Bachelors in
Game Art and Animation

Duration 4 Years (8 Semesters)

160 Credits

Bachelors in Game Art and Animation

SEMESTER 1											
S. No	Course Code	Course Title	Periods per Week				Credits	Marks			End Exam
			L	T	P	Total		Int	Ext	Total	W/P/J
1		Drawing Fundamentals, I	1	0	3	4	4				P
2		Digital Art	0	0	4	4	4				P
3		Classical animation (2D Animation)	1	0	3	4	4				P
4		Design Fundamentals I	2	0	0	2	2				T
5		**English Comm. I**	2	0	0	2	2				T
6		Computer fundamentals	1	0	1	2	2				P
7		**Environmental Studies**	2	0	0	2	2				T
		Total	**9**	**0**	**11**	**20**	**20**				

SEMESTER 2											
S. No	Course Code	Course Title	Periods per Week				Credits	Marks			End Exam
			L	T	P	Total		Int	Ext	Total	W/P/J
1		Graphic Design	1	0	3	4	4				P
2		Digital Modeling	1	0	3	4	4				P
3		Animation I(Principles)	1	0	3	4	4				P
4		Design Fundamentals II	2	0	0	2	2				T
5		Drawing Fundamentals	0	0	2	2	2				P
6		**English Communication II**	2	0	0	2	2				T
7		**Indian Constitution**	2	0	0	2	2				T
		Total	**9**	**0**	**11**	**20**	**20**				

SEMESTER 3											
S. No	Course Code	Course Title	L	T	P	Total	Credits	Int	Ext	Total	End Exam W/P/J
1		Digital Sculpting	0	0	4	4	4				P
2		Hard Surface Modeling	0	0	4	4	4				P
3		Animation II	1	0	3	4	4				P
4		Rigging and Skinning I	0	0	2	2	2				P
5		Concept Art	0	0	2	2	2				P
6		Elective	0	0	1	1	2				P
7		MOOC	0	0	2	2	2				P
		Total	**3**	**0**	**16**	**19**	**20**				

SEMESTER 4											
S. No	Course Code	Course Title	L	T	P	Total	Credits	Int	Ext	Total	End Exam W/P/J
1		Organic Modelling, I	0	0	4	4	4				P
2		Environment Modelling, I	0	0	4	4	4				P
3		Body Mechanics	1	0	3	4	4				P
4		Rigging and Skinning II	0	0	2	2	2				P
5		Preproduction	0	0	2	2	2				P
6		Elective	0	0	2	2	2				P
7		MOOC	0	0	2	2	2				P
		Total	**1**	**0**	**19**	**20**	**20**				

SEMESTER 5											
S. No	Course Code	Course Title	Periods per Week				Credits	Marks			End Exam
			L	T	P	Total		Int	Ext	Total	W/P/J
1		Hard Surface Modelling II	1	0	3	4	4				P
2		Pantomime	0	0	4	4	4				P
3		Environment Modelling II	0	0	4	4	4				P
4		Body Mechanics II	0	0	2	2	2				P
5		Lighting and Rendering	0	0	2	2	2				P
6		Elective	1	0	1	2	2				P
7		MOOC	0	0	2	2	2				P
		Total	**2**	**0**	**18**	**20**	**20**				

SEMESTER 6											
S. No	Course Code	Course Title	Periods per Week				Credits	Marks			End Exam
			L	T	P	Total		Int	Ext	Total	W/P/J
1		Organic Modelling II	1	0	3	4	4				P
2		Facial Acting	0	0	4	4	4				P
3		Acting for Animation	1	0	3	4	4				P
4		Post Production	0	0	2	2	2				p
5		AR/VR	0	0	2	2	2				P
6		Elective	1	0	1	2	2				P
7		MOOC (Massive online open courses)	2	0	0	2	2				p
		Total	**6**	**0**	**14**	**20**	**20**				

SEMESTER 7												
S. No	**Course Code**	**Course Title**	**Periods per Week**				**Credits**	**Marks**			**End Exam**
			L	**T**	**P**	**Total**		**Int**	**Ext**	**Total**	**W/P/J**
1		Specialization Project	0	0	10	10	10				P/J
2		Animation Project Management	0	0	2	2	2				T
3		Portfolio development	0	0	8	8	8				P
		Total	**2**	**0**	**18**	**20**	**20**				

SEMESTER 8												
S. No	**Course Code**	**Course Title**	**Periods per Week**				**Credits**	**Marks**			**End Exam**
			L	**T**	**P**	**Total**		**Int**	**Ext**	**Total**	**W/P/J**
1		Internship	0	0	20	20	20				P/J
		Total	**0**	**0**	**20**	**20**	**20**				

Semester 1

Drawing Fundamentals 1		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module guides students through, Develop fundamental drawing skills using various types of lines, mastering the concept of contour drawing, exploring principles of shape and form in drawing, achieve depth and realism through shading techniques, utilize value and texture effectively in drawings, grasp the principles of perspective and proportion, apply composition techniques to create dynamic drawings, and engage in critical evaluation and discussion of artwork.

Indicative Content:

UNIT-1 Introduction to Drawing and Line
- Overview of different types of lines and their use in art
- Exercises in line quality and weight
- Introduction to the concept of contour drawing
- Basic exercises in contour drawing

UNIT-2 Shape and Form
- Introduction to the principles of shape and form in drawing
- Basic exercises in creating shapes and forms
- Exercises in shading and creating the illusion of depth

UNIT-3 Value and Texture
- Introduction to the use of value and texture in drawing
- Exercises in creating different types of texture
- Basic exercises in using value to create form and depth

UNIT-4 Perspective, Proportion, and Composition
- Introduction to the principles of perspective and proportion
- Basic exercises in one-point and two-point perspective
- Exercises in creating proportional figures and objects
- Introduction to the principles of composition in drawing
- Basic exercises in creating dynamic compositions
- Critique of student work and discussion of different approaches to drawing

OUTCOMES:

After successful completion of the module student shall be able to:

- Demonstrate an understanding of basic drawing tools and materials.
- Develop hand-eye coordination through basic drawing exercises.
- Create drawings that use different types of lines and shapes to convey form.
- Apply principles of perspective to create the illusion of depth.
- Execute principles of composition in drawing

Reading and Reference Materials:

- Drawing on the Right Side of the Brain by Betty Edwards

- Perspective Made Easy by Ernest Norling
- Anatomy for the Artist by Sarah Simblet
- Colour and Light: A Guide for the Realist Painter by James Gurney
- The Natural Way to Draw by Kimon Nicolaïdes

Assessment Mapping:

Assessment	Outcome-1 - 4	Outcome-5
Assignment	x	
Portfolio		x

Digital Art

Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module guides students through digital art creation with Photoshop. Starting with tool introduction and photo restoration, it progresses to advanced features such as blending modes, masking, and double exposure. The module also covers material study, hand-drawn exploration, and painting techniques for still life, portrait, and environment, providing a well-rounded skill set in digital art and painting.

Indicative Content:

UNIT-1 • Introduction Photoshop and its tools and interface • Photo restoration using Clone stamp and healing patch tools • How to create basic vector art using Photoshop tools
UNIT-2 • Understanding of FX blending modes and masking. • Double exposure and study of layers in Photoshop. • Photo manipulation.
UNIT-3 • Basic understanding of the material study • Hand-drawn study of basic materials on complex shapes. • Painting a still life keeping in mind lighting.
UNIT-4 • How to paint a portrait • How to paint an environment • Introduction to matte painting

OUTCOMES:

After successful completion of the module student shall be able to:

- How to create believable backgrounds for movies, games, and more.
- Understand light composition.
- Understand how to optimize a scene.
- Learn to create Digital Art using Photoshop
- Material study
- 2d matte painting
- Still Life

Suggested Reading/ References:

Digital Matte Guide Book.

Digital painting techniques.

Digital art masters Buy 3D total.

Painting tricks and techniques by Gary Tonge.

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	
Portfolio		x

Classical Animation

Sub Code:	Credits:	Duration:

Objective:

The Classical Animation course aims to provide students with a comprehensive understanding of fundamental animation principles through hands-on exercises. By the end of the course, students should be able to grasp the 12 Principles of Animation and apply this knowledge not only to traditional hand-drawn animation but also to the 3D animation medium. The course focuses on practical skills development, covering topics such as ball bounce with variations in weight, adding tails to animations, creating pendulum animations, and incorporating elements like arcs, overlap, and walk cycles. The ultimate goal is to equip students with the ability to use animation principles effectively, making their hand-drawn and 3D animations more convincing and entertaining.

Indicative Content:

UNIT-1
- Students will learn to bounce balls and understand the principles of stretch and squash.

- Students will learn a ball bounce with a different weight.

UNIT-2
- Students will learn ball bounce with a tail attached to it.
- Students will learn Pendulum animation and understand the principles of arcs and overlap.

UNIT-3
- Students will be learning lamp jumps along with the basics of walk cycles.

OUTCOMES:

After successful completion of the module student shall be able to:

- Understand sic fundamentals of 12 Principles of animation.
- How to use this fundamental knowledge for animation in 3D medium.
- How to use principles of animation to make the hand-drawn animation more convincing and entertaining.

Suggested Reading/ References:

1. Timing for Animation by Harold Whitaker
2. The Illusion of Life
3. Animation Survival Kit

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Design Fundamentals I		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

In this course, students will master fundamental visual elements, applying shapes, forms, colors, and textures in artistic expression. They will learn the impact of direction, position, space, and gravity on visual communication, acquiring practical skills in representation.

Additionally, color theory will be employed for effective communication. In the second unit, students will differentiate between organic and inorganic shapes, proficiently create basic 3D forms, and explore textures in both 2D and 3D contexts. The third unit focuses on grasping design principles for 2D and 3D compositions, applying elements for balanced compositions, exploring tessellation, transformations, and metamorphosis. Students will develop the ability to create values using black and white pigments and apply design principles such as repetition, structure, and contrast for creative expression..

Indicative Content:

UNIT-1 **Visual Elements & Communication 1** (Practical- Learning through Assignments)   • **Conceptual Elements** – Point, Line, Plane, Volume   • **Visual Elements-** Shape, Form, Size, Color, Texture   I. Direction, Position, Space and Gravity ● **Practical Elements** – Representation,   ii. **Perception of Color** –meaning, emotion and communication from everyday experiences. Color in Art and Design   • **Visual communication**- through Image & Text – Meaning and associations
UNIT-2 **Visual Elements & Communication 2** (Practical- Learning through Assignments)   • **Study of Shapes& Forms:** Types of Shapes- Study of Organic & Inorganic shapes -To study basic- 3Dimensional Forms- Study of Organic & Inorganic forms.   • To create Basic Geometrical forms such as Cube, Pyramid, Sphere, Cone, Cylinder etc. using different materials such as Clay, Plaster and paper boards, Wire, straw, sticks etc   • Study of Textures in 2D and 3 D.
UNIT-3 **Design Principles** in 2D and 3 D   • To study the Design Principles in 2D & 3D such as Balance, Harmony, Rhythm, Proportion, Scale, Unity, Dominance, Emphasis, Contrast, Movement and Space Using Design elements – such as Point, Line, Plane, Volume, Shape, Form, Size, Colour& Texture.   • To Create simple composition of Shapes and Forms in relation to Design using the above-mentioned principles and to study and work using tessellation, units and their shapes, transformations, and metamorphosis.   • To create values in Design using Black & White pigments   1. Repetition 2. Structure 3. Similarity 4. Gradation 5. Radiation 6. Anomaly 7. Contrast 8. Concentration 9. Texture 10 Space.

OUTCOMES:

After successful completion of the module student shall be able to:

- After completing this course students will be able to execute the design concepts using elements and principles of Design
- Students learn the design terminologies of their usage
- The course provides an end number of examples and references to know the ways of seeing from the simple to the complex world.

- Course also provides an opportunity to learn from the interdisciplinary domains
- This Course allows students to observe and study nature and culture and develop visual sensibilities, perceptual skills, analytical skills, and Representational skills.

Reading and Reference Materials:

Design Fundamentals—Elements, Attributes, & Principles: A Beginner's Guide to Graphic Communication

Design Elements, Colour Fundamentals: A Graphic Style Manual for Understanding How Colour Affects Design

Assessment Mapping:

Assessment	Outcome-1 - 2	Outcome-3 - 5	Overall
Assignment	x		
Presentation		x	
Case study			x

Computer Fundamentals		
Sub Code: xxxxxx	Credits:	Duration:

Objectives:

Develop a foundational understanding of computer basics, including hardware, software, input/output devices, storage, networking, and peripheral devices. Explore the distinction between system software and application software, and gain an introduction to popular operating systems, the student will acquire proficiency in Microsoft Office applications, including Word, Excel, and PowerPoint, covering document formatting, data analysis, and presentation design and understand the fundamentals of web technology, including HTML document structure, CSS layout, and multimedia integration. Students will explore the concepts of cloud computing, including service models, deployment models, and key providers. Gain insights into cyber security, identifying common threats and understanding network security. Explore emerging technologies such as augmented reality (AR), virtual reality (VR), and the Internet of Things (IoT). Understand the hardware, software, and applications associated with AR and VR. Gain insights into IoT devices, protocols, platforms, and security. Demonstrate understanding of the course content through practical application and assessment, preparing for further exploration in the field of technology.

Indicative Content:

UNIT I - COMPUTER BASICS Intro to Computers - Computer Applications - Computer Hardware - Input Devices - Output Devices - Storage Devices - Networking Components - Peripheral Devices. Software Overview - System software vs. Application software - Intro to Operating Systems - Functions of an OS - Popular OS.
UNIT II - MS OFFICE Overview of Microsoft Office - Alternatives - Intro to Microsoft Word - Formatting Documents - Document Structure - Advanced Formatting Features. Intro to Microsoft Excel - Data Entry and Formatting - Formulas and Functions - Data Analysis and Visualization. Intro to Microsoft PowerPoint - Slide Design and Formatting - Transitions and Animations - Presenter Tools.
UNIT III - WEB TECHNOLOGY Introduction to Web Technology - How Websites Work - Introduction to HTML - HTML Document Structure - Lists and Tables in HTML - Forms and Input Elements - Multimedia in HTML - Introduction to CSS - CSS Layout and Box Model - Styling Text and Fonts - Colors and Backgrounds.
UNIT IV - CLOUD COMPUTING AND CYBER SECURITY Overview of Cloud Computing - Cloud Service Models - Cloud Deployment Models - Key Cloud Providers - Introduction to Cybersecurity - Common Cybersecurity Threats - Network Security.
UNIT V - EMERGING TECHNOLOGIES Overview of Emerging Technologies - Introduction to Augmented Reality - AR Devices and Platforms - AR Applications - Introduction to Virtual Reality - VR Hardware and Software - VR Applications - Introduction to the Internet of Things - IoT Devices and Protocols - IoT Platforms and Security.

OUTCOMES:

After successful completion of the module student shall be able to:

1. Recall and identify fundamental computer concepts, including hardware, software, and peripherals.
2. Recognize input/output devices, storage components, and networking elements.
3. Understand the distinction between system and application software, and grasp operating system functions.
4. Familiarity with Microsoft Office applications, covering document formatting and presentation design.
5. Comprehend basics of web technology, including HTML, CSS, and multimedia integration.
6. Apply Microsoft Office knowledge to create and format documents, analyze data, and design presentations.
7. Apply HTML and CSS concepts to develop structured web pages.

8. Utilize cloud computing services and understand cybersecurity principles.
9. Explore emerging technologies like augmented reality, virtual reality, and the Internet of Things.

Reading and Reference Materials:

HTML & CSS, A Step-By-Step Guide for Beginners, By Daniel Bell

Office 2016 at Work For Dummies,By Faithe Wempen

Assessment Mapping:

Assessment	Outcome-1 - 7	Outcome-8 - 9	Overall
Assignment	x		
Presentation		x	
Test			x

Semester 2

Graphic Design		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module guides students through, exploring the history and significance of graphic design, **a**pply graphic design principles in contemporary settings, incorporate sketching and doodling techniques in graphic design, familiarize with essential graphic design tools and their applications, Students Discuss future trends in graphic design, including UI/UX and motion graphic, develop proficiency in color theory and its practical applications.

Students gain hands-on skills in raster graphics using Adobe Photoshop, create vector art and understand the principles of vector graphics, explore typography, masking, and other blend effects in design and understand elements and principles of good design, including layout techniques and branding strategies.

Indicative Content:

UNIT-1 Intro to Graphic Design
• The world's most famous graphic designer story.
• How to use their knowledge of graphic design into today's world.
• Use of sketching/doodling in graphic design Module Introduction
• Tools what we are going to cover
• Future of Graphic Design
• Use of graphic design in UI/UX, Motion graphic etc

UNIT-2 Colour Theory
• History of colour.
• Introduction to Pencil Colours
• How different brand will be useful to achieve a beautiful result.
• Use of different paper.
• Introduction to colour wheel
• Different types of Colour Harmonies, Cool and Warm colours
• Colour Psychology.
• Positivity and Negativity about different colours.

UNIT-3 Graphics.
Raster Graphics
• To introduce students to Adobe Photoshop. The aim of the module is to practically educate students on specific tools and functionalities within Photoshop relevant to Digital Art through practical exercises and assignments.
• Image Restoration (Understanding Clone and healing brushes to restore damaged photographs)
How to create vector art / polygon art using pen tool

• Photo manipulation, Image Editing, how to create buttons
Basic Tools introduction (pen tool, shape builder, selection and direct selection tool etc.
Vector Graphics
• Difference between vector and raster graphics
• How to create vector art using reference.
• Create an illustrator
• How to create a mandala
• Understanding of Typography
• Masking and another blend effect.
• How to make isometric design.
• How to create a logo using golden ratio and grid system
• How to create a branding

UNIT-4 Visual Communication
• Elements of Good Design (Line, Shape, Space, Value, Typography etc…)
• Principal of Good Design (Balance, Contrast, Figure and Ground, Alignment …)
• Grid System in logo Design and Other layout Techniques
• How to create personal branding and client branding

OUTCOMES:

After successful completion of the module student shall be able to:

- How to make presentation and branding
- Create illustration.
- Flyer and banner design.
- Creating brush and buttons.
- to optimize a scene.
- How to make presentation and branding
- How to create Logo design and other branding collateral.
- Use of Grid System in advertising.
- Different types of adverting materials

Suggested Reading/ References:

- Digital Masterclass
- Piximperfect – source you tube
- Illustrator by Densky
- Illustrator tutorial by GFX Mentor
- Everyday Design – Don Norman
- Grid System Raster Systems
- Logo Modernism

Assessment Mapping:

Assessment	Outcome-1 - 5	Outcome-6 - 9	Overall
Assignment	x	x	
Case Study		x	
Portfolio			x

3D Digital Modelling		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module aims to build a solid foundation in 3D digital modelling. Starting with tool and interface introduction, it progresses to creating complex assets using primitive tools and polygon modelling. The focus then shifts to developing soft skills, encompassing the creation of complex 3D models and unwrapping high-poly props. Finally, students learn UV mapping principles and apply them in modelling and unwrapping an interior scene filled with props.

Indicative Content:

UNIT-1: Introduction to 3D Digital Modelling Tools and Interface
• Introduction to tools and interface
• Create complex assets using multiple primitive tools like Spline, loft, lathe, etc.
• Understanding and creating Objects using primitive tools and polygon modelling

UNIT-2: Developing Soft Skills for 3D Modelling
• Understanding the tools and interface of the digital modelling software and developing the soft skills to create from a simple to a complex shape 3D model from the provided references.
• Creating a 3D Prop which is a little complex
• Unwrapping a high poly prop using major modelling tools

UNIT-3: UV Mapping and Interior Modelling
• Understanding UV layout, unwrap and, UV spreadsheet
• Modelling and unwrapping an interior filled with props using Polygons

OUTCOMES:

After successful completion of the module student shall be able to:

- Model any kind of lowpoly prop with certain constraints with UV mapping and textures.

- Model an interior filled with props using all tools with a few constraints.
- Lighting, rendering and render passes.

Suggested Reading/ References:

1. Blender 3D For Beginners: DananThilakanathan
2. 10 Minute Blender: John Think
3. Digital Modelling – William Vaughan

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Animation I		
Sub Code:	Credits:	Duration:

Objective:

The primary objective of the module is to learn the 3D software and to provide students with a solid foundation in animation principles and techniques in the 3D software. Through the structured units, students will learn the art of animating objects, starting with fundamental concepts such as stretch and squash in a bouncing ball. As they progress through the course, they will gain insights into handling different weights in ball animation, incorporating tails into their work, and creating more complex animations like pendulum movements with a focus on principles such as arcs and overlap

Indicative Content:

UNIT-1
- Students will learn bouncing ball and understand the principles of stretch and squash.   - Students will learn a ball bounce with a different weight.
UNIT-2
Students will learn ball bounce with a tail attached to it.

• Students will learn Pendulum animation and understand the principles of arcs and overlap.
UNIT-3   • Students will be learning lamp jump along with basics of walk cycles.

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding of basic Principles of animation
- Understanding of Personality variations through poses
- Understanding of how inanimate object can be animated

Suggested Reading/ References:

1. Complete Animation Course, Chris Patmore, Barrons Educational Series Inc,2015
2. The Art of DreamWorks Animation: Celebrating 20 Years of Art- Ramin Zahed (All)
3. Animation Survival Kit

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Design Fundamentals II

Sub Code: xxxxxx	Credits:	Duration:

Objective:

In this module, students will explore the influences of visual art, architecture, and the impact of print media, illustrations, and comics on sensory perception. They will also study the contributions of photography, cinema, television, and media to visual consciousness.

Students will delve into the complexity of 3D organic and inorganic forms, mastering the creation of designs using polyhedral structures. They'll gain insights into design principles related to form, space, and mass, exploring 3D concepts such as repetition, radiation,

gradation, similarity, concentration, contrast, and anomaly.In Design Principles in 2D and 3D, students will conduct a texture study in 3 dimensions, study color contrasts, and create color compositions, helping them grasp different schemes in 3-dimensional design projects.

Indicative Content:

UNIT-1 Visual Culture • Introduction to Visual Culture- Influences of Visual Art, Architecture. • Brief History of print media, illustrations, comics etc., and influences on our senses and impact on Visual Culture. • Study of photography, Cinema, Television and media impact on our visual consciousness contributing to Visual Culture.
UNIT-2 • To study complex / hybrid and fusion of 3Dimensional Organic & Inorganic forms. To learn to create designs using Polyhedral Structures and planes • To Study and develop knowledge of the principles of design in relationship to form, space and mass. Identify relationships in form. • To explore concepts in 3dimension such as Repetition, Radiations, Gradations, Similarity, Concentration, Contrast, Anomaly.
UNIT-3 Design Principles in 2D and 3 D • Texture study in 3 dimensions: To create natural and manmade textural surfaces on Clay, POP etc. • Study of Colour: To study the seven Colour contrasts (Hue, Light / Dark, Cold. Warm, Complementary Contrast, Simultaneous Contrast, Saturation, Extension). To study Subtractive and additive colours. • To create colour compositions using different colour schemes like; Colour Harmony / colour balance complementary, warm, cool etc.in 3-dimensional Design.

OUTCOMES:

After successful completion of the module student shall be able to:

- After completing this course students will be able to execute the design concepts using elements and principles of Design
- Understands the impact of Design on Society and Culture
- Able to understand and create Forms and shapes from Organic & Inorganic references from Life.
- Able to develop 3D concepts based on Design Principles
- Student able to learn and create new surface textures for relevant Design forms.

Reading and Reference Materials:

1. Design Fundamentals—Elements, Attributes, & Principles: A Beginner's Guide to Graphic Communication

2. Design Elements, Colour Fundamentals: A Graphic Style Manual for Understanding How Colour Affects Design

Assessment Mapping:

Assessment	Outcome-1 - 2	Outcome-3 - 5	Overall
Assignment	x		
Presentation		x	
Case study			x

Drawing Fundamentals II			
Sub Code: xxxxxx	Credits:		Duration:

Objectives:

This module guides students through exploring advanced perspective techniques for creating complex scenes and environments, to apply learned skills in exercises to effectively portray depth and dimension, help understand the principles of figure drawing, including capturing the human form and gesture. Engage in basic exercises to develop proficiency in figure drawing techniques, to explore various approaches to figure drawing to enhance artistic expression.

Students gain an introduction to the principles of color theory in the context of drawing by applying color theory concepts through exercises in creating palettes and conveying mood/emotion. Understand the principles of lighting and shadow in drawing, and practice creating dramatic lighting and shadows to enhance visual impact.

Indicative Content:

UNIT-1 Advanced Perspective • Further exploration of perspective techniques • Exercises in creating complex scenes and environments
UNIT-2 Figure Drawing • Introduction to the principles of figure drawing • Basic exercises in capturing the human form and gesture • Exploration of different approaches to figure drawing
UNIT-3 Colour Theory • Introduction to the principles of colour theory • Basic exercises in creating colour palettes and using colour to convey mood and emotion.
UNIT-4 Lighting and Shadow • Introduction to the principles of lighting and shadow in drawing • Exercises in creating dramatic lighting and shadows

• Discussion of the role of lighting and shadow in creating atmosphere	

UNIT-5 Final Project and Portfolio Review
- Students will complete a final project that demonstrates their understanding of the principles covered in the course
- Portfolio review and discussion of potential career paths in gaming and animation

OUTCOMES:

After successful completion of the module student shall be able to:

- Demonstrate advanced drawing skills, including sketching and gesture drawing
- Apply advanced principles of anatomy and prop   hand-drawn the human figure in different poses
- Use advanced shading techniques to create value and contrast in drawings
- Create visually compelling storyboards and narrative artwork
- Understand the principles of character design and concept art

Reading and Reference Materials:

- "Figure Drawing: Design and Invention" by Michael Hampton
- "The Artist's Complete Guide to Figure Drawing" by Anthony Ryder
- "Mastering Composition: Techniques and Principles to Dramatically Improve Your Painting" by Ian Roberts
- "Storyboards: Motion in Art" by Mark Simon
- "The Anatomy of Style: Figure Drawing Techniques" by Patrick J. Jones
- "The Skillful Huntsman: Visual Development of a Grimm Tale at Art Centre College of Design" by Scott Robertson, Khang Le, and Mike Yamada

Assessment Mapping:

Assessment	Outcome-1 - 5	Overall
Assignment	x	
Portfolio		x

Semester 3

Digital Sculpting		
Sub Code: xxxxxx	Credits:	Duration:

Objective :

This module aims to equip students with advanced digital sculpting skills. They will develop a comprehensive understanding of high-detail modelling, including hard surface and organic creature sculpting. Through practical sessions using tools like ZBrush and Mudbox, students will master anatomical studies, mesh flows, and face loops for character modelling. The focus extends to blocking organic forms, adding medium and fine details, retopology, and mastering unwrapping, polypainting, and texture map extraction techniques. By the end, students will be proficient in high-detail sculpting, employing industry-standard software tools for intricate 3D art creation.

Indicative Content:

UNIT-1 • Understanding of the concept of high detailed modelling • Understanding & sculpting hard surface models with its macro level detailing • Understanding sculpting of an organic creature with its prominent details.
UNIT-2 • Understanding usage of Zbrush and basics of sculpting • Anatomical Study for Character Modelling and Planning Mesh Flows / Face Loops
UNIT-3 • Blocking the Organic Form by Sculpting • Sculpting medium details and fine details and Retopology • Unwrapping, Polypainting and Texture Map Extractions
UNIT-4 • Introduction of Digital sculpting software tools like Pixologic Zbrush, Autodesk Mudbox. • Understand high detail sculpting and techniques relevant to cg art creation.

OUTCOMES:

After successful completion of the module student shall be able to:

- Be able to learn how to model low rez mesh in Zbrush
- Understanding of the concept of high detailed modelling.

- The generation of texture maps from high-detail models and understanding of their relevance to games.

Suggested Reading/ References:

1. Zbrush Character creation: Advanced Digital Sculpting
2. Digital Sculpting with Mudbox: Essential tools and techniques for artists

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Hard Surface Modeling

Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module guides students in creating high and low-poly vehicles with detailed maps, emphasizing error-free normal map usage. It includes the creation of combat vehicles with color, specular, and gloss textures, understanding and applying normal and AO maps on low-poly models, and mastering 3DSMax/Maya for hard surface props and game models.

Indicative Content:

UNIT-1 • Create both high-poly and low-poly versions of a vehicle, with the goal of creating normal, AO and specular maps. • Learn how to create error-free normal maps and use them on low-poly models. • Creating textures with object history.
UNIT-2 • Creation of a Combat vehicle. Research needs. Macro workflow and schedule. • Creating the color, Specular and Gloss texture. • Creating the high-resolution model and normal map.
UNIT-3 • Understanding of Normal and AOMaps • Using normal, AO and specular maps on a low-polymodel.
UNIT-4

> • Understanding the fundamentals of 3DSMax \ Maya
> • Applying the concepts learnt in creation of a hard surface prop and in game model

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding the approach of low poly and high poly modeling with details.
- Knowledge of texture baking using a cage.
- Understanding how to clean up and retouching the textures for final output, and common error's pertaining to textures baking.
- Understanding how to clean up and retouching the textures for final output.

Suggested Reading/ References:

1. Blender 3D 2.49 Architecture, Buildings, and Scenery – Allan Brito

2. Blender 3D Incredible Machines – Christopher Kuhn

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	
Portfolio		x

Animation II

Sub Code:	Credits:	Duration:

Objective:

By the end of the course, students are expected to have a strong grasp of the basic fundamentals of body dynamics, the ability to express personality through poses, and the technical know-how to animate inanimate objects. The overall objective is to prepare students for more advanced and intricate animation projects by honing their skills in both artistic expression and technical proficiency.

Indicative Content:

> **UNIT-1**
> • Helps students to understand the body dynamics at play while doing specific actions, such as Full Body Walk, Push and Pull.

UNIT-2
• Students will understand how to create strong poses with personality.
UNIT-3
• Students will be able to demonstrate technical understanding of constraints which will build a good foundation for upcoming modules.

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding of basic fundamentals of Body dynamics
- Understanding of Personality variations through poses
- Understanding of how inanimate objects can be animated

Suggested Reading/ References:

1. Complete Animation Course, Chris Patmore, Barrons Educational Series Inc,2015
2. The Art of DreamWorks Animation: Celebrating 20 Years of Art- Ramin Zahed (All)
3. Animation Survival Kit

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Rigging & Skinning I

Sub Code: xxxxxx	Credits:	Duration:

Objective:

The Rigging & Skinning I module is designed to provide students with a foundational understanding of character rigging and skinning techniques, focusing on setups for biped characters and introducing fundamental concepts for more complex rigging tasks. The course spans three units, covering key aspects of character rigging and skinning

Indicative Content:

UNIT-1

• Understanding of a character Rig setup, Skinning and painting weights along with creating a Global control. Also use and understand deformers and rigid binding. • Understanding Create Joint Setup & Controls for Cartoon Character • Understanding to Create an FK/IK Hand setup, Finger Control and have to create an IK Leg setup • Understanding Jaw and Eye Controls, Aim Constraints for eyes and a global control for the character.
UNIT-2 • Understanding Smooth Bind & Paint Weight the mesh to the Joints. This will attach the rig to the character mesh. • Understanding of component editor for skinning.
UNIT-3 • To understand Human IK. • Facial Rig setup and Facial Controllers

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding of placement of joint, and its Orientation, and FK/IK setup.
- Understanding Binding mesh with Joint and painting weight for proper skinning.
- Understanding complex facial rigs et up.

Suggested Reading/ References:

1. Learning Blender: A Hands-On Guide to Creating 3D Animated Characters – OliverVillar
2. Rig it Right! Maya Animation Rigging Concepts (Computers and People) by Tina O'Hailey (Author)
3. Body Language: Advanced 3D Character Rigging – EricAllen
4. The Art of Rigging (A Definitive Guide to Character Technical Direction with Alias Maya, Volume 1)   – Kiaran Ritchie

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Concept Art		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

Integrate fundamental principles, practical techniques and advance skills to master the art of visual storytelling and creating compelling imaginative worlds.

Indicative Content:

UNIT-1 Introduction to Concept art • Understanding purpose and importance of Concept art • Philosophy of art & Storytelling • Revisiting fundamentals of art • Shapes and silhouettes • Art-styles and Artists
UNIT-2 Tools & Techniques • Familiarising painting tools in Photoshop • Effects, Levels & Curves • Strokes, Shading & Hatching • File organisation
UNIT- 3 Conceptualization and Iteration • References to increase our visual library • Understanding Fantasy vs. Functionality • Thumbnails
UNIT- 4 Concept Art • Value studies • Photobashing • Materials, Lights and Shadows • Rendering

OUTCOMES:

After successful completion of the module student shall be able to:

- Accelerate creative thinking for concepts
- Understand visual elements and how they help in selling your ideas.
- Interpret design briefs effectively
- Understand pipelines and quick techniques to make art.
- Successfully translating ideas into polished industry standard concept art.

Reading and Reference Materials:

- Darek Zabrocki – First Sun (Gumroad)
- Adobe Live – Drawing characters and environments with Jonah Lobe (Youtube)

Assessment Mapping:

Assessment	Outcome-1 - 4	Outcome-5
Assignment	x	
Portfolio		x

Semester 4

Organic Modelling, I		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module guides students through the gaming pipeline, covering planning, base mesh blocking, high-poly sculpting, retopology, unwrapping, map baking, and finally, texturing and rendering. The objective is to equip students with advanced skills in game asset creation, fostering a comprehensive understanding of the entire process.

Indicative Content:

UNIT-1   • Understand Complete gaming pipeline.   • Planning (how to start and understand reference).
UNIT-2   • Blocking the base mesh.   • Sculpting highpoly Model with all details.
UNIT-3   • Retopo the highpoly model and Unwrap the mesh   • Bake all the necessary maps.
UNIT-4   • Texturing and rendering

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding the study and importance of basic human anatomy.
- Understanding the concept and implications of line for a character model.
- Understanding of the animal anatomy and sculpting all details.
- Able to pose in zbrush and render for a good presentation.

Suggested Reading/ References:

- Anatomy for 3D sculptors
- Essential skills in organic modelling by Nicholas B Zeman
- ZBrush character sculpting

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	
Portfolio		x

3D Environments I

Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module guides students in creating game environments by collecting references, blocking base models, adding details, unwrapping, and applying textures. It further introduces Unreal Engine for project setup, asset importation, and material creation, concluding with the application of lighting and rendering techniques to enhance the visual appeal of the environments.

Indicative Content:

UNIT-1
• Collect Reference And creating a mood board to have a broader aspect of what to create.
• Block out the base model and check scale.

UNIT-2
• Add details to the basic block of the environment which was created with the use of reference
  and unwrap the same.
• Export the unwrapped file to either Substance or Photoshop for texturing.

UNIT-3
• Introduction to Unreal engine
• Setup project and import all assets.
• Create and apply materials.

UNIT-4
• Applying Lighting and rendering

OUTCOMES:

After successful completion of the module student shall be able to:

- Learn to create a simple Game environment, and render it in unreal engine
- Learn about lighting and rendering in Unreal engine
- Different types of materials

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Body Mechanics I

Sub Code:	Credits:	Duration: 6 weeks

Objective:

The outcomes of the course include a deep understanding of both basic and in-depth body dynamics, the ability to identify the transfer of weight in biped characters, knowledge of using props and weapons for game cycles, and the practical skill of performing action as live reference for animation assignments. By the end of the course, students should be well-

equipped to tackle complex character animations with a focus on realistic and dynamic body mechanics.

Indicative Content:

UNIT-1 • Learning how to break-down an animation into golden and key-poses. Creating in-between frames from the key poses and complete the animation. • Understand how to balance weight, the body dynamics behind lifting a heavy object, and throwing the object.
UNIT-2 • Helping understand how to break down loop able actions. Students also need to make sure that the animation and poses are valid from all points of view. • Strengthen knowledge on posing and breaking down animation.
UNIT-3 • To reinforce the fundamentals of Body dynamics the concept of weight but with the help of their live video reference. • To understand the body dynamics at play while doing specific actions, such as simple Lifting a heavy object, and throwing an object, jump cycle, Idle, or run cycle (for gaming)

OUTCOMES:

After successful completion of the module student shall be able to:

- Understand basic and in-depth fundamentals of body dynamics.
- How to identify transfer of weight in biped.
- Understand usages of props and weapons for game cycles.
- Performance Acting as live reference for the animation assignment.

Suggested Reading/ References:

1. Complete Animation Course, Chris Patmore, Barrons Educational Series Inc,2015
2. The Art of DreamWorks Animation: Celebrating 20 Years of Art- Ramin Zahed (All)
3. Animation Survival Kit

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	
Portfolio		x

Rigging & Skinning II		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

The objective of the module include a thorough understanding of joint placement, orientation, and FK/IK setups, proficiency in binding the mesh with joints and painting weights for proper skinning, and the ability to create complex setups such as spine setups for flying characters and GUI for facial controls. By the end of the course, students should be well-equipped to handle intricate character rigging and skinning tasks for a variety of character designs.

Indicative Content:

UNIT-1
• Understanding of a character Rig setup, Skinning and painting weights along with creating a Global control. Also use and understand deformers and rigid binding. • Understanding Create Joint Setup & Controls for Quadruped and creatures • Understanding to Create an FK/IK Hand setup, • Understanding tail Controls (Dynamic), Aim Constraints for eyes and a global control for the character.
UNIT-2
• Understanding Smooth Bind & Paint Weight the mesh to the Joints. This will attach the rig to the character mesh. • Understanding of component editor for skinning.
UNIT-3
• To understand Human IK. • Facial Rig setup and Facial Controllers

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding of placement of joint, and its Orientation, and FK/IK setup.
- Understanding Binding mesh with Joint and painting weight for proper skinning.
- Understanding how to Create a Spine Setup for flying character and GUI for face.

Suggested Reading/ References:

1. Learning Blender: A Hands-On Guide to Creating 3D Animated Characters – OliverVillar
2. Rig it Right! Maya Animation Rigging Concepts (Computers and People) by Tina O'Hailey (Author)
3. Body Language: Advanced 3D Character Rigging – EricAllen
4. The Art of Rigging (A Definitive Guide to Character Technical Direction with Alias Maya, Volume 1)   – Kiaran Ritchie

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Preproduction

Sub Code: xxxxxx	Credits:	Duration:

Objective:

The objective of the Preproduction module is to empower students with essential skills for animation preproduction. Through in-depth exploration of screenwriting, concept art, storyboarding, character design, and layout, students will master the nuances of crafting engaging scripts, creating captivating visuals, and designing effective storyboards. The course aims to cultivate a practical understanding of industry standards, enabling students to contribute proficiently to the animation preproduction phase. By the end, students will possess the theoretical knowledge and practical expertise necessary for success in key facets of animation development, positioning them as adept professionals ready for the challenges of the industry.

Indicative Content:

UNIT-1 Screen Writing • Anatomy of a Script, Script Elements and Scene Heading, Action, Characters. Dialogue - Parenthetical - Extension - Transition - Shots - Page Breaking, Finer Points, Dual Dialogue Reading Scripts from Popular Television Shows and Animation Films.
UNIT-2 Concept Art and Story Sketches • Research - Period - Historic / Scientific facts, Society Costumes Props, Food etc. Illustration, Anatomy, rendering your drawings, Techniques and styles, Inking – Graphic styles, Text – as image, Page Elements and Composition, Projecting figures in Deep space, Framing and Composition, Perspective and Camera.
UNIT-3 Story Board • Advantages of Storyboard in Animation, Anatomy of a Storyboard, Thumbnail Storyboard, Preparing Storyboards using Digital software. Advanced Storyboard Techniques, Various Camera Shots and Camera Moves and their meaning, Transitions, Aspects of the story board.
UNIT-4 Character Design, Layout Design.

Character Visualization, Character Bible, Stereotypes, Developing Character for Comics, Films and TV Episode. Elements of Character Design Creating Characters from Life Anthropomorphism, Definition and meaning, Use of Anthropomorphic Characters in Modern Literature, Films and Television, Theo Morphs and Pathetic Fallacy Introduction to Layout, importance of layout in Animation, Perspective- one point, two-point, three point, Warped, Schematics Projection, Cinematic Camera Angles. Preparing/Posing Layouts, Aspect Ratio, field guides, Schematic mapping, Camera Movements

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding Script, Script Elements and Scene Heading, Action, Characters. Dialogue.
- Understanding Page Elements and Composition, Projecting figures in Deep space, Framing and Composition, Perspective and Camera.
- Understanding how to Create a Storyboard in Animation, Anatomy of a Storyboard, Thumbnail Storyboard.

Suggested Reading/ References:

1. The Animation Bible: A Practical Guide to the Art of Animating from Flipbooks to Flash [Paperback], Maureen Furniss
2. Drawn to Life: 20 Golden Years of Disney Master Classes: Volume 1: The Walt Stanchfield Lectures [Paperback], Walt Stanchfield
3. Facial Expressions: A Visual Reference for Artists, Mark Simon, Publisher: Watson Guptill, ISBN-10: 0823016714, ISBN-13: 978-0823016716   – Kiaran Ritchie

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Semester 5

Hard Surface Modelling II		
Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module instructs students in a holistic 3D modeling and texturing workflow. Starting with reference collection and base model blocking, it progresses to detailed model creation and high-poly versions. The module then covers the texturing process with the use of maps and concludes with practical application in a game development setting, including project setup, material creation, and lighting/rendering techniques.

Indicative Content:

UNIT-1
• Collect Reference And creating a mood board to have a broader aspect of what to create.
• Block out the base model and check scale.
UNIT-2
• Add details to the basic block of the model which was created with the use of reference.
• Create a highpoly version based of the low poly
UNIT-3
• Export the unwrapped file to either Substance or Photoshop for texturing.
• Baking and Texturing Using normal, AO and specular maps on a low-polymodel.
UNIT-4
• Setup project and import all assets.
• Create and apply materials.
• Applying Lighting and rendering

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding how to create a complex mech or war machine
- Understanding how create highpoly
- Understanding the Baking and Texturing procedure

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Pantomime		
Sub Code:	Credits:	Duration:

Objective:

The Pantomime course is designed to provide students with a focused exploration of acting in animation, emphasizing body mechanics and gestures without the complexity of facial animation and lip-sync. Through the units, the course aims to equip students with the fundamental skills needed for expressive character animation through body language.

Indicative Content:

UNIT-1
• The Pantomime module is a good launch pad for acting in animation where they do not have to
deal with the details of facial animation and lip-sync. Students will focus more on body mechanics
before they go on too much complex modules later on.
•Pantomime is a dramatic act, of mime, in which performers express meaning through gestures.
More focus will be given to the body mechanics and gestures of the character.

UNIT-2
• Students will learn the technique of conveying emotions, actions, feelings, etc., by gestures without speech, so all acting is done through the body of the character while staying away from emotion which adds another level of complexity.

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding body language.
- Clear understanding of body mechanics.
- Convey emotion through gestures.

Suggested Reading/ References:

1. Cartoon Animation - Preston Blair
2. Character Animation Crash Course – Eric Goldberg

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

3D Environments II		
Sub Code:	Credits:	Duration:

Objective:

This module aims to equip students with skills in creating modular environments for games. It covers reference collection, base model blocking, and identification of modular parts. Students learn to create both modular and non-modular elements, plan for trim sheets, and export files for texturing. The final units focus on project setup, asset importation, material application, and lighting/rendering techniques tailored to modular and non-modular parts in the Unreal Engine.

Indicative Content:

UNIT-1 • Collect Reference And create a mood board to have a broader aspect of what to create. • Block out the base model and check the scale. • Identify the modular parts
UNIT-2 • Create modular and non-modular parts. • Planning for trim sheets and unique textures • Export the unwrapped file to either Substance or Photoshop for texturing.
UNIT-3 • Setup project and import all assets to the Unreal engine • Create and apply materials. • Set up the environment.
UNIT-4 • Applying Lighting and rendering of the modular and non-modular parts

OUTCOMES:

After successful completion of the module student shall be able to:

- Learn to create a complex Game level, and render it in an unreal engine
- Use of trim sheets
- Use of modular asset
- complex materials

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	

Portfolio		x

Body mechanics II		
Sub Code:	Credits:	Duration:

Objective:

Overall, the module aims to equip students with advanced animation skills, particularly in portraying realistic character movements.

Indicative Content:

UNIT-1 • To understand how to balance weight, and to understand the body dynamics behind a combat and idle animation, with the help of a reference • To help reinforce the fundamentals of Body dynamics and the concept of weight with the help of live video references and books.
UNIT-2 • Before animating a character, one should know about the character's behaviour which generally comprises of. • Knowing every detail of your character will help you spot small nuances while animating the character. • A small change in gesture will speak a lot about the character's actions. • Keeping an action pose in mind while drawing will help in knowing the body dynamics and then it becomes easier for the animator to know how the body of the characters behaves.
UNIT-3 • Understanding facial expression change for a dialogue animation. • **OLLIE JOHNSTON NOTES – "Twelve Rules for Facial Expression"**

OUTCOMES:

After successful completion of the module student shall be able to:

- Understand the purpose of weight in athletic, and fast body motion.
- Understand the purpose of expressing emotion through the body.
- Understand the purpose of facial muscles and the tips and tricks to use them.
- Performance Acting as a live reference for the animation assignment.

Suggested Reading/ References:

1. Simplified Drawing for Planning Animation – WayneGilbert
2. Complete Animation Course, Chris Patmore, Barrons Educational Series Inc,2015
3. Blender 2.5 Character Animation Cookbook – VirgilioVasconcelos
4. https://thinkinganimation.com/twelve-rules-facial-expression/

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	
Portfolio		x

Lighting and Rendering		
Sub Code:	Credits:	Duration: 4 weeks

Objective:

The Lighting and Rendering course aims to provide students with a comprehensive understanding and practical skills in the art and science of lighting and rendering for computer-generated environments. Over a four-week duration, the course delves into the fundamentals of lighting, covering topics such as direct light source setup, modification of lights using the Light Editor, shadow adjustments, and referencing lighting techniques in Maya.

Indicative Content:

UNIT-1
- Basics of Lighting
- Set up a direct light source
- Create, group, and modify lights in your scene with the Light Editor
- Adjust lighting
- Shadow in Maya
- Lighting Reference

UNIT-2
- Setup and real-world lighting
- Creature portrait lighting, part 1
- Beauty lighting for cg product shots, part 1
- Environmental lighting for action shots, part 1

OUTCOMES:

After successful completion of the module student shall be able to:

- Lighting any type of CG Environment
- Learn how to render and use different passes
- How to composite the scene with render passes

Suggested Reading/ References:

1. *Digital lighting and rendering.*
2. Light for Visual Artists, 2nd edition
3. Light science and magic 5th edition.

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Semester 6

Organic Modelling II

Sub Code: xxxxxx	Credits:	Duration:

Objective:

This module guides students through the realistic character creation process in gaming. Starting with an understanding of the gaming pipeline and planning, it progresses to practical aspects such as blocking the base mesh, sculpting high-poly models, and optimizing through retopology and unwrapping. The module concludes with hands-on experience in projection textures, texturing, and rendering techniques, ensuring students can produce lifelike characters for gaming environments.

Indicative Content:

UNIT-1
• Understand the Complete gaming pipeline for the realistic character.
• Planning (how to start and understand the reference).
UNIT-2
• Blocking the base mesh.

• Sculpting high poly Model with all details.
UNIT-3   • Retopo the high poly model and Unwrap the mesh   • Bake all the necessary maps.
UNIT-4   • Projection textures   • Texturing and rendering

OUTCOMES:

After successful completion of the module student shall be able to:

- Create a complex realistic game ready character
- Learn the posing technique
- Rendering using Arnold and displacement map

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall
Assignment	x	
Portfolio		x

Facial Acting

Sub Code:	Credits:	Duration:

Objective:

The Facial Acting module aims to provide students with a comprehensive understanding of animating facial expressions and lip-syncing. Spanning two units, the course focuses on breaking down facial anatomy, identifying muscles associated with expressions, and refining the animation process to create impactful and realistic character performances.

Indicative Content:

UNIT-1   • Learn different parts of the face.   • Identifying different muscles associated with making an expression.   • Learn how to perform lip-syncing
UNIT-2   • How to set up a face library for expression change, and mouth shapes.   • Refining Blocking for expression change, and mouth shapes.

| • Polish, correct the animation. |
| • One planned single-character shot with audio. |
| • This will also be a key exercise on how to introduce your shot to a Supervisor/Director before playing a shot to them. |

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding how to lip-sync is done.
- Clear planning of shots from start to finish.
- Experiment and understand camera angles.
- Improvement in performance acting with the help of a rigged character.

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	
Portfolio		x

Acting for Animation				
Sub Code:		Credits:		Duration:

Objective:

The objective of the module include a thorough understanding of lip-syncing techniques, clear planning and execution of shots, setting up shots to production studio levels, and improvement in performance acting using rigged characters. By the end of the course, students should be well-prepared to create dynamic and engaging character animations that effectively convey emotions and interactions.

Indicative Content:

UNIT-1 • Learn how to perform lip-syncing. • Identifying good audio for animation. Prepare a storyboard, capture live acting, and assemble the set. Set the animation frame rate, screen resolution, and camera settings. • Acting theories (how to empower animators to become character animators)
UNIT-2 • How to set up effective camera angles appropriate to the short. The animation has to match the camera angle in the captured video performance. Block character animation • Refining Blocking and animating the characters. • Polish, correct the animation. • One planned single-character shot with audio (eg, monologue)
UNIT-3 • Types of nonverbal communication in which physical behaviours, as opposed to words, are used to express or convey information. • Different perspectives and a point of view of an Animation Supervisor/Director on how a shot should be approached. • This will also be a key exercise on how to introduce your shot to a Supervisor/Director before playing a shot to them. • One planned double-character shot with audio (dialogue showing acting and reacting between two characters)

OUTCOMES:

After successful completion of the module student shall be able to:

- Understanding how to lip-sync is done.
- Clear planning of shots from start to finish.
- Setting up a shot to production studio level.
- Improvement in performance acting with the help of a rigged character.

Suggested Reading/ References:

1. Directing the Story: Professional Storytelling and Storyboarding Techniques for Live Action and Animation by Francis Glebas
2. The Animation Book: A Complete Guide to Animated Filmmaking-From Flip-Books to Sound Cartoons to 3-D Animation" by Kit Laybourne.
3. Acting for Animators: 4th Edition Introducing Autodesk Maya
4. Cartoon Character Animation with Maya: Mastering the Art of Exaggerated Animation

Assessment Mapping:

Assessment	Outcome-1 - 4	Overall
Assignment	x	

Portfolio		x

Post-production

Sub Code: xxxxxx	Credits:	Duration:

Objective:

The Post-production course aims to empower students with comprehensive skills in the dynamic field of post-production, covering essential aspects such as compositing, color correction, 2D and 3D animation, tracking, expressions, rendering, and advanced video editing techniques. Over the course duration, students will explore industry-standard tools and software, gaining proficiency in Adobe After Effects and Adobe Premiere Pro

Indicative Content:

UNIT-1 Introduction to Compositing
• Introduction to motion graphics - Video montage Video Titling Logo Animation. Visual Effects (VFX) and other applications. Introduction to Adobe After Effects - History of VFX. Planning and documentation for VFX. -Understanding the workspace - Project window- Project Settings New Composition. Composition Settings. Nesting Compositions in a single file, Timeline Layering concept in After Effects, Adding Composition and Footage to Timeline, Timeline Options-Work Area, Current Time/Framerate - Extra Switches. Monitor. Magnification. Safe Frame. Editing in Monitor Window (Setting In/Out Points) Taking Snapshot. Loading Last Snapshot. Colour Channels. Resolution (Down Sampling Factor) Region of Interest. Toggle Transparency - Wireframe Mode - 3d View Popup -Pixel Aspect ratio correction.

UNIT-2 Compositing in 2D and 3D, Chroma, Paint and Rotoscope,
• Animating Images and Text to Sound. To learn how to animate images and text Footage Options in Timeline Effects, Transform Position Scale Rotate, Anchor Point, Opacity Adding Keys Adjusting Keys, setting in and Out point for the footage, Adjusting Speed of the Animation, Parenting Layers, Creating Layers Solid Text Light Camera. Null Object, Adjustment Layer, Blending Modes, Sound Breakdown - Masking. To understand Masking, Masking / Alpha Channel, Interpolation - Compositing in 2D Space: Creating Composites in 2D Space, Creating multiple composites with sound, Creating multiple composites using video with alpha channel, Using Null and Adjustment Layer - Compositing in 3D Space, Understanding 3d Environment in After Effects, Camera Light Coordinates, Animating Footage in 3d space, Creating Multiple Composites in 3d space, Advanced Lighting Shadows, Environmental Lighting, Advanced Camera, Depth of field, Camera Shake, Compositing in 3D Space, To understand 3D post and Z- Depth, Importing 3d data into After Effects, Applying Filters

UNIT-3 Colour, Camera and Tracking, Expressions and Rendering
• Stabilization/Colour Correction. Colour manipulation tools, Filters, Colour Manipulation using Blending Mode, and Layer Blending. Advanced Colour Correction Creating Mood for the scene Tinting Footage, Exposure Adjustments, Brightness, and Contrast. Learning to stabilize camera shake and jitter, Analysing Footage for a shake, Using stabilize option - Camera Tracking: Tracking Concept, using footage elements in tracking, 2D Tracking, Using the Data of Tracking. 3D Tracking, Constraints of 3D Tracking, Using the Data of Tracking, Advanced Tracking Techniques.
Using Expression in After Effects, Advantages of Using Expressions Wiggle Script, Controlling the animation of objects using a script, Advanced Expression for animation - Rendering: Exporting video Clips, Exporting Single Frame of the animation, Exporting part of the animation. Batch rendering, Creating Batch Render.

UNIT-4 The Concept of Editing, Classic rules of film cutting & EDITING TECHNIQUES.
Introduction Short History of Video Editing Technology, Slice and Splice, Electronic Editing, Digital Editing, Time code Editing, Computerized video editing, Small Format Editing, Nonlinear and Digital Effect Editing, Basis of Digital editing process, Time codes, SMPTE, Non-linear editing, Online editing.
Editing Process and Tools - Offline editing, EDL, on-air editing, Formats, Analog Video Format, Digital Video Format, Editing Tools, Dedicated editing machines, Smoke, Quantal, FCP, and Avid Software-based Editing Solutions.
Digital Editing Techniques, Editing with Adobe Premiere - Introduction, Setup, Interface, capturing media in Premiere Pro, organizing your media, Monitors, Editing - Effects, Adobe Title Designer, Working with Audio, Exporting, Editing Exercises, Music videos, Promos, Commercials, Trailer, Sound Editing Using Adobe Sound Booth.

SOUND EFFECTS MUSIC AND FOLEYS – Dialogue. Dialogue writing. Recording of dialogue, The spoken language Dialect, and Accent. Voice acting/ modulation. Cast, Scratch Audio Track, Shooting the Storyboard, Slugging the Storyboard, Animatics.

OUTCOMES:

After successful completion of the module student shall be able to:

- Familiarize the tools and techniques to create standard VFX shots
- Learn Problem-solving techniques to rectify the errors during compositing.
- Create content for broadcast, feature film, and web animation.

Suggested Reading/ References:

1. Digital Lighting & Rendering, Second Edition by Jeremy Birn
2. Lighting and Rendering in Maya: Lights and Shadows by Jeremy Birn
3. Compositing Digital Images, T. Porter and T. Duff, Proceedings of SIGGRAPH '84, 18 (1984) 4 The Art and Science of Digital Compositing, Ron Brinkmann

Assessment Mapping:

Assessment	Outcome-1 - 3	Overall

Assignment	x	
Portfolio		x

Intro To AR/VR		
Sub Code: xxxxxx	Credits:	Duration:

Objectives:

The AR/VR course aims to empower students with proficiency in using a game engine, focusing on Unity, to gain familiarity with essential features, such as the camera, editor overview, and Unity UI, acquire skills in basic transformations like move, rotate, and scale within the Unity environment. To explore visual scripting techniques for game development, apply knowledge to develop virtual reality applications using Unity for various hardware platforms (Google Cardboard, Oculus, HTC Vive, PS VR) and to explore augmented reality (AR) app development using Unity for handheld devices, covering both marker-less and marker-based AR.

Indicative Content:

UNIT-1
- Game Engine
- Camera
- Overview of the editor
- Unity UI
- Move, Rotate, and Scale
- Visual scripting.

UNIT-2
- Virtual reality App development using unity IF we have hardware (Google Cardboard, Oculus, HTC Vive, PS_VR)

UNIT-3
- AR App development using unity for handheld devices (marker less, marker-based)

OUTCOMES:

After successful completion of the module student shall be able to:

- Familiarize with Unity Editor and Visual scripting.
- Move, Rotate and Scale Objects.
- Build a Menu system using Unity UI.
- Develop an AR application.
- Develop a VR application.

Suggested Reading/ References:

Unity Cookbook.

Assessment Mapping:

Assessment	Outcome-1 - 3	Outcome-4 - 5	Overall
Assignment	x	x	
Case study		x	
Portfolio			x