COURSE MODULES

LEVEL 1.1

Design Principles
This module aims to develop the abilities of the students in the design principle and fundamental elements and processes of organising, displaying, and communicating ideas and information creatively to the minds of the intended audience through two-dimensional form, three- dimensional form, colour structure, and composition.

Drawing Foundation
This module trains students to develop the skills needed to visualise and create ideas for digital and interactive projects. Students will be exposed to various training and basic drawing techniques that will hone their ability to visualise ideas. Rudimentary exposure to digital tools will occur at the later part of this module in order to solidify the relevance of traditional skills in digital tools.

Fundamentals for Creative Professionals I
This module provides a broad introduction to the field of IDM by exploring the roles, professional practice, ethical expectations and career development paths of IDM professionals. Through a guided inculcation of interpersonal and team work skills with strong team bonding spirit, the module aims to deepen students' commitment to the sector that the course prepares them for. In addition, students will be required to begin charting their career path in the IDM industry by considering crucial aspects such as personal preferences and aptitude, job roles and responsibilities, skills needed and further education.

History of Film & Animation
This module surveys the development of film and animation over the past century. Students explore the evolution of the medium and how technology, economics, artistic trends, individual artists and national cultures have affected its development.

Principles of Animation
This module introduces the language and principles of classical animation through analysis and decomposition of movement frame-by-frame. Students will explore the importance of effective timing and spacing, and how their manipulation can affect the feel of an action.

Storytelling, Scriptwriting & Storyboarding
This module aims to induct students into the world of storytelling, and the industry practice of scripting and storyboarding visual communication prior to going into production stage. Students will explore new story creation through the generation of story ideas, characters, story imagery and script.

LEVEL 1.2

Applied Design
This module aims to develop students' ability to perceive, design and construct objects in three- dimensional space. Additionally, students will be trained to interpret and translate two-dimensional form into three-dimensional volume, mass, space, and structure. It introduces the basic elements, principles, materials and methodologies of three-dimensional design. Working with both physical medium and digital tools, students will be trained in the use of materials, physical components, application of digital design and visualisation tools, and communicate their ideas and solutions through physical mock-ups and prototyping.

Figure Drawing & Anatomy
This module covers basic fundamentals in drawing and understanding of the human form. Students will learn how to draw the human form with life models and develop their artistic skills through understanding the anatomical structure of the human body and how these anatomical elements function to create movement, attitudes and poses from head to toe. Emphasis of this module will be on the artistic application of this knowledge for artists and animators.

Principles of Body Mechanics
This module further develops students' classical animation skills on various biped/human characters. It continues to develop students' understanding of the concepts of motion and body mechanics, and aims to develop students' ability to create convincing movement, expression of mood, thought, attitude, and personality in the characters with a goal to bring the characters to life.

Sketching & Rendering
This module builds upon knowledge and skills gained in Drawing Foundation. Students are introduced to permanent mediums like ink, markers and various techniques. These mediums are required in the production of both observational and ideation works while simultaneously, strengthening confidence in visualising ideas. In the second term, students are required to apply their knowledge and skills gained in the first term into digital works. Basic digital techniques and workflow used in the industry will be introduced at this stage.

Storyboarding
This module explores the pre-production skills of storyboard art. It introduces the concepts of storyboard drawings, which map out camera angles, continuity, and lighting. Students learn about the basics of film grammar through the analysis of scripts, character, and set design, and translate these through drawings to create story flow, character development, mood, time, and place. Students will create both production and presentation storyboards.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 1	
Level 1.1 (27 hours per week)	
Design Principles	4
Drawing Foundation	4
Fundamentals for Creative Professionals I	3
History of Film & Animation	4
Principles of Animation	4
Storytelling, Scriptwriting & Storyboarding	4
Innovation Toolkit ^	4
Sports & Wellness ^	2
Level 1.2 (24 hours per week)	
Applied Design	4
Figure Drawing & Anatomy	4
Principles of Body Mechanics	4
Sketching & Rendering	4
Storyboarding 4	4
Communication & Contemporary Issues ^	4

Notes:
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IS Modules
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develop students' competencies in core areas such as Communication, Innovation and Enterprise, Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.

COURSE MODULES

LEVEL 2.1

3D Fundamentals
This module examines the basic principles and techniques of creating 3D digital models. It provides an overview of the process of digital asset creation, and introduces techniques and critical thinking skills for organic and inorganic modelling, polygonal modelling, and patch modelling. Texture mapping, lighting, shading, rendering and camera setups are explored. Emphasis is placed on professional habits and the digital workflow.

Advanced Figure Drawing
This module focuses on the human figure and gestures. Students work with life models to create full studies, short poses, and sustained studies. Students explore putting the figure into an environment, figurative composition, and introductory sequential figurative composition. The module also includes a thorough study of costume and drapery. Students will learn to increase perception, insight, draftsmanship, aesthetic vocabulary, and conceptual attitudes.

Animal Anatomy
This module introduces comparative study of the human structure and the structure of a variety of animal types. Focus will be specifically on the impact of anatomical structure on locomotion. The module also considers standard locomotion cycles and the relationship between humans and various animals. Emphasis of this module will be on the artistic application of this knowledge for artists and animators.

Fundamentals of Creative Professionals II
This module gives a course-based experience in which students can engage with the local community and industry. This includes participation in community service events or in Service-Learning projects that leverage students' discipline knowledge and skills to meet identified needs. Through iterative and guided reflection on the service experience, students gain a broader appreciation of their discipline and an enhanced sense of personal voice, empathy and civic responsibility. Industry talks and seminars are organised to keep students up-to-date on emerging trends so as to build up their interpersonal, team and networking skills with the community and industry.

LEVEL 2.2

Character Design
This module leverages on the drawing skill and anatomy knowledge to create characters that are memorable and unique. It introduces the creative process and traditions of character design, and the basic structural strategies for creating characters. It covers the basic tools such as thumbnails, silhouette design, figure invention, props, costumes, character archetypes, marker sketches and digital painting.

Digital Cinematography
This module introduces the art of cinematography for digital video and computer-generated imagery.
It covers the principles and concepts of practical cinematography through physical lighting, choreography of camera movement and lighting of computer- generated environments to enhance the visual impact in storytelling.

Props & Environment Design
This module covers the basics of designing different types of props and environments for animation, film and games. Students will learn perspective, composition, tonal differences between interior and exterior environments, research techniques for believable detail, clear tonal reads, and modelling within established values. Additional subjects will include lighting and material indication, the thought process before the sketch, use of thumbnails, rendering with Photoshop, and the use of pencil, pen and reference material.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 2	
Level 2.1 (26 hours per week)	
3D Fundamentals	4
Advanced Figure Drawing	4
Animal Anatomy	4
Career & Professional Preparation II	2
Elective Module #	4
Elective Module #	4
Fundamentals for Creative Professionals II	2
Interdisciplinary Studies (IS) elective ^	2
Level 2.2 (22 hours per week)	
Applied Design	4
Figure Drawing & Anatomy	4
Principles of Body Mechanics	4
Sketching & Rendering	4
Storyboarding 4	4
Communication & Contemporary Issues ^	4

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COURSE MODULES

LEVEL 3.1

3D Animation Production
This module introduces 3D animation production within the context of a small production pipeline. Building on the cumulative skill sets acquired in previous semesters with a focus on team dynamics rather than individual projects, it provides an overview of the process of 3D digital production, such as scheduling, budgeting, developing & documenting the production process, and integration of tasks across a production, from concept to completion.

Emphasis is placed on professional habits and the digital workflow. This will require each cohort to learn choreography, continuity, and basic scene analysis, all while working within the confines of a team. New dynamics will

come into play, particularly in terms of accountability to small and large groups, as well as increased responsibilities with man-hour projections and general scene management.

Concept Development
This module introduces various idea generation and concept development techniques. Students learn the pre-production skills of concept illustration and visual development through the application of knowledge skills in drawing, storytelling and composition to communicate the concept effectively to an audience.

Digital Post-Production
This module focuses on the final stage of all animation production, which involves the assembly of various production elements ranging from rendered files to sound effects. Students are introduced to the effective use of equipment, compression strategies and codecs in post-production. Effective editing skills for animation such as working with animatic and finished-shot to build the final edit, compositing of visual effects and conformation of audio to picture with be covered. Students will also examine the various channels for media delivery, bandwidth consideration, and delivery format.

Fundamentals of Creative Professionals III
This module provides a stepping stone to the students in their IDM career. Students are given an insight into the IDM industries and are kept abreast of the updates and the necessary skill sets required in their career path. They also have the opportunity to be exposed to the various institutes of higher learning to further enhance their skill sets.

LEVEL 3.2

Internship or Studio-based Production
The primary aim of this final year industry-based project is to nurture the spirit of innovation and enterprise in students and broaden their experience beyond classroom learning. It also provides students with the opportunity to apply the knowledge and skills gained in the past semesters. Using the demo programme prototyped in the earlier semester under the Concept Development module, students will develop an idea into a full working product. Local or overseas attachments are also possible.

3D ARTS SPECIALISATION

3D Character Rigging
This module deals with issues relating to character modelling, rigging and setup based-on production requirements. Students will be presented with various character setups and explore appropriate modelling and rigging solutions for their own characters. Topics include skeletons, forward/inverse kinematics and custom control panels. Students will acquire the ability to set up a character for a wide range of complex body movements, with an emphasis on techniques for creating controls, which are realistic, flexible and can be intuitively animated.

Advanced 3D Modelling
This module continues to build on students' 3D modelling skills through the creation of hyper-realistic models. Subjects like bipedal characters and creatures will be tackled through the balanced application of anatomy and technical efficiency. Students will learn to fuse the traditional art of sculpting organic form with digital modelling techniques. It covers anatomy in modelling and the need for quality in deformable and detailed surfaces.

Game Mechanics
This module studies the game mechanics – the rules intended to produce an enjoyable gameplay, and introduces the principles and methodologies behind the rules and play of games. It first studies the simplest types of games, board games and card games, and examines basic math and rules that make these simple games enjoyable.

Students will then use this theoretical knowledge to create simple yet practical games that show their comprehension of what is enjoyable in games. It pays attention to the psychological design considerations, play testing, game tuning, player analysis, and the integration of visual, audio, tactile and the textual elements. Once students have mastered the basics of physical game mechanics, they will expand their expertise by looking at various arcade-action games and other simple action games. They will then create prototypes of games and will hold focus groups to get feedback on their designs.

Texture & Shading
This module covers the tools and techniques for the creation of custom 2D texture maps. Students learn about different artistic styles, levels of craftsmanship (handmade, manipulated scanned imagery and 3D compositing), repetition structures, and tile-able and seamless motifs, with grounding in traditional painting. Focus will be on the layering technique, where overlapping elements form rich and beautiful work. Texture mapping techniques will also be explored with emphasis on manual UV unwrapping.

CHARACTER ANIMATION SPECIALISATION

2D Animation Production
This module introduces the traditional animation production within the context of a small production pipeline. Students work in teams with the goal of delivering a short animate project. Students will work through the entire production process of the creation of a traditionally animated film. Students learn how to translate storyboard to layout and the choreography of camera and action to communicate the story effectively. Students will also acquire skills on how to deal with new dynamics within the team, and general scene management.

Acting for Animation
This module further develops students' ability to translate thoughts and feelings into specific gestures and actions. It surveys the history of acting in the theatre, animation and film. In addition, the module focuses on the analysis of action in the human form, gestures, timing, characterisation, communication of attitude, character relationship, storytelling through motion, emotion and thought process to create a moving and memorable acting performance.

Advanced 3D Character Animation
This module emphasises how character animation influences character personality and how performance and dialogue propel a story and create the mood. Students explore the choreography of a scene through action and composition. They become knowledgeable in multifaceted issues of animated performances. The expression of emotion, timing, and the subtlety of character is explored. Lip-synching and dialogue animation are presented. It also gives students an appreciative view of character rigging for animation.

Creature Animation
This module aims to broaden students' repertoire as an animator in the area of non-humanoid characters. Students develop a better understanding of animal anatomy and behaviour as the foundation of creature animation. Through detailed analyses of reference footage, aided by in-class demonstrations and lectures, students will produce professional-quality animation cycles. This module also introduces technical methods to students in order to optimise work flow in professional production environments.

ELECTIVE MODULES

3D Environment Modelling

This module provides the opportunity for students to create architectural interiors and the natural environments representing houses, buildings, and entire worlds contained under one roof, in which to place the game characters. It explores and integrates design and technology to develop matte paintings, virtual sets and digital backgrounds. Students acquire the knowledge and practical skill sets for digital matte painting production.

3D Prototyping

This module introduces the aspects of rapid prototyping by allowing students to partake in designing 3D models and implementing them into a physical 3D product. Students are exposed to various prototyping methods and covers product design and using 3D printing as an enabling technology.

Capstone Project

In this module, students are required to complete a substantial project that is the culmination of their education in the School of InfoComm Technology. The project can be a real-world problem proposed by a client, or it can be proposed by students in pursuit of their personal interests.

Digital Painting

This module covers digital painting techniques essential to produce artwork and background for concept art, animation and games. It covers speed drawing and painting, and further enhances students' understanding of light and shade, colour, composition, atmospheric and linear perspectives, form and space to create an appropriate mood and emotion for the situation as required in the script and the illusion of volume and space.

Effects & Simulation

This module aims to equip students with the capability to create a range of effects for a variety of needs in animation production. Students will be introduced to simulation through particle-based effects. An overview of softbody dynamics will also be covered in the form of cloth, hair and fluid simulation. Students learn to optimise their workflow with the goal of producing rendered effects that display natural behaviour and appearance.

Pre-Visualisation

This module examines the digital pre-visualisation processes of modern filmmaking which supplement traditional storyboarding techniques. Through demos and exercises, students learn how to utilise animation and modelling in order to stage and art direct complex sequences before they proceed to actual production. Lighting, camera placement, movement, editing, and storytelling are also covered in class lectures.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 3	
Level 3.1 (26 hours per week)	
3D Animation Production	4
Capstone Project or 2 Elective Modules #	8
Concept Development	4
Digital Post-Production	4
Fundamentals of Creative Professionals III	2
Interdisciplinary Studies (IS) elective ^	2
World Issues: A Singapore Perspective ^	2
Level 3.2 (22 hours per week)	

Internship or Studio-based Production	22

In the second year, students choose to specialise in either Character Animation or 3D Arts

CHARACTER ANIMATION SPECIALISATION **

- 2D Animation Production
- Acting for Animation
- Advanced 3D Character Animation
- Creature Animation

3D ARTS SPECIALISATION **

- 3D Character Rigging
- Advanced 3D Modelling
- Game Mechanic
- Texture & Shading

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