**Apprenticeship Standard in development**

**Junior Visual Effects (VFX) Artist or Assistant Technical Director (ATD)**

**Level of occupation -** Level 4

**Typical duration of apprenticeship -** 18 months

**Occupation summary**

This occupation is found inthe British and International visual effects (VFX) industries, providing digital content for film, television, advertising, corporate and immersive reality industries. VFX companies and studios vary in size and the number of employees they have, and are described as small, medium, or large companies. They are to be found across England and the UK. The output and remit of a 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.

VFX is the term used to describe any imagery created, altered, or enhanced for moving media. This involves the integration of live-action footage and computer generated (CG) imagery to create images, which look realistic but would be dangerous, costly, or simply impossible to capture during live-action shooting such as explosions, car crashes or flooding of cities.

The broad purpose of the occupation is to collaborate with the team to create or manipulate VFX assets or elements to meet production requirements and perform a range of support functions to ensure the smooth running of a visual effects project. This is a core and options apprenticeship, with three options and the option taken is dependent on the VFX specialism of the employer.

**Option 1 – Junior VFX Artist (2D)**

Junior VFX Artists (2D) are responsible for assisting the senior visual effects artists by preparing elements for use in the final VFX shot. Junior 2D artists utilise artistic knowledge in areas such as composition and colour, in addition to accepted industry standard compositing software and operating systems.

**Option 2 – Assistant Technical Director (VFX)**

Assistant Technical Directors (VFX) (ATD’s VFX) may perform a diverse series of technical support functions to ensure the smooth running of a visual effects project. ATDs utilise a variety of industry standard graphical applications, scripting languages and operating systems. They may support projects by gathering artist requirements, designing solutions and coding small-scale tools using established employer workflow requirements. They are expected to work well within a team and to be good communicators and problem solvers.

**Option 3 - Junior VFX Artist (CG/3D)**

Junior VFX Artists (CG/3D) are responsible for creating computer generated (CG) assets or elements for use in the final VFX shot. Junior VFX (CG/3D) artists utilise artistic knowledge in areas such as sculpting, cameras and storytelling, in addition to accepted industry standard CG software and operating systems.

Upon successful completion of their apprenticeship the individual could have a diverse career progression, some will eventually become Supervisors in their field. A Junior VFX artist (2D) will typically progress to become a compositor and may eventually become a 2D or VFX Supervisor. An ATD may progress to become Pipeline Technical Directors, Software Developers, Riggers, Technical Directors or FX Artists. A Junior VFX Artist (CG/3D) may progress to become a Matchmove Artist, Layout Artist, Modeller, Lighting Artist, Texture Artist or Previz Artist.

In their daily work, an employee in this occupation interacts with engineers, artists, designers, and team leads, other visual effects teams, their supervisor and/or the client. This is a junior level role, and 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, to create the effects required, according to the story being created, the VFX/CG Supervisor and the Director's wishes. It is usually a studio-based role.

An employee in this occupation will be responsible for, in all options:

* managing their own workload with the VFX production team and/or their lead, generating the required work on time, to meet the brief of the  supervisor/client
* working within the workflow pipeline/toolset of the company that they are working for
* working effectively in collaboration with clients, colleagues, partners, and suppliers in the VFX industry to ensure that the VFX elements/asset seamlessly incorporated into the production
* using innovative approaches to solve problems and ensure VFX assets are delivered in line with production requirements
* organising their VFX outputs using appropriate storage processes and systems.

**Option 1 – Junior VFX Artist (2D)** **specialist responsibilities:**

* creating mattes (masking areas of the live action footage) by roto-scoping (tracing around   objects in the frames) and keying (isolating areas of blue/green screen in the live action footage) to allow all elements of the scene to be layered convincingly by a compositor
* removing erroneous objects within the live action footage, such as camera/lighting equipment and safety stunt wires and rigs
* producing simple composites (combining live action elements and computer-generated imagery to create a shot that looks as if it was captured at the same time by a single camera).

**Option 2 – Assistant Technical Director VFX (ATD)** **specialist responsibilities:**

* supporting and troubleshooting the pipeline and workflow tools
* providing technical assistance to people in creative departments
* managing data and resources.

**Option 3 - Junior VFX Artist (CG/3D) specialist responsibilities:**

* using on set data and tracking markers to track the camera motion on set to allow CG assets to be integrated seamlessly into the scene
* creating 3D assets which could include props, environments, or characters
* attending dailies/review sessions to gain feedback on their work and respond appropriately to that feedback.

**Typical job titles**

Assistant technical director, CG artist CG generalist, Junior 2D artist Junior 3D artist, Junior compositor, Junior pipeline technical director, Layout artist, Lighting artist, Matchmove artist, Previz artist, Roto/prep artist, Technical runner, Texture artist.

**Core occupation duties**

| **DUTY** | **KSBS** |
| --- | --- |
| **Duty 1** Assess the requirements set by the client or supervisor brief. Establish which tools and techniques best meet the required creative, narrative and technical demands of the production. | K1 K7 K19  S1 S2 S16  B2 |
| **Duty 2** Create VFX assets/tools in line with production requirements, ensuring the output meets the requirements for the workflow process | K2 K5 K9 K10 K11 K13 K15 K16 K17 K19  S2 S5 S15  B1 |
| **Duty 3** Manage VFX assets through the workflow (pipeline) in line with production requirements for organising, storing and retrieving assets | K2 K3 K5 K10 K12 K13 K19  S3 S5 S6 S12 S15  B1 |
| **Duty 4** Work autonomously and with clients or customers in the visual effects (VFX) industry, collaborating with other departments as required to ensure that the CG elements are delivered to meet agreed production requirements | K1 K5 K7 K8 K14  S6 S7 S10 S11 S13  B4 B6 B7 |
| **Duty 5** Seek out, interpret and apply information about emerging practice in the visual VFX industry to improve knowledge and performance in line with organisational protocols | K4  S8  B5 |
| **Duty 6** Work with existing VFX project organisation tools. Consider and recommend improvements to existing tools. Develop and implement new tools as required. | K4 K6 K12 K13  S2 S4 S17  B2 B3 |
| **Duty 7** Recreate physical systems or manipulate computer generated geometry to create or develop a VFX asset. | K8 K9 K10 K11 K14 K15 K17  S9 S14 |
| **Duty 8** Use innovative approaches to solve problems and ensure VFX assets are delivered in line with production requirements | K8 K18  S7 S13 S17  B2 B3 |

**Option duties**

**Junior VFX Artist (2D) duties**

| **DUTY** | **KSBS** |
| --- | --- |
| **Duty 9** Create mattes using roto-scoping and keying to allow all elements of the scene to be layered convincingly by a compositor | K3 K15 K26 K27 K28 K29  S3 S22 S23 S24 S27  B1 |
| **Duty 10** Remove erroneous objects within live action footage, such as camera/lighting equipment and safety stunt wires and rigs | K24 K25  S17 S20 S21 |
| **Duty 11** Produce basic composites that could be for editorial purposes for test screenings of the film or for use in the final production | K9 K10 K11 K15 K17 K25  S25 S26 |
| **Duty 12** Apply the principles of colour space within the VFX colour pipeline | K11 K20 K21 K22 K23  S18 S19 |

**Junior VFX Artist (CG/3D) duties**

| **DUTY** | **KSBS** |
| --- | --- |
| **Duty 13** Select and use appropriate technology to render VFX assets for pre-rendered or real-time productions | K4 K15 K30  S4 S28 |
| **Duty 14** Track cameras, markers and objects to meet production requirements | K11 K31 K34 K35 K36 K37  S11 S27 S29 S30  B1 |
| **Duty 15** Create and manipulate 3D assets in line with production requirements/ the brief. These may include models, textures, camera’s, environmental elements, rigs. | K3 K10 K11 K15 K17 K18 K29 K38  S3 S9 S10 S31 S33 S34 S35 |
| **Duty 16** Evaluate VFX assets in line with feedback from multiple sources including dailies, to ensure production requirements are met and own practice continuously improves | K10 K11 K14 K15 K17  S17 S32 |

**Assistant Technical Director (VFX) duties**

| **DUTY** | **KSBS** |
| --- | --- |
| **Duty 17** Set up and/or follow file management protocols, convert files, file and store data securely, undertake file archiving and restoration | K3 K6 K32 K33  S3 S37 |
| **Duty 18** Monitor, manage, manipulate, problem solve, escalate and report on render queues and track resource usage | K6 K12 K13 K40 K41  S10 S39 S40 S41 S44 S46 |
| **Duty 19** Perform bespoke database/ library queries or searches. Identify, collect and migrate information from data sources in order to meet production requirements. | K12 K32 K39  S36 S37 S38 |
| **Duty 20** Contribute to software design, development and scripting | K8 K18 K42 K43 K44  S41 S42 S43 S45  B1 |

**KSBs – Knowledge, Skills and Behaviours**

**Knowledge**

**K1**: The value of VFX content and confidentiality to the business and its customers, why it is important to maintain data security, and the legal and regulatory requirements which apply to VFX assets including copyright and intellectual property rights

**K2**: The in-camera creation pipeline, from pre-production, through shoot, editorial, VFX to grading

**K3**: The importance and methods of retaining the quality of the source material

**K4**: The VFX industry and the terminology, current tools and workflows used

**K5**: The VFX production pipeline, including shot bidding, turn-over, briefing, reviews, client reviews, deliveries and final delivery

**K6**: The importance of naming conventions, file formats and version control and the impact of not doing this correctly

**K7**: How to identify production requirements from a brief; plan your approach to the work, techniques, optimisation and schedule

**K8**: The requirements and expectations of the workflow, and of other team members who will use the assets you create

**K9**: Common artefacts in plate photography such as lens distortion, parallax and overscan

**K10**: The principles of perspective, depth of field and scale and how this relates to a believable final image

**K11**: The principles of photographic composition, light and colour

**K12**: The principles of computer systems, IP networks and shared storage systems as applied in VFX

**K13**: How assets are managed throughout the workflow including: production storage, shared storage, nearline storage and archive, whether on premises or in the cloud

**K14**: Why it is important to evaluate progress and seek feedback on your work in VFX

**K15**: How to create assets that support the vision of the story and the purpose of the image

**K16**: How Computer Generated Imagery can be rendered in multiple passes in order to be adjusted more efficiently in the composite. These passes can include: colour, diffuse, specular, shadow and beauty lighting.

**K17**: Research methods, techniques and tools that can be used and where to find credible and valid sources of information, reference materials and previously created assets

**K18**: The different software and techniques that could be used; the implications of their use, how to customise these and how they can be used to solve problems

**K19**: The rendering requirements for the production and how to optimise assets

**K20**: VFX2D: How digital images are encoded and stored, especially colour spaces and their appropriate use

**K21**: VFX2D: The differences in linear light, gamma encoded and logarithmic encoded pixel values

**K22**: VFX2D: The implications of working with high and low dynamic range images

**K23**: VFX2D: The VFX colour pipeline, from acquisition to working space, balance grades, look grades and delivery

**K24**: VFX2D: How to determine the most appropriate method for removing unwanted artefacts in live action footage

**K25**: VFX2D: Camera moves and how they impact patching or frame-by-frame painting

**K26**: VFX2D: How to determine which technique is the correct method to generate the matte and how the matte will be used in the composite

**K27**: VFX2D: Motion blur, how it affects the matte and the principals of animation to effectively replicate in the generated matte

**K28**: VFX2D: How to analyse the shot to determine the most efficient breakdown of shapes and keyframes

**K29**: VFX2D & 3D: The concept and purpose of a template or hero script as appropriate

**K30**: VFX3D: How to identify and select the different rendering techniques and tools to use, and how to save and duplicate render settings across multiple files

**K31**: VFX3D: The types of data and information you might receive from an on-set environment

**K32**: ATD: The fundamentals of data structures, structured and unstructured data, database system design, implementation and maintenance

**K33**: ATD: The quality issues that can arise with data and how to avoid and/or resolve these

**K34**: VFX3D: How to identify where your asset or shot fits within a sequence

**K35**: VFX3D: The process of following image features across a series of frames in order to record the position of an object in the source footage

**K36**: VFX3D: How the camera moves, the impact on the tracking process and how to select the most appropriate method to produce an accurate track

**K37**: VFX3D: The technical process of tracking and how you can improve the accuracy and efficiency of tracking the shot

**K38**: VFX3D: How to interrogate software to solve issues with and/or create: simple shot lighting, basic simulations, a model, a rig or blocked animation

**K39**: ATD: The organisation's data architecture

**K40**: ATD: Grid computing and its use within VFX render queues - at a basic level

**K41**: ATD: How to balance resource needs within the company’s physical capacity

**K42**: ATD: Principles of software development, the software design process and the importance of design before development

**K43**: ATD: How workflow diagrams, prototyping and presenting to intended users can aid in designing better solutions

**K44**: ATD: Application specific scripting languages e.g. Mel, Python, Vex, Hscript etc. as appropriate

**Skills**

**S1**: Identify the information required, and gather the appropriate research or reference materials to carry out your work to expected creative, narrative and technical standards on each production

**S2**: Select the appropriate software and technique to meet the required standards and tasks, taking into account the needs of other departments in the production pipeline

**S3**: Use appropriate techniques to reduce degradation of the source material

**S4**: Identify render errors and fix/escalate them as appropriate

**S5**: Work in line with agreed workflows, adapting to operational and creative changes as they occur

**S6**: Operate within and adhere to agreed organisational policies, standards and procedures such as health & safety, confidentiality, security, asset storage and legal and regulatory requirements

**S7**: Manage own workload and operate both individually and as part of a wider VFX team, keeping colleagues, clients and/or other departments updated on progress and report any issues arising

**S8**: Use reliable information to keep-up-to date with the new tools, software, data and other related technology, and how they affect your work

**S9**: Interpret and correct lens distortion, parallax and overscan

**S10**: Multitask on simultaneous projects, often for different clients, deciding how to prioritise the work to ensure that all tasks are completed on schedule

**S11**: Respond positively to feedback on work, making refinements as needed

**S12**: Apply the naming conventions, file formats and version control for the work

**S13**: Deliver content in the correct format as required by the employer and clients

**S14**: Use maths to describe problems, recreate physical systems or manipulate computer generated geometry

**S15**: Move, store and organise assets created, ensuring data integrity, in order to enable their use throughout the rest of the pipeline

**S16**: Analyse and determine the most appropriate approach to carry out the work

**S17**: Trouble shoot VFX problems, taking responsibility for the course of action followed and sharing solutions

**S18**: VFX2D: Convert between common colour spaces, selecting the appropriate colour space for the given task and combining images from multiple colour spaces

**S19**: VFX2D: Apply colour adjustments at the correct stage of the composite, using non-destructive adjustments where possible

**S20**: VFX2D: Use patching techniques to remove unwanted objects within the live action footage

**S21**: VFX2D: Use frame-by-frame painting to remove unwanted objects within the live action footage

**S22**: VFX2D: Generate mattes by roto-scoping and luminance, difference and colour keying

**S23**: VFX2D: Produce accurate roto-scope by correctly placing shapes, control points and keyframes

**S24**: VFX2D: Accurately replicate motion blur within the roto-scope generated matte

**S25**: VFX2D: Complete basic composites demonstrating keying, colour grading, re- timing and screen insertion

**S26**: VFX2D: Complete basic live action and CGI composites demonstrating set extensions and simple CGI objects integrated into live action elements

**S27**: VFX2D & VFX3D: Create accurate point tracks and planar tracks in line with production requirements

**S28**: VFX3D: Apply render settings across multiple assets

**S29**: VFX3D: Analyse, interpret and use on-set data and information

**S30**: VFX3D: Model and manipulate geometry for scene reconstruction

**S31**: VFX3D: Select and use software to create: a model, a texture map, puppet rig or blocked animation to meet the requirements of the brief

**S32**: VFX3D: Review assets created with the relevant people, offering suggestions to assist others with the production

**S33**: VFX3D: Capture and work with photogrammetry and convert it to useable 3D geometry and cameras

**S34**: VFX3D: Optimise and rebuild assets/scenes for real time rendering

**S35**: VFX3D: Assemble, layout and maintain assets into project, sequence, or shot based environments

**S36**: ATD: Identify, collect and migrate data to/from a range of systems

**S37**: ATD: Manipulate and link different data sets as required

**S38**: ATD: Perform database queries across multiple tables to extract data for analysis

**S39**: ATD: Monitor, manipulate and report on render queues

**S40**: ATD: Monitor, track and report render resource usage

**S41**: ATD: Investigate existing solutions or frameworks

**S42**: ATD: Design and present proposed solutions and respond to feedback

**S43**: ATD: Plan and document development roadmap

**S44**: ATD: Troubleshoot individual artist input, output or archival problems

**S45**: ATD: Develop small-scale tools, using existing pipeline frameworks and libraries

**S46**: ATD: Support or troubleshoot pipeline and workflow tools

**Behaviours**

**B1**: Work with sustained concentration and with attention to detail; able to self-check work for quality control

**B2**: Work on own initiative, be proactive and inquisitive; but recognise your own level of authority and when it is necessary to escalate issues

**B3**: Think creatively and logically to solve technical problems - contribute to a process continual improvement of workflow and technique. Use initiative and innovation to problem solve, to provide creative solutions and opportunities for the production.

**B4**: Be flexible and able to work under pressure - managing and re-organising priorities and bringing multiple tasks to completion within deadlines, communicating progress as required

**B5**: Demonstrate judgement in assessing the use of emerging practice within the constraints of a production environment. Do not willingly accept second best, and be pragmatic about balancing client expectations against the available time and budget.

**B6**: Use different communication methods and tools to suit different audiences or situations and changes in circumstances to create and maintain positive, professional, trusting and ethical working relationships with your team and the wider range of internal, external and connected stakeholders.

**B7**: Maintain commercial confidentiality and professional practice at all times, and in all settings

**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