# LONDON CAPITAL COMPUTER COLLEGE

## Advanced Diploma in Graphic Design (992) – Computer Animation

| **Prerequisites:** Excellent keystroking ability. | **Corequisites:** A pass or better in Diploma in Graphic Design or equivalence. |
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**Aim:** The course illustrates history of animation and its relationship to societies/cultures and explore the development of animation from its earliest attempts in prehistoric times through the present day integration of technology. Strategies for production are presented, including animation techniques, design layout, editing, timing, composition, color, lighting, music, sound effects, voice, story, concept, content, theme, historical relationship, social context, ethical context, purpose, audience, and philosophy. This course focuses on the history and aesthetics of animation, with references to related arts such as live-action cinema, puppetry and comics. Screenings include a wide range of commercial and experimental works produced throughout the world. Graphic animation techniques utilizing microcomputers and 3D software. 3D modeling, scene composition, materials editing, object and camera movement, character development and storyboarding will be explored. **Action Analysis** - drawing from life is at the foundation of understanding human and animal articulation, proportion, balance, weight and pose essential for the animator. By using observational drawing techniques to learn to see, candidates explore issues of human and animal pose and motion relevant to animation. **Principles of 2/3D Animation** - candidates explore the basic principles of animation to develop an understanding of character and performance. Emphasis is placed on the analysis of actions. The course include the theories of 2/3D space, object modeling, procedures for texture mapping, lighting and rendering. Candidates learn how to construct basic digital 2/3D models of character and environment. **Stop Motion** - candidates learn how to build a simple biped character and animate it in a number of motion tests. Candidates become familiar with the use capturing software and will be exposed to a wide range of stop motion styles to encourage personal aesthetic exploration. **Principles of Screen Design** - screen design is fundamental to animation communication. In this course, students expand upon traditional media skills and animation craft by adding the element of screen design. Through individual approach and expression in traditional and digital media, students communicate by juxtaposing and sequencing imagery to develop a sense of artist-audience construct and consequence. **Animation Production** - using perspective and other traditional design attributes to create a variety of shot compositions, students in this course learn the business of staging, posing and animating action in a sequential layout to create effective visual narrative. This course develops the candidate's ability to rough, block and animate 2-D shots in sequence to meet the goals of the script to tell a story. Through the process of learning to assemble the components necessary to allow for the efficient workflow in getting animated storytelling on the screen, students in this course focuses on pre-visualization, creating and texturing assets for camera, animating for camera, lighting and rendering in passes, and assembling shots in sequence to create effective storytelling. **Motion Capture Animation** - motion capture is the process of recording movement and translating it onto a rigged digital character. In this course animators learn how to capture and cleanup motion capture data, and how to use key frame animation knowledge to enhance character performance.

| **Required Materials:** Recommended Learning Resources. | **Supplementary Materials:** Lecture notes and tutor extra reading recommendations. |
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| **Special Requirements:** This is a hands-on course, hence practical use of computers is essential. Requires intensive lab work outside of class time. ||
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| **Intended Learning Outcomes:** | **Assessment Criteria:** |
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| 1.      Define character animation a specialised area of the animation process and demonstrate the tools needed to process creating animated characters. | 1.1      Design/trace characters<br>1.2      Create joints that work<br>1.3      Be able to work with outlines<br>1.4      Create parts for replacement animation<br>1.5      Be able to assemble characters with hierarchies |

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| | 1.6 | Analyse rig replacement animation in After Effects |
| | 1.7 | Explore rig with the Puppet tool in After Effects |
| | 1.8 | Analyse rig Flash characters |
| | 1.9 | Analyse rig replacement animation in Flash |
| | 1.10 | Explore rig with the bone tool in Flash |
| 2.  Explore how to create effective animations by understanding the principles behind them. | 2.1 | Analyse the first, second and third law of motion |
| | 2.2 | Be able to use slow in and slow out |
| | 2.3 | Explore arcs and smooth motion |
| | 2.4 | Understand overlap and follow-through |
| | 2.5 | Be able to animate overlap and follow-through |
| | 2.6 | Understand squash and stretch |
| | 2.7 | Be able to animate squash and stretch |
| | 2.8 | Analyse squashing and stretching techniques |
| | 2.9 | Understand weight and anticipation |
| | 2.10 | Be able to animate anticipation and weight |
| 3.  Demonstrate the different Flash drawing tools, effective use of symbols, and document management best practices. | 3.1 | Describe internal vs. external forces |
| | 3.2 | Be able to bring characters to life |
| | 3.3 | Explore blinking, changes in eye direction and head turns animation |
| | 3.4 | Create a strong line of action |
| | 3.5 | Create strong silhouettes |
| | 3.6 | Analyse pose-to-pose animation: Blocking |
| | 3.7 | Analyse pose-to-pose animation: Animating |
| | 3.8 | Analyse pose-to-pose animation: Finalizing |
| 4.  Demonstrate how walk is timed as well as the length of the character's stride. | 4.1 | Be able to produce a walk in four poses |
| | 4.2 | Analyse motion of the head and body |
| | 4.3 | Evaluate walk cycles and backgrounds |
| | 4.4 | Explore skeleton motion and walking |
| | 4.5 | Learn to animate a walk: Contact position |
| | 4.6 | Learn to animate a walk: The feet |
| | 4.7 | Learn to animate a walk: The body |
| | 4.8 | Learn to animate a walk: The legs |
| | 4.9 | Learn to animate a walk: The upper body and arms |
| | 4.10 | Learn to animate a walk: The head |
| | 4.11 | Learn to animate a walk: Squash and stretch |
| 5.  Demonstrate how walk is timed as well as the length of the character's stride. | 5.1 | Be able to create a run in four poses |
| | 5.2 | Create a first frame: First pose |
| | 5.3 | Create a second frame: Second pose |
| | 5.4 | Create a third frame: Third pose |
| | 5.5 | Create a fourth frame: Fourth pose |
| | 5.6 | Be able to animate upper body |
| 6.  Analyse facial animation, how it helps to | 6.1 | Explore the basics of dialogue animation |

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| make speech comprehensible and dialogue turns intuitive and outline how animation entails dialogue using eyes, facial muscles, body language, and a host of subtle factors. | 6.2 | Be able to read tracks and assign mouth shapes |
| | 6.3 | Be able to use phonemes and lip-syncing |
| | 6.4 | Be able to animate dialogue: Animating the body |
| | 6.5 | Be able to animate dialogue: Assigning mouth shapes |
| | 6.6 | Outline finalising animating dialogue |
| 7. Outline the reasons to animate text in Flash and the several features of After Effects. | 7.1 | Be able to animate a scene |
| | 7.2 | Be able to set up the scene in After Effects |
| | 7.3 | Be able to animate the feet in After Effects |
| | 7.4 | Be able to animate the legs in After Effects |
| | 7.5 | Be able to animate the upper body in After Effects |
| | 7.6 | Be able to animate the mouth and blinks in After Effects |
| | 7.7 | Be able to set up the scene in Flash |
| | 7.8 | Be able to animate the feet in Flash |
| | 7.9 | Be able to animate the body in Flash |
| | 7.10 | Be able to animate the legs in Flash |
| | 7.11 | Be able to animate the hands in Flash |
| | 7.12 | Be able to animate the mouth in Flash |

## Recommended Learning Resources:
## Computer Animation

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| **Text Books** | • Computer Animation: Algorithms and Techniques by Rick Parent ISBN-10: 0125320000<br>• Get Animated!: Creating Professional Cartoon Animation on Your Home Computer by Tim Maloney ISBN-10: 0823099210<br>• Handbook of Computer Animation by John Vince ISBN-10: 1852335645 |
| **Study Manuals** | BCE produced study packs |
| **CD ROM** | Power-point slides |
| **Software** | Computer Animation software (college can choose on any program of their choice) |