

BHARATHIAR UNIVERSITY: COIMBATORE – 641 046

**PG DIPLOMA IN VISUAL EFFECTS (VFX)
(For the candidates admitted from the academic year 2020-2021 onwards)**

PG Diploma in Visual Effects (VFX) is a skill based program aiming at providing the fundamentals of using the VFX technology for Films, Commercials, Games and AR & VR. This program a VFX pipeline Pre-Production, Production and Post-Production in an integrated manner.

Program Objectives:

This course emphasizes developing advanced compositing skills with a focus on various pipeline workflows and shot finishing. Students will practice advanced compositing techniques using plates from actual film projects. Students will also learn stereo compositing techniques and workflows.

Programme Outcomes

Upon successful completion of this course students will be able to

1. Recognize and evaluate key visual effects technologies and how they are used to create advanced visual effects;
2. Construct complex visual effects shots incorporating live action, 2D and 3D generated imagery;
3. Compose a shot using multiple render passes created from 3D packages;
4. Re-light elements within a composited scene to blend seamlessly with live action plates;
5. Demonstrate and execute delivery guidelines for feature film and television production pipelines;
6. Compose stereoscopic footage for use in a 3D production.

Eligibility for Admission

Candidate for admission to the Diploma course shall be required to have completed the UG / PG Degree (any discipline) of this University or any other University recognized by UGC.

Duration of the Program

This Course shall consist of two Semesters in an Academic Year. For this purpose, an Academic Year shall be divided into two Semesters; the first Semester falls between July to November and the second semester falls between December to April.

Medium of instruction and examinations

The medium of instruction and examinations shall be in English.

SCHEME OF EXAMINATION

		Hours/ week	Exam Duration	Max marks		Total Marks	Credits
				CIA	EoS		
Semester I							
Practical 1	Fundamentals of Visual Effects (VFX)	6	3	40	60	100	3
Practical 2	Concepts of Rotoscope (VFX and Stereo)	6	3	40	60	100	3
Practical 3	Concepts of Paint (VFX and Stereo)	6	3	40	60	100	3
Practical 4	2D PREP (Specialization)	6	3	40	60	100	3
Practical 5	2D PREP Advanced (Specialization)	6	3	40	60	100	3
	Total	30				500	
Semester II							
Practical 6	Fundamentals of VFX Supervision and Production	6	3	40	60	100	3
Practical 7	Concepts of 3D for VFX	6	3	40	60	100	3
Practical 8	Concepts of 2D for Comp	6	3	40	60	100	3
Practical 9	3D GENERALIST (Specialization)	6	3	40	60	100	3
Practical 10	Comp (Specialization)	6	3	40	60	100	3
		30				500	

Distribution of Marks – Practical Semester Exam				
Total	External	Minimum marks in external	Internal	Total minimum marks
100	60*	24	40	40

*External 60 marks break up – 25 marks by external examiner, 25 marks by internal examiner, 10 marks for report by internal examiner

Passing Minimum

- a) A candidate shall be declared to have passed in a paper if he or she obtains not less than 40% of marks in that paper.
- b) A candidate failing to secure the minimum marks prescribed shall be required to reappear for the examination in that paper and obtain not less than the minimum marks required for passing the paper.

Examinations

- A candidate will be permitted to appear for the University Examination for any year if he / she secures minimum 75% of attendance in the number of instructional days.
- Examination shall be conducted at the end of each semester.

Classification of Successful Candidates

- a) Candidate qualifying for the Diploma with not less than 60% of the aggregate marks shall be declared to have passed the examinations in FIRST CLASS provided they have passed the examinations in every paper at the first appearance. Other successful candidates shall be declared to have passed the examination in SECOND CLASS.

Practical I: FUNDAMENTALS OF VISUAL EFFECTS (VFX)

Module 1: Behind the Camera (Script to Screening)- I

Storyboarding Process - Pre-Production works - Functionality of Production Pipeline

Module 2: Behind the Camera (Script to Screening)- II

Process involved in Post-Production - The Process behind Screening.

Module 3: Lights and Color (Fundamentals)

Fundamentals to know about Colours and Lights - Color Theory - Indoor and Outdoor Lighting concept - Do's and Don'ts about Color correction - Understanding LUT

Module 4: Footage Conformation- Convert RAW

Convert RAW - Match the Edit Timeline – Opticals - Footage Conversions IN & OUT - process of DI (Digital Intermediate)

Module 5: Technical Aspects of VFX Process

"Lens information & Set Data" - Resolutions, Aspect Ratio & File Formats - Analysing the Footage & description - Assigning the Job & its responsibilities -Delivery Process

Books Recommended

The Visual Effects Society (VES) Edited by Jeffrey A. Okun, Susan Zwerman

Practical II: CONCEPTS OF ROTOSCOPE (VFX AND STEREO)

Module 1: Introduction to Rotoscope

Introduction to Rotoscope -Types of Rotoscope in VFX - Fundamentals of Roto

Module 2: Introduction to VFX Roto

Usage of Roto in VFX - Annotations / Mark-up for VFX Roto - Manual Roto vs Automated Roto - Work with Motion blur - Channels in VFX Roto

Module 3: VFX Roto Fundamentals

Shot Analyzation for VFX Roto - Principles of Roto, how to articulate a perfect Roto - Self-Quality Check. The Importance of QC. - Motion blur. matching with the source - Naming Procedures and Rendering the Rotoscope. Output Formats

Module 4: Introduction to Stereo Roto

Usage of Roto in Stereo - Annotations / Mark-up for Stereo Roto - Breakouts and Depth understanding - How to Organize the workspace - How to deliver the output?

Module 5: Stereo Roto Fundamentals

Shot Analyzation for Stereo Roto - Breakout Principles of Stereo Roto - Self Quality Check. The Importance of QC - Layering and Naming Procedures - Rendering the Rotoscope. Output Formats.

Books Recommended: Rotoscoping Techniques and Tools for the Aspiring Artist: by Benjamin Bratt

Practical III: CONCEPTS OF PAINT (VFX AND STEREO)

Module 1: Introduction to Paint Process

Various process of Paint in VFX - Understanding the Pixels and Grains - Paint Techniques with Tools from various platforms - VFX Paint vs Stereo Paint

Module 2: Intro to Photoshop and Nuke

Intro to Photoshop, Nuke on Paint Process - Photoshop Tools for Paint - Nuke Tools for Paint Roto for Paint purpose - Rendering and Output Formats

Module 3: VFX Paint Fundamentals

Intro to Paint. The areas where it is needed - Introduction to Tools - Cleanplate Process - Sequence Paint Process - Output Process

Module 4: Stereo Paint Process

Intro to Stereo Paint process - Depth Map understanding in Nuke - Node usage for Stereo Paint in Nuke - Edge Erode for Depth Paint in Nuke - Stereo Output for Paint

Module 5: Stereo Paint Fundamentals

Clean Plate for Stereo Paint- Left and Right Views understanding in Stereo Paint - Various methods used in the industry - Tools understanding - Render and File Formats for Stereo process

Books Recommended: Professional Portrait Retouching Techniques for Photographers
Using Photoshop by Scott Kelby

Practical IV - 2D PREP (Specialization)

Module 1: Rotoscope

Working with Shots – Understanding Complexities – Planned Vs Actuals (Mandays Planning)
– Analyzation on Quality as per Client Requirement.

Module 2: Manual roto and Tracking process in Silhouette & Nuke

Working in Shots with Tracking possibilities – Manual Roto Shots for better consistency – Working in versatile pipelines like Nuke and Silhouette for Roto.

Module 3: Paint in Photoshop & Nuke

Clean Plate Tasks – Sequence Paint Tasks – Working in Platforms such as Photoshop & Nuke

Module 4: Clean plate and Seq Paint

Time Bound tasks on Clean Plate and Seq Paint - Planned Vs Actuals (Mandays Planning)

Module 5: Quality Analysis

Developing knowledge on Self QC - Client Notes understanding – Working on Kickback.

Practical V 2D Prep Advanced (Specialization)

Module 1: Stereo Rotoscope

Working with Shots – Understanding Complexities – Planned Vs Actuals (Mandays Planning)
– Analyzation on Quality as per Client Requirement.

Module 2: Stereo Process with Rotoscope (2D to 3D Conversion Type)

Annotation Studies – Conversion Type Roto process – Analyzation on Breakouts as per client requirement.

Module 3: Depth understanding using Roto

Conversion Roto for 3D Stereo – Working with Depth Maps – Final QC and Kickback – Final Output to Client.

Module 4: Clean plate for Stereo Paint & Seq Paint.

Time Bound tasks on Stereo Clean Plate and Seq Paint - Planned Vs Actuals (Mandays Planning)

Module 5: Quality Analysis

Developing knowledge on Self QC - Client Notes understanding – Working on Kickback.

Books Recommended: Stereoscopic 3D: 3D Stereo Digital Intermediate Workflow by Jeff Olm, Brian Gaffney

Practical VI - FUNDAMENTALS OF VFX SUPERVISION AND PRODUCTION

Module 1: 2D and 3D-Fundamentals

Difference between 2D and 3D - Fundamentals of 2D -Cutouts and Sketches- 3D Sketches - How to Convert 2D sketch to 3D

Module 2: Visualization: Perspective Basics

Perspective Basics - One Point Perspective - Two Point Perspective - Drawing Shades - Basics of Color Concepts

Module 3: 2D Matte Paint & 3D Matte Paint

History of Matte painting - Recreation of Assets - 3D Set Extension Matte Paint - Working with Images - Preparing BG mattes Basics

Module 4: Pipeline of VFX and 3D

Understanding the Pipeline of VFX and 3D - Process Understanding: From and To Client - Troubleshooting the problems - Team Planning - Managing the Deliveries and Deadlines

Exercise 5: VFX Troubleshooting the problems

Planning the Budget and Team Strength - Client Interaction on Project Pitching - Mutual Handshake with Production and Client - Execution of Manday's within the planned Budget - Planning Vs Actuals on Production

Books Recommended:

- Digital Matte Painting: Techniques, Tutorials & Walk-Throughs

- The Digital Matte Painting Handbook by David B. Mattingly
 - Figure Drawing – design and invention By Michael Hampton
- Practical VII CONCEPTS OF 3D FOR VFX**

Module 1: Introduction to 3D Pipeline

Learning Basic Sketching of Characters/Objects - Learning about the 3D Pipeline from Storyboarding to Screening - Anatomy Understanding - Shades and Textures in Sketching
3D Interface Learning

Module 2: Modelling - Set and Props

Basic Primitives Understanding - Building Sets using Polygons - Learning about Curves and Surfaces - Learning to Create an Extension of Live Set - File Assembling in Maya

Module 3: Texturing

Learning about the Concepts of Texturing - Different types of Shaders - Unwrap UV from a 3D Model - Applying Texture to a Model -Creating Customized Textures and Shaders

Module 4: Lighting

Fundamentals of Lighting in Maya - Understanding Indoor and Outdoor Lights - Matching a 3D Model with live lighting - Understanding of HDRI Map -Various Concepts of Lighting used in the industry

Module 5: Rendering and Compositing

Process of Rendering - Rendering Passes - Aligning the Render passes in Nuke - Comp Tree for 3D Layers -Final Output with Proper File Naming Conventions

Books Recommended: Nuke Learning

Practical VIII - CONCEPTS OF 2D FOR COMP

Module 1: Introduction to 2D Compositing

Concepts of Compositing - Ancient and advanced method of Compositing - Pipeline process

Module 2: Usage of Roto and Paint for Compositing

2D Comp an overview - Roto for Comp - Paint for Comp - Node understanding in Nuke
Rendering Layers using various file formats

Module 3: Camera Tracking 2D and 3D

Introduction to Tracking - 2D Tracking - 3D Tracking - Camera and Lens for Comp purposes
- Tracking concepts used in the industry

Module 4: Nodes for Compositing in Nuke

Nodes for Comp an Overview - Node for Memory Management and RAM Consumption -
Node for Color Management - Node for Focus Adjustments - Node for 2D and 3D Comp

Module 5: 3D Platform integration with Compositing

Intro to Maya - Tools knowledge - Modelling, Texturing and Lighting Concepts - 3D and Comp
integration - Layer Concepts for Rendering

Books Recommended: Color Correction for Video Using Desktop Tools, Steve Hullfish,
Jaime Fowler

Practical IX 3D GENERALIST (Specialization)

Module 1: Modelling

Anatomy – Basic Proxy Modelling – Advanced Mesh Modelling – Topology understanding on Mesh.

Module 2: Texturing

Model created in the **Module 1** need to be given texture – Realistic Texturing for Skin and Cloths – Applying Filters for look and feel (For ex: Wood – Rock – Steel)

Module 3: Lighting

Create both Indoor and Outdoor lighting for the models created in the **Module – 1 and 2** – Shaders with Lights – Rendering using latest Renderman's

Module 4: Working on Live footage.

Provide a Showreel by Assigning the Model created in a live footage – Lighting should match – Texture and Look & Feel.

Module 5: Project

A project will be assigned to accomplish overall learning.

Books Recommended: 3D Object Modelling - Issues and Techniques

Practical X - COMP (Specialization)

Module 1: Compositing

Working in Roto – Paint and Comp for a single shot – Self QC on Roto – Paint – Comp – Manday's calculation for R P C – Matching the completed task done by production.

Module 2: Nuke and Tools

Working with various Tools to do a particular Task – Align layers and plates from other resources.

Module 3: Node Tree Structure

Producing a proper Node structure in Comp – Client Notes on Creative Fixes – Pipeline Co-ordination on Projects requirements.

Module 4: QC

Self QC on Completed Task – Analyzation on other resources such as Matte Paint – Cameras – 3D Elements – Roto and Paint Plates. Final Output with Client requirement.

Module 5: Project

A project will be assigned to accomplish overall learning.

Books Recommended: Nuke Learning