Bharathiar University- Coimbatore -46
School of Distance Education (SDE)

Diploma in Animation & VFX
(For the SDE students admitted from the academic year 2014-15 & onwards)

Course Duration : 3 years
Eligibility : 10th pass

Scheme of Examinations (Annual Pattern)

Duration of Exam: Theory – 3 hours practical- 3 hours   Max marks: Theory -25   Practical – 75
                                                               Min pass Marks: Theory 10 Practical-30

First Year

S.No	Subject	Theory	Practical	Total Marks
1.1	Organic and Inorganic Art	25	75	100
1.2	History of Art	25	75	100
1.3	Graphic Designing	25	75	100
1.4	Script Writing	25	75	100
1.5	Basics of Photography	25	75	100

Second year

S.No	Subject	Theory	Practical	Total Marks
2.1	2D Animation & Web Designing	25	75	100
2.2	Fundamental of 3D Modeling	25	75	100
2.3	Texturing, Lighting & Rendering	25	75	100
2.4	Fundamental of Rigging	25	75	100
2.5	Fundamental of Animation	25	75	100

Third year

S.No	Subject	Theory	Practical	Total Marks
3.1	Fundamental of Editing	25	75	100
3.2	Fundamental of Compositing	25	75	100
3.3	3D Interactive Basics	25	75	100
3.4	Game environment	25	75	100
3.5	Project (Animation& Interactive media)	-	-	100*
	TOTAL MARKS			1500

*For Project - Project Evaluation: 80% Marks, Viva Voce: 20% Marks

1st YEAR

PAPER 1.1: ORGANIC AND INORGANIC ART

Unit - I

        Man made Drawing-Philosophy of art – Modern art - Intro to art & tools - Circles – Squares – Triangles – Rectangles, Handling, Tonal values-shadings-lightings-shadings, Human anatomy – Muscles - Live model study – Skeletal forms-Birds & animal study – The Crystal Interface in Contemporary art: Metaphors of organic and inorganic..

Unit - II

        Drawing and painting -Intro to Painting & Color mixing-Still life Organic drawing-Still life (Inorganic) drawing & painting-Cloth Studies – Geometrical Object Studies-Watercolour- Color mixing-Flower and Fruit drawing and shading – Principles of Composition: Proportion – Rhythm – Dominance – Harmony – Unity - Balance.

Unit - III

        Outdoor Study-2D Composition &Memory Drawing -perspective drawing-Landscape painting-Outdoor drawing and painting-Indoor drawing and painting-BG Designing-drawing and painting-BG Designing for 3D.

Unit - IV

        Preproduction-Story Concepts-Story Writing-Intro to storyboard-camera angles- Character design – Visual impact-BG & layout Design-Script writing & Development- Storyboard-Animatics-Posing and Movement.

Unit - V

        Sketching Portrait-Art & craft, Clay modeling- Portraits, Modeling Methods, Clay modeling- Character modeling - Mask making - Set designing – Painting - Paper Art -Junk Art – Organic Clay Modeling Sculpture – Sculpting for Traditional Clay Modeling.

REFERENCE:
1. Story boarding the Simpsons way - Chris roman
2. How to Draw Anime & Game Characters - Tadashi Ozawa
3. Perspective - A Guide for Artists, Architects and Designers - Gwen White
4. How to draw Portrait Drawing A Step-By-Step Art Instruction Book (2005) - Watson-Guptill
5. Perspective Drawing Handbook - Joseph D'Amelio

PAPER 1.2: HISTORY OF ART

Unit – I

History of Indian art -Art history-Ancient art- Art by region - Centuries in art - Islamic ascendancy- Indian fresco- Contemporary art- Indian architecture- Indian painting and its various genres - Memory Drawing – Cultural Studies.

Unit - II

History of Western Art - Ancient Classical art - Medieval- Renaissance - Early Renaissance - High Renaissance – Mannerism – Baroque – Rococo - Modern art – Applied Arts: Ceramics – Printmaking – textiles and Fibre Arts

Unit - III

History of Contemporary Art- Abstract Expressionism-Computer art- Conceptual art- Minimalism- Neo-Dada- Pop Art- Post minimalism- Installation art- Photorealism- Graffiti Art – Artistic and Historical Orgins.

Unit - IV

Color theory -Color theory-about colors-RGB-RYB-CMYK-primary colors-secondary colors-tertiary colors-rays colors-Ink colors-tint-shades

Unit - V

Color Practical-color mixing-color making-applying colors-Secondary color mixing- tertiary color mixing-making- color wheel-define colors-cool colors-Warm colors Color tint & Shades (P)about tint and shades- making tints-making shades about black and white

REFERENCE:
1. The Animator's Workbook - Antony white
2. Water colour Landscape - David Bellamy

PAPER 1.3: GRAPHIC DESIGNING

Unit - I

Introduction to Photoshop - Interface overview -Tools & Techniques- About Menu bar and Panels - Resolution- Color mode

Unit - II

Color Correction (Auto Levels, Contrast, and Colors-Hue saturation adjustments-make duotone and sepiatone-Replacing color- background effect) - Black& white coloring (Pen tool,Create New layer and Adjustments)- Retouching (Patch tool, Clone tool, Healing Brush, Red Eye Tool and Blur) .

Unit - III

Layer Blends-Using the Styles Panel- Creating Custom Layer Styles - Smart Filters - Sharpen and Blurs-Noise Filter - Filter Gallery - Liquify Filter - Pen Tool- Pen Tool to Create Paths - Understanding paths - Clicking and dragging your way down the path of knowledge-A closer look at the Paths panel .

Unit - IV

   Masking-The mask-related selection commands - Editing an alpha channel- Working in Quick Mask mode-Masking with vector paths- Tracing(Pen tool- Selection-Fill and Storke)

Unit - V

Collage- Poster Design - Rules in poster design- Poster Layout Design -Typing the Text In Poster Layout - Add Title - Create Matte painting in Photoshop (Sketch - Masking - Adjustments and painting tools)

REFERENCE:

1. Photoshop book for Digital Photographers - Scott Kelby
2. The Technique of Film and Video Editing, Fourth Edition: History, Theory, and Practice - Ken Dancyger

PAPER 1.4: SCRIPT WRITING

Unit I Basics of Scriptwriting
Structure of script Units of Time, A, B and C Plots-Screenplay Nomenclature-Treatment-
Plot-Character-Script Form-Writing Scripts for Television News-Minutes and Seconds-
Script Form-Writing Documentaries-PSAs-Promos and Ads-Important Vocabulary

Unit II Formats of Script
Features-Documentaries- Educational Programmes- Short films-Fiction-Non-Fictions-Time
Chunks-Children Programmes-Women Programmes-Writing for special audience-
farmers and youth.

Unit III Concept and Story Idea
Idea: What makes a good concept-Idea for television-Character for your story-Create obstacles and Dramatic points in the story-Plots-Its importance-twist in plots-Story elements-Characters- How to create interesting characters-elements of Teleplay.

Unit IV Scenes and Dialogues
Scene: What is a scene-Types of scenes-Breaking Individual tracks into scenes- The filler scene and target Audience consideration-Dialogue-Importance of dialogues- Dialogues for different genres-Preparation of shooting script-Story board writing.

Unit V Presentation Techniques
Who are you talking to- Pace problems-Making sense of intonation-Script problem-Breath
Support and resonance-Are you sitting comfortably-Learning to love microphone-Getting
your breath-Being conversational-Language and Perform

References
1. Jan Johnson Yopp and Katherine C. McAdams, Reaching Audiences: A Guide to Media Writing, 2002
2. Antony Friedman, Writing for Visual Media, Focal Press, April 2001

PAPER 1.5: BASICS OF PHOTOGRAPHY

Unit I: Camera
Over view on Photography – Shutter – Aperture – Depth of field – Major type of camera –
Photo journalism – advertising portrait- nature photography-purpose and control over aperture- aperture –
shutter speed – factors that affect D.O.F.

Unit II:Lens
Pinhole Photography – construction of a pinhole camera - Focal length –Focus and depth of field-hyperfocal
distance –determining the hyperfocal distance of a lens- – History of Photography.-Daguerotype – FoxTalbot-
Modern B/Wchemistry – Eastman Kodak.

Unit III:Film
Selecting and using film –different formats-35m-120mm – 220mm – 4 x 5 film -Film speed – How film
responds to light-film grain – sensitivity – structure of film – light vs film – Ethics of Image Editing

Unit IV: Exposure and image making Techniques
How an exposure meter works –ambient light meters –flash meter readings - Built in meter –
External light meter – Metering techniques– gray scale- Framing- Perspective- Rule of thirds Texture- Pattern-
Shapes and lines, Tone, Aspects of Balancing - Composition- and Design

Unit V: Black and White photography
Black and white film – Black and white filters – Developing –developing tank – structure of
B/Wfilm- Printing.-making a mask – photograms- push processing – pull processing –
masters of B/Wphotography – Ansel Adams – identifying the various zones

Reference:
1. The Basic Book of Photography (Fourth Edition) (Paperback) -by Tom Grimm
(Author), Michele Grimm (Author)
2. Mastering the Basics of Photography (Paperback) -by Susan McCartney (Author)

2nd YEAR

PAPER 2.1: 2D ANIMATION & WEB DESIGNING

Unit - I
What is 2D animation-2D Animation principles-Flash interface-Tools and techniques-Tracing-
drawing the objects and background.

Unit - II
Key frame animation-Tweening animation(Classic Tweening, Motion Tweening and Shape Tweening)-
Symbols (Graphic, Movieclip and Buttons).

Unit III

   How to draw a figure (character) using drawing tools - character editing- character coloring it - produce a character-Character animation (walk cycle).

Unit IV

   UI designing in flash-Page Navigation Using Acton Script (Basic-Level) - A navigation page is a special type of page that can be included on other pages to provide a consistent set of navigational elements-Adding sound-Add scenes & Editing-export / import from flash.

Unit V

Introduction to dreamweaver-UI-What is frames-create- edit- link frames-How to embed flash website in Dreamweaver-Basic information about XML-CSS.

REFERENCE:
1. Dreamweaver CS4 For Dummies - Janine C. Warner
2. The Art of Design and Animation in Adobe Flash CS3 - Chris Georgenes
3. Adobe Flash CS4 FOR DUMMIES - Ellen Finkelstein and Gurdy Leete

PAPER 2.2: FUNDAMENTAL OF 3D MODELING

Unit - I

   Introduction to Maya-What is 3D- Coordinates- Application of 3dMaya Interface- the three dimensions- Maya workspace - The axis indicator - Maya scene view – Tools – Menus – Surface Tools – Curve Tools.

Unit - II

   Nurbs Modeling - Intro to curves- types of curves available in maya.- EP curve & CV curve - its differentiation-how to edit its positions- foundation of Nurbs - Curves - Proficiency at drawing and editing curves

Unit III

   Nurbs Modeling -Objects- Different objects created using curve - Nurbs surface creation- Edit Nurbs options – Object creation using Loft Tool – Object creation using Revolve Tool – Object creation using Extrude Tool.

Unit IV

   Polygon Modeling –I Objects - Different objects created using polygon tools-tips and tricks – Edit Poly Tools – Space ship model creation - Tap model creation – Sword model creation

Unit V

   Polygon Modeling –II Objects - Different objects created using polygon tools and tips and tricks - Guitar Model creation – Interior model creation – Car model creation - cartoon character model creation.

REFERENCE

1. Stop Staring: Facial Modeling and Animation Done Right - Jason Osipa
2. Texturing and Modeling : A Procedural Approach - David S. Ebert, F

PAPER 2.3: TEXTURING, LIGHTING AND RENDERING

UNIT - I

What is Unwrapping - concepts - purpose of unwrapping - Maps available in maya, application of maps-how to create and layout UVs for objects using different projection methods & its attributes -Utilizing the UV texture editor & interactive editing its positions in view port & its main attributes to control mapping areas over objects.

UNIT - II

How to generate UV map in UV Texture using UVlayout tools like unfold for flattening UV's over mesh to create flat 2dimensional map using commands-tools available in uv editor like sew for merging 2 or more edge's into single-relax for maintaining uniformity between uv's-cut for detaching uv map-Stretching UVs to fit in grid-aligning uv's in grid.

UNIT - III

Application & difference between 2d, 3d textures & Environmental textures-Maya 2D textures – categories-water-Perlin- noise, etc., Bitmaps- generating textures - Maya 3D textures – procedure & resolutions – mathematics & algorithms.

UNIT - IV

What is light & its theory-Maya lights-attributes & shadows-Maya spot lights - on stage - in motion pictures- Directional lights- Ambient lights - Point lights - Area lights – application- characteristics-properties and palettes for the above-Advanced Techniques

UNIT - V

Software render-Hardware render- mental ray render and techniques of multi pass render

REFERENCE

1. Advanced Maya Texturing and Lighting with CDROM - Lee Lanier, Wiley Publishing
2. Texturing and Modeling : A Procedural Approach - David S. Ebert
3. Advanced Maya Texturing and Lighting with CDROM - Lee Lanier, Wiley Publishing
4. Rendering with Mental Ray -Thomas Driemeyer

PAPER 2.4 : FUNDAMENTAL OF RIGGING

Unit - I

Introduction to Rigging - Basic introduction to rigging for animating a mechanical character - Brief description about importance of rigging a character or an object - Constraints -Tools

Unit - II

Robot Rigging - Understanding Mesh Flow - Joints Creation - Naming Joints - Orientation axis - Ik Handles for legs - Grouping for legs - Attributes Creation - Set Driven Controls for Legs & Fingers - Body Controls - Master Controls - Parenting

Unit - III

Vehicle Rigging - Understanding Vehicle movements - Joints Creation - Naming Joints - Orientation Axis - Attributes Creation - Expressions for Wheel Rotation - Controls Creation - Rigid Binding - Body Controls - Door Controls - Wheel Controls - Master Controls

Unit - IV

Biped Rigging (Cartoon Character Rigging) - Ik Handles for Legs & Hand - Ik Spline Handles for Spine Joints - Attributes creation for legs & Fingers - FKIK Switching - FK Controls - IK Controls - Master Controls - Skinning -Skinning Tools & Techniques- Rigid and Smooth Binding - Fine Tuning Influences.

Unit - V

Quadruped Rigging - Ik Handles for Legs - Ik Spline Handles for Spine Joints - Attributes Creation - IK Controls - Master Controls- Quadruped Skinning - Skinning Tools & Techniques -Rigid and Smooth Binding - Fine Tuning Influences.

REFERENCE
1. An Essential introduction to Maya Character Rigging - Cheryl Cabrera
2. Body Language: Advanced 3D Character Rigging – Eric Allen & Kelly.L.Mudrick
3. Inspired 3D Advanced Rigging and Deformations – Brad Clark, John Hood, Joe Harkins

PAPER 2.5 : FUNDAMENTAL OF ANIMATION

Unit - I

Animation Tools - Introduction to Animation - History of Animation - Production Pipeline - Types of Animation - Different Animation types - Animation Tools - Principles - Graph Editor - Animation types

Unit - II

Ball Bounce Animation - Set Key Animation - Stretch & Squash Animation - Fine Tuning in Graph Editor - Obstacle Ball Bounce Animation - Set Key - Primary Animation - Stretch & Squash - Obstacle Bounce - Fine Tuning - Graph Editor

Unit - III

Walk Cycle & Progressive Walk Animation (Cartoon Character Animation) - Understanding Walk Animation - Normal Walk - Cartoonic Walk Styles - Acting - Blocking - Primary - Secondary -Fine Tweening - Graph Editor - Previewing Animation

Unit - IV

Run Cycle Animation & Progressive Run Animation (Cartoon Character Animation) - Normal Run - Cartoonic Run Styles - Acting - Blocking - Primary Animation - Secondary Animation - Fine Tweening - Graph Editor - Previewing Animation

Unit - V

Jump & Dive Animation (Cartoon Character Animation), Facial Animation (Cartoon Character Animation), Car Animation (Cartoon Car Animation) - Understanding Facial Expressions - Acting - Keying - Fine Tweening - Graph Editor - Inorganic Animation

REFERENCE
1. Animation The Mechanics of Motion - Chris Webster
2. Understanding Animation - Paul Wells
3. Timing for Animation - Harold Whitaker, John Halas
4. The Art of 3-D Computer Animation and Effects, Third Edition - Isaac Victor Kerlow
5. Maya Studio Projects: Dynamics - Todd Palaman

3rd YEAR

PAPER 3.1 : FUNDAMENTAL OF EDITING

Unit - I

Introduction - Editing - What is editing - Principals of editing - Basic understanding about storyboard - integrating storyboard to editing

Unit - II

Basic tools - work in timeline editing - Animatics Editing - Rendering frames - adding frames markers - separating in to shots order

Unit - III

Introduction To Audio Editing - Syncing audio to video Drawing information - making rythmic - audio cutting - Fine tuning audio

Unit - IV

Playblast editing - output animation - Composite Editing - output from composited shots - analysing the composited shots

Unit - V

Color Correction - Exporting with Different Formats - Final rendering - different movie format - Dvd rendering - Web based rending - make showreel editing

REFERENCE
1. The Technique of Film and Video Editing, Fourth Edition: History, Theory, and Practice - Ken Dancyger
2. The Art of Motion Picture Editing – Vincent Lobrutto

PAPER 3.2 : FUNDAMENTAL OF COMPOSITING

Unit - I

Introduction - Compositing Fundamentals - Interface - Knowledge about compositing - Analysing reference composited works

Unit - II

Rotoscopy - Keying – Wire removal - Extracting image from the back ground - add grains for the final management - color grading

Unit - III

Color correction - Motion Tracking - Stabilization - matching colors between two shots - parenting layers

Unit - IV

Titling Effects - Motion Graphics - keyframe animation - television advertisements - using 3d camera - null object - filters

Unit - V

3D Compositing - Fixing 3D object with live footage - understanding different types of passes - fixing layer passes - Fine tuning image composition - z depth

REFERENCE
1. Art & Science of Digital Compositing - Ron brinkmann
2. Digital Compositing for Film and Video-Steve Wright

PAPER 3.3 : 3D INTERACTIVE BASICS

Unit - I

Introduction about 3d interactive world and its application-Introduction to Game engine and features-Game engine its features and improvements-exporting from maya to Game Engine exporting an object to-exporting an animated character inside Game Engine

Unit - II

Game Tool interface -Menu Bar-file menu-resources menu-editors menu-options menu-help menu- 3d layout panel-tool bar-selection and transformation control-guide control-object creation control-camera manipulation controls-preview panel- building blocks panel-building blocks-unity resources-level manager panel-level manager-status bar.

Unit - III

Naming Conventions and Best Practice Concepts- unity naming conventions-importing from maya-3d model data, resetting the models transform-exporting materials-exporting lights-exporting cameras- exporting dummy objects-exporting groups-exporting bone setup

Unit - IV

Audio Discover the details of sources-listeners-clips and more graphics- Find out all about the rendering pipeline-How Unity's components give you visual control.

Unit - V

Navigation Find out about Unity's ' Nav Mesh ' path finding system-Create some
Mechanical mayhem as you learn about Unity's physics options-Platform specific Browse here for details on
working with individual platforms.

REFERENCE

1. Unity Game Development Essentials Paperback - Will Goldstone

PAPER 3.4 : GAME ENVIRONMENT

Unit – I

Character study-Importing a character and assigning a controller-character controller-unlimited controller-
character curve follow-keyboard controller- keyboard mapper-character go to, share character animation-
creating a targeted character movement

Unit - II

Collision theory- Floor object collision-creating characters and floors-basic collision- advanced collision
using collision detection triggering events-declare floors-declare obstacles- floor slide- prevent collision- sphere
slider-sphere intersection

Unit – III

Introduction to camera-adjusting camera target-Camera Tracking-different types of camera-dolly- camera
colour filter-camera zoom extend-switching cameras-get current camera, set as active camera- look around.

Unit IV

Material and Texturing- creating simple shadows- creating planar shadows- creating projected shadows-
creating grid collision- Creating a background creating a background colour using a background image.

Unit V

Animating and manipulating material- basic texture animation-creating pseudo-3D characters using
sprites-animating material movement-2D interface creating a 2Dsprite-creating a 2D frame.

REFERENCE

1. Game Coding Complete, Third Edition [Paperback] - Mike (Mike McShaffry)

PAPER 3.5 : PROJECT (ANIMATION & INTERACTIVE MEDIA)