tools and techniques. Be involved in the development of departmental tools and techniques.	K6 K9 K11 K14 S6 S9 S10 B1 B3 B4
Duty 8 Ensure that all work carried out meets the defined technical and artistic requirements and that the VFX content and/or assets created fit within the production pipeline.	K1 K6 K8 S1 S4 S5 S6 B1 B3
Duty 9 Practice continuous self-learning to keep up to date with technological developments to enhance relevant skills and take responsibility for own professional development.	K11 S8 S11 S12 B3 B4 B5

Option duties

VFX Simulation duties

DUTY	KSBS
Duty 10 Design and create crowd effects, physical effects or creature effects to meet the requirements of the production.	K15 K18 S13 S15
Duty 11 Develop one off, bespoke and reusable effects using FX animation, procedural simulation, dynamic simulation, particle and fluid systems.	K16 K17 K18 S14 S16

VFX Assets duties

DUTY	KSBS
Duty 12 Develop and create rigging VFX work to meet the requirements of the VFX pipeline, applying knowledge of the mechanics of movement and anatomy to underpin the creation of skeletal and muscle systems.	K20 K21 S17 S19
Duty 13 Test, optimise, document and maintain automated, user friendly and optimised rigs and interfaces, collaborating with departments up and down-stream throughout the complete workflow process.	K19 K22 K23 S18 S20

VFX Lighting, Shading and Look Development duties

DUTY	KSBS
Duty 14 Control the interactions between material properties, surfaces and lighting by utilising custom and standardised shaders to develop the look.	K24 K27 K28 S21 S24
Duty 15 Create high quality CG lighting, shading and rendering to meet the needs of the production, applying knowledge of lighting techniques and colour-space.	K24 K25 K26 S22 S23 S25

VFX Environments duties

DUTY	KSBS
Duty 16 Create high quality environment assets that include architecture, nature, and geographical features using high resolution models, digital matte paintings, textures, projections and lights to meet technical and artistic requirements.	K29 K32 S26 S29
Duty 17 Take the lead on scene assembly and set dressing, collaborating with the art department to establish the aesthetic of an environment.	K30 K31 S26 S27 S28 S30

KSBs

Knowledge

K1: Core - How to critically analyse and interpret the technical specifications, client requirements, organisational and industry standards and how this evaluation will affect the delivery of the VFX.

K2: Core - How photogrammetry, texture reference and scanning impact on the VFX produced.

K3: Core - The principles of motion picture photography and the factors that affect the film making process including lenses, composition, light, colour, perspective and scale.

K4: Core - Methods used to assess and evaluate VFX processes, tools and workflows to identify limitations, risks and interdependencies, selecting the option that allows for the completion of content within timescales.

K5: Core - The utilisation of industry tracking tools to interpret and track interacting factors on the project.

K6: Core - The specialisms and disciplines in the VFX pipeline and how these communicate and interact with each across the VFX development process.

K7: Core - Approaches to communication and strategies that can influence others and achieve the production outcome required.

K8: Core - The industry and organisational standards that apply when selecting software packages and tools.

K9: Core - Approaches used to assess and evaluate potential improvements to packages and tools and how best to collaborate on implementation.

K10: Core - How to present work as part of the "dailies" review process, seeking and acting on feedback for the work produced.

K11: Core - The practices used to research, test and critically analyse results when trialling the latest advancements in technical VFX tools, concepts and techniques within your department and organisation.

K12: Core - The iterative nature of the production and how it can be used to continuously improve and meet the client specification.

K13: Core - The formatting requirements of VFX products to enable them to be reviewed effectively and securely. The importance of meeting development timescales and the wider impact this has on the pipeline, business and resources.

K14: Core - Scripting and coding languages (e.g Python, MEL, PyMEL, VEX etc.) and their application in VFX production and pipelines.

K15: Simulation - Practices used to critically evaluate, select and apply the 3D software required for the simulation of, muscle, cloth, particles and Voxel based dynamics e.g Houdini, Maya.

K16: Simulation - How to apply and interpret mathematical and physical principles (e.g Algebra, Vectors, Matrices, Area, Volume, Density, Speed, Velocity, Acceleration) in the context of CG simulations.

K17: Simulation - Approaches used to critically analyse and balance real-world physics and the properties of materials against the limitations of the simulation tools or techniques

K18: Simulation - How to interpret, convert and apply scale and orientation between different CG software tools.

K19: Rigging - Practices used to critically evaluate the user interface requirements to meet the animators needs and for technical abstraction of the rig.

K20: Rigging - Anatomy and skeletal structures (bones/muscles) and mechanical systems.

K21: Rigging - The different deformation systems and how they layer together (blendshapes/lattice/deformers/skinning).

K22: Rigging - How the application of modular coding can improve rigs and workflow efficiencies.

K23: Rigging - The application of linear algebra; vectors and matrices, to optimise rigging.

K24: Lighting, Shading and Look Development -The physics of light and the mathematics and coding principles that enable replication of real world phenomena in digital environments.

K25: Lighting, Shading and Look Development - The suitability and limitations of different techniques for using light in computer graphics: point, directional, spot, emissive, ambient, diffuse, specular, key light, rim light, fill light etc. in the context of creating the desired mood from the client brief.

K26: Lighting, Shading and Look Development - The options for optimising render times, without degradation of the quality required to fulfil the agreed brief for a project.

K27: Lighting, Shading and Look Development - The variety of material maps (e.g. displacement, bump, diffuse, specular, roughness etc.) and how they can be applied to achieve the correct 'look' for an object, character or environment.

K28: Lighting, Shading and Look Development - The different types of shader (e.g. vertex, pixel, geometry, tessellation, primitive, mesh etc.) and how they can be used to alter the hue, saturation, brightness or contrast of an image; including producing blur, light bloom and volumetric lighting.

K29: Environments - Practices used to critically evaluate and plan the requirements for 3D modelling, texturing, matte painting, lighting, layout and matchmove to create convincing environments; that are consistent throughout sequences and meet the creative requirements of a project.

K30: Environments - Principles of photography and the application of technical aspects e.g. exposure and lenses, and how lighting interacts with surfaces to re-create photo-realistic images.

K31: Environments - The application of cinematography and composition theory to form, colour, texture, volume, scale, proportion and mass. How these interact with historical, geographical or environmental references to create convincing landscapes or architecture.

K32: Environments - The application of camera science, 2.5D projections and 3D lighting to digitally matte painted textures within computer-generated 3D environments, allowing for 3D camera movement.

Skills

S1: Core - Interpret the brief and identify tangible assets to meet the specifications. Identify the resources required and any interacting factors, in order to meet the specification.

S2: Core - Critically evaluate the brief, checking for any missing information and clarifying the outcomes.

S3: Core - Assess and evaluate the VFX processes and workflow required to complete the tasks within timescales, developing a plan for VFX deliverables

S4: Core - Take responsibility for competing priorities, multiple stakeholders or projects simultaneously, adapting approach to achieve the required production outcome without impact on relationships or deliverables.

S5: Core - Apply industry and organisational standards regarding the selection and use of workflows, software packages and tools.

S6: Core - Monitor and evaluate the agreed workflow and methods and make recommendations to improve workflows, packages or tools.

S7: Core - Present VFX work in progress as part of the dailies review process; evaluate and act on feedback to maintain delivery timelines, technical requirements and outputs.

S8: Core - Provide information and rationale for the development of organisational policies, standards and procedures such as confidentiality, security, asset storage, legal and regulatory requirements.

S9: Core - Apply problem solving techniques to determine the root cause of technical challenges, adapt approach whilst recognising the impact this could have on other workflow stages and departments.

S10: Core - Write scripts or code to customise software or pipeline tools, simplify/automate processes or procedurally generate assets. Solve technical or creative problems, improve efficiency and/or reduce errors for the requirements of the project or department.

S11: Core - Research and analyse information to keep-up-to date with the new tools, software, data and other related technology. Critically evaluate how they could impact on personal development and the potential wider impact across the department and organisation.

S12: Core - Present findings and the wider business implications. Adapt communication style to influence and meet the needs of the audience.

S13: Simulation - Analyse and interpret reference or concept art material, to choose the correct simulation technology/technique, and adapting simulations to output art directed motion, that meets client/project requirements.

S14: Simulation - Develop or adapt simulation setups to achieve required visual quality while working within the time constraints of the production.

S15: Simulation - Create convincing, naturalistic motion though controlled simulation, tailoring simulation as needed to follow client brief.

S16: Simulation - Develop programs (shaders) for the purposes of bespoke simulation shading (e.g.VEX / Vops for Mantra).

S17: Rigging - Critically analyse and evaluate body shape to select the correct anatomical structure.

S18: Rigging - Critically assess rigging issues and develop modular scripts to problem solve and automate the rigging process.

S19: Rigging - Evaluate, select and apply different deformers to create natural deformations in characters and change the positions of vertices in a parent mesh.

S20: Rigging - Assess the animator's user interface requirements and collaborate with animators to optimise the rig for speed and control.

S21: Lighting, Shading and Look Development - Utilise or modify shaders to achieve photorealistic or stylised 'neutral renders' of assets that meet the 'look' outlined in the brief.

S22: Lighting, Shading and Look Development - Analyse requirements and create lighting templates for scenes or sequences that can be utilised by other artists during shot production.

S23: Lighting, Shading and Look Development - Deliver lighting shots that work within the given render budget on a particular production.

S24: Lighting, Shading and Look Development - Work with texture and groom artists on the development of the texture maps and/or the hair and fur of an asset; taking responsibility for ensuring that all assets work within the lighting and colour pipeline requirements of a particular production.

S25: Lighting, Shading and Look Development - Evaluate the technical specifications of the production to define and produce the render passes required.

S26: Environments - Apply 3D modelling techniques to layout the scene for camera. Create, refine and correct geometry and integrate assets and textures.

S27: Environments - Assess lighting requirements including position and distance of light, shadows, style of lighting for internal or external scenes, day or night and depth of lighting e.g. directional, ambient, spot or volume.

S28: Environments - Analyse, select and create detailed and convincing textures free of artefacts that represent real-world surfaces, traits or imperfections.

S29: Environments - Evaluate and apply the artistic techniques and/or the 2D (e.g Nuke & Photoshop) and 3D packages (e.g. Blender, Maya, ZBrush & Houdini) and tools to create and layer images. Embed landscapes and architecture seamlessly into scenes.

S30: Environments - Research, source, evaluate and select images to meet the technical requirements of the scene.

Behaviours

B1: Teamwork and Partnership – Works collaboratively with stakeholders and colleagues, developing strong working relationships to achieve common goals. Adopt a flexible approach to working with others and promote mutual respect.

B2: Accountability - Acts professionally when carrying out daily work, actively encourages and supports colleagues, setting personal goals and high performance standards for self. Committed to prioritising and completing work within a set timeframe and to industry standards. Adapts positively to changing work priorities and patterns, ensuring deadlines continue to be met.

B3: Quality focus that promotes continuous improvement, innovation and creativity to the VFX development process.

B4: Problem solving - Uses initiative to identify issues quickly; enjoys solving complex problems at the root cause and applying appropriate and/or creative solutions.

B5: Self-development - Overcomes problems through a process of reflection and review and by undertaking continuous professional development (CPD) in order to utilise new technological advances in the sector.

Qualifications

English & Maths

Apprentices without level 2 English and maths will need to achieve this level prior to taking the End-Point Assessment. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and maths minimum requirement is Entry Level 3. A British Sign Language (BSL) qualification is an alternative to the English qualification for those whose primary language is BSL.

Does the apprenticeship need to include any mandated qualifications in addition to the above-mentioned English and maths qualifications? **No**