

**REGULATIONS AND SYLLABUS**  
**FOR**  
**P.G.DIPLOMA IN ANIMATION ENGINEERING TECHNOLOGY**  
**OFFERED BY**  
**BHARATHIAR UNIVERSITY, COIMBATORE**  
**FROM 2008-2009**  
**UNDER THE**  
**CENTRE FOR COLLABORATION OF INDUSTRY**  
**AND INSTITUTIONS (CCII)**  
**COLLABORATIVE PROGRAMME**

## **P.G.DIPLOMA IN ANIMATION ENGINEERING TECHNOLOGY**

### **REGULATIONS**

**1. Description of course/objective of the course**

This course is designed to prepare technicians with specialized skills, knowledge and attitude to work in Animation field.

The program will be conducted at any Amaze Multimedia Centre recognized by Bharathiar University under the UIICSC Collaborative Program.

**2. Regulations**

a. Any Degree Course by the recognized University or equivalent

**3. Duration of the Course**

The Course shall extend over a period of 12 months.

**4. Courses and scheme of examination**

Course No.	Course Title	University examination		Credits
		Internal	External	
1.Theory	Cell Animation	40	60	4
2. Theory	Computer Animation	40	60	4
3. Theory	3-D Modeling and Animation	40	60	4
4. Theory	Visual Effects	40	60	4
5. Practical	Object Animation	40	60	4
6. Practical	2D Visual Effects Creation	40	60	4
7. Practical	Character Modeling and Animation	40	60	4
8.Practical	Dynamics Particle Illusion	40	60	4
9.Project	Project Work, Viva-Voce	80	120	8

**5. Practical Training**

Being a practical oriented program, the focus will be more on practical training. The candidate shall undergo practical training of the computer laboratory of Amaze Multimedia or other computer laboratories of Bharathiar University affiliated institutions.

## **6. Requirement to appear for examination**

Candidate should put in a minimum of 90% attendance to appear for the examinations.

## **7. Passing minimum**

To pass

- A candidate shall secure a minimum of 40% in the University examination for practical and theory and overall 40% in each of the paper (Internal + External) to pass the examination. A candidate failing in any one of the components has to reappear for that particular component in the supplementary examinations.

## **8. Classification of successful candidate**

- A candidate who obtains 75% and above, aggregate in theory and practical examinations, in the first attempt shall be deemed to have passed the examination with distinction.
- A candidate who obtains from 60% to 74% of the aggregate in theory and practical examinations, in the first attempt shall be deemed to have passed the examination in the first class.
- Other Successful candidates shall be declared to have passed the examination in the Second class.

## **9. Conferment of degree**

A candidate who has passed all the examination as prescribed shall be eligible to receive the “P.G DIPLOMA IN ANIMATION ENGINEERING TECHNOLOGY” from Bharathiar University.

## **10. Course Material**

Course Material shall be supplied by Amaze Multimedia.

## **11. Revision of Regulation and syllabus**

The syllabus and regulations of the courses are subject to modification by the University whenever necessary.

## **12. Question Paper Pattern**

Theory examination will be for 100 marks with the following components which will be converted into 60 marks.

- Multiple Choice / one word answers: 20x1=20 marks(no choice)
- Short notes(100 words / one paragraph) : 5x6=30 marks(either/or type)
- Descriptive (300 words 1 ½ page) : 5x10=50 marks(either/or type)

# **SYLLABUS**

## **Course 1: Cell Animation (Theory)**

### **UNIT – 1**

Digital 2D Animation orientation – Basic factors affecting the illusion of motion – Impact of digital techniques on the craft of film and video animation – Professional animation practice and job description – Prevailing file format standards and other compatibility issues – History and future trends of computer animation application in the visual arts.

### **UNIT – 2**

2D animation application software interface – Default setting and user preferences – Document setup. Import and export formats – Document and timeline window feature – Tools and commands palettes – Media-selection tools and techniques Asset-management features.

### **UNIT – 3**

2D graphics-creation features – Underlying data type: raster – vector – Raster painting and/or import features – Vector shapes – Vector free-form and control-point placement tools – Features specific to the program in use.

#### **UNIT – 4**

2D graphics editing features – Basic geometric transformation – Boolean operations on shapes – Object stroke attributes – Object fill attributes – Shading techniques (blends – gradients) – Packaged effects (extensions – Plug-ins) – Features specific to the program in use.

#### **UNIT – 5**

2D animation frame-sequencing features – Straight-ahead animation – Key frames animation – Motion paths – Applying geometric transformations over time – Intertwining options – Looping and palindrome motion – Features specific to the program in use.

## SUGGESTED READINGS

1. Paul Steed : Modeling a Character in 3Ds Max 7, Published by dreamtech, Second Edition – 2005.
2. John Kundert – Gibbs, Eric Kunzen Dort, Dariush Derakhashani, Mick Larkins, Eric Keller, Boaz Livny, Mark E.A. de Soura : Mastering Maya 7, Wiley Publishing Edition 2006.
3. Kelly L.Murudock : 3ds Max 9 Bible. Published by Wiley, Inc. 2007.
4. Boaz Livny and Eric Keller : 3ds Max 9 Essentials First Printed in India 2007. Published by Elsevier, a divisions of Elsevier India Pvt Ltd.2007.
5. John Kundert – Gibbs, Mick Larkins, Dariush Derakhashani, Eric Kunzendort, Eric Keller, Boaz Livny, Mark E. A.de Soursa, with Ed Siomacco. : Mastering Maya 8.5 2007 Published by Wiley Inc.

## **Course 2 : Computer Animation (Theory)**

### **UNIT - 1**

Creating Your First Flash Animation – how to *create* a new blank movie file in Flash MX – and the tools and steps involved in making your first simple animation using motion twining – basic shapes – Flash Animation 2 - Shape Twining – pick up at the end of where we left off – Shape twining in Flash MX.

### **UNIT - 2**

Flash Lesson 8 -Adding Simple Audio – add a looping audio background to our Flash character animation to complete it – Lip-Synching For Animation: Basic Phonemes – add actual expression and realistic mouth-movements to your animation – it helps to study how the shape of the mouth changes with each sound – these ten basic phonemes shapes can match almost any sound of speech – in varying degrees of expression.

### **UNIT - 3**

Flash Animation – Fireworks E-card – using Flash’s drawing tools to set a scene for an animation – creating the scene for a Fourth of July exploding fireworks E-card – a future lesson will demonstrate how to animate it – Flash Animation 4 - Animating E-card – set the stage for our E-card – use a new kind of symbol called a Movie Clip.

### **UNIT - 4**

Flash Tip – Tools of the Trade – Drawing in Flash With a Graphics Tablet – frame-by-frame vector animation with this high-tech – but inexpensive – plug and play tool – Animation Tip – Tools of the Trade – Light Tables – 2D animation for cell painting – computer animation – a light table.

### **UNIT - 5**

Animating the limbs – add speech bubbles – about adding actual audio tracks later – to learn about working with text in Flash – and to give our characters a “voice” to communicate with the viewer – so to animate our facial features and give them expression and lip movements.

## SUGGESTED READINGS

1. Paul Steed : Modeling a Character in 3Ds Max 7, Published by dreamtech, Second Edition – 2005.
2. John Kundert – Gibbs, Eric Kunzen Dort, Dariush Derakhashani, Mick Larkins, Eric Keller, Boaz Livny, Mark E.A. de Soura : Mastering Maya 7, Wiley Publishing Edition 2006.
3. Kelly L.Murudock : 3ds Max 9 Bible. Published by Wiley, Inc. 2007.
4. Boaz Livny and Eric Keller : 3ds Max 9 Essentials First Printed in India 2007. Published by Elsevier, a divisions of Elsevier India Pvt Ltd.2007.
5. John Kundert – Gibbs, Mick Larkins, Dariush Derakhashani, Eric Kunzendort, Eric Keller, Boaz Livny, Mark E. A.de Soursa, with Ed Siomacco. : Mastering Maya 8.5 2007 Published by Wiley Inc.



## **Course 3 : 3D Modeling and Animation (Theory)**

### **UNIT – 1**

Modeling methods – Modeling with Primitives – Planning your Model – Deforming Lattices, wire or Cluster.

### **UNIT - 2**

Extrusion – Object duplication – Pivots and CV Surfaces – The Production Process – Complex Model Hierarchy.

### **UNIT – 3**

Complexities over various Modeling Techniques – Purpose and Modeler Dependency - Hardware and Software Considerations.

### **UNIT – 4**

Basic Animation – Animation Types – Key frame Animation – Understanding Animation workflow.

### **UNIT – 5**

Animation Techniques – Non – Linear and Character Animation – Posing, Timing and Refining – Working with Poses.

### **SUGGESTED READINGS**

1. Paul Steed : Modeling a Character in 3Ds Max 7, Published by dreamtech, Second Edition – 2005.
2. John Kundert – Gibbs, Eric Kunzen Dort, Dariush Derakhashani, Mick Larkins, Eric Keller, Boaz Livny, Mark E.A. de Soura : Mastering Maya 7, Wiley Publishing Edition 2006.

3. Kelly L.Murudock : 3ds Max 9 Bible. Published by Wiley, Inc. 2007.
4. Boaz Livny and Eric Keller : 3ds Max 9 Essentials First Printed in India 2007. Published by Elsevier, a divisions of Elsevier India Pvt Ltd.2007.
5. John Kundert – Gibbs, Mick Larkins, Dariush Derakhshani, Eric Kunzendort, Eric Keller, Boaz Livny, Mark E. A.de Soursa, with Ed Siomacco. : Mastering Maya 8.5 2007 Published by Wiley Inc.

## **Course 4 : Visual Effects (Theory)**

### **UNIT – 1**

Visual Effects- Description- Types- Particles – Analysis- Size- Sand Effects – Smoke Effects- Fire Effects – Cloud Effects – Snow Effects

### **UNIT-2**

Fluid Effects-Coloring- designing Clouds Background – Designing Fog Effects – Explosion Effects– Fire Effects with flames - Space Effects and designs- Designing Thick Smoke

### **UNIT-3**

Designing Paint Effects – Coloring paints- Designing Trees and green effects – Designing Weather and seasons –Effects on seasons- Designing Glass image – Designing Different glass reflection- Designing Glow Effects – Liquid Effects and reflection design

### **UNIT-4**

Designing Special Effects – Designing effects of Hair and shape – Designing Fur Effects- Designing Clothes and effects

### **UNIT-5**

Visual Effects Tool and advanced functions– Converting images from 2D to 3D Pictures. Creating 3D Effects- Differentiation 2D effects and 3D effects.

### **SUGGESTED READINGS**

1. Antony Bolante : Adobe After effects 5 for windows After Indian edition 2002 Published by G.C. Jain for Techmedia
2. Danish Derakhshevi : Introducing Maya 8 3D for Beginners 2006 Wiley Publishing Inc.
3. Vikas Gubta & Kogent Solutions Inc. : Multimedia and Web Design. A Revolutionary 3-Stage Sub learning System Published by dream tech.
4. Paul Marino : 3D Animation and Film making Using Game engines. The art of

5. Asoke K.Ghosh  
Hall of

Machinima Published by  
Dreamtech edition – 2005.  
: Game Design Process – NIIT  
Published by Practice –  
India Private Ltd.

## **Course 5: Object Animation (Practical)**

### **UNIT – 1**

Object Animation in Intermediate level – Introductory concepts to basic techniques in Object Animation- Principles of Object Animation and Production.

### **UNIT -2**

Object – Shape and the Placement – Making an object Looks Natural – Drawing Guidelines – Drawing with the 45 Degree Placement Rule.

### **UNIT – 3**

2D graphics editing features – Basic geometric transformation – Boolean operations on shapes – Object stroke attributes – Object fill attributes – Shading techniques (blends – gradients) – Packaged effects (extensions – Plug-ins) – Features specific to the program in use.

### **UNIT – 4**

Integrating Independent Workflows – Hands On: Creating Object Animation – Overcoming Practical Difficulties- Creation and Simulations of Object Particle – Overcoming Hardware Requirement.

### **UNIT – 5**

Digital Animation – Advanced concepts of Animation, Animation Production, High-end Digital Production Software- US ANIMATION (V5.2). Throughout each of the 3 weeks, the students will learn advanced techniques in Digital Animation.

### **SUGGESTED READINGS**

1. Paul Steed : Modeling a Character in 3Ds Max 7, Published by dreamtech, Second Edition – 2005.

2. John Kundert – Gibbs, Eric : Mastering Maya 7, Wiley  
Kunzen Dort, Dariush Derakhashani, Publishing Edition 2006.  
Mick Larkins, Eric Keller, Boaz Livny,  
Mark E.A. de Soura
3. Kelly L.Murudock : 3ds Max 9 Bible. Published by  
Wiley, Inc. 2007.
4. Boaz Livny and Eric Keller : 3ds Max 9 Essentials First Printed  
in India 2007. Published by  
Elsevier, a divisions of Elsevier  
India Pvt Ltd.2007.
5. John Kundert – Gibbs, Mick Larkins, : Mastering Maya 8.5 2007  
Dariush Derakhashani, Eric Kunzendort, Published by Wiley Inc.  
Eric Keller, Boaz Livny, Mark E. A.de  
Soursa, with Ed Siomacco.

## **Course 6 : 2d Visual Effects Creation (Practical)**

### **UNIT – 1**

Creating your First Flash Animation – how to create a new blank movie file in Flash MX – and the tools and steps involved in making your first simple animation using motion twining – basic shapes – Flash Animation 2 – Shape Twining – pick up at the end of where we left off – shape twining in Flash MX.

### **UNIT – 2**

Flash Animation 3 – Fireworks E- Card – Using Flash’s drawing tools to set a scene for an Animation – few little gradient and fill tricks – part of the lesson will Walk you through Creating the scene for a Fourth of July exploding fireworks E- card – a future lesson will demonstrate how to animate it –Flash Animation 4 – Animation your E- Card – set the stage for our E- Card – use a new kind of symbol called a Movie Clip.

### **UNIT – 3**

Flash Animation Using Text in Flash – to Give Your Character a Voice – Get into animating the limbs – add speech bubbles – learn about adding actual audio tracks later – to learn about working with text in Flash – and to give our characters a “Voice” to communicate with the viewer – to get our characters control our limbs as a whole – and in sub-parts – and also to animate our facial features and give them expression and lip movements.

### **UNIT – 4**

Flash Lesson 8 – Adding Simple Audio – add a looping audio background to our Flash character animation to complete it – Lip-Syncing For Animation: Basic Phonemes – add actual expression and realistic mouth-movements to animation – it helps to study how the shape of the mouth changes with each sound – these ten basic phoneme shape can match almost any sound of speech – in varying degrees of expression – and with the in-between frames moving from one to the other – are remarkably accurate.

### **UNIT - 5**

Flash tip – Tools of the trade – Drawing in Flash With a Graphics Tablet – Save yourself some time and effort in your frame-by-frame vector animation with this high-tech – but inexpensive – plug and play tool – Animation Tip – Tools of the Trade – Light Tables – 2D animation for cell painting – doing the preliminary pencil work to be scanned in for a computer animation – a light table is one of the most important tools for frame-by-frame animation.

## SUGGESTED READINGS

1. Paul Steed : Modeling a Character in 3Ds Max 7, Published by dreamtech, Second Edition – 2005.
2. John Kundert – Gibbs, Eric Kunzen Dort, Dariush Derakhashani, Mick Larkins, Eric Keller, Boaz Livny, Mark E.A. de Soura : Mastering Maya 7, Wiley Publishing Edition 2006.
3. Kelly L.Murudock : 3ds Max 9 Bible. Published by Wiley, Inc. 2007.
4. Boaz Livny and Eric Keller : 3ds Max 9 Essentials First Printed in India 2007. Published by Elsevier, a divisions of Elsevier India Pvt Ltd.2007.
5. John Kundert – Gibbs, Mick Larkins, Dariush Derakhashani, Eric Kunzendort, Eric Keller, Boaz Livny, Mark E. A.de Soursa, with Ed Siomacco. : Mastering Maya 8.5 2007 Published by Wiley Inc.



## **Course 7 : Character Modeling and Animation (Practical)**

### **UNIT – 1**

Polygonal Modeling – Using primitives Converting 5-,6-,7-,8-,9-,,-Sided Poly To Quads – Creating Linear Templates – Working With Poly Editing Tools: Making Simple Hand – Sub div Proxy Modeling – Splitting Polygons – Creating Areas of Details on a Poly Mesh(Surface)

### **UNIT - 2**

Modeling with NURBS – Lofting, Surface, Extruded Surface, Planar Surface, Beveled Surface, Boundary Surface – Combining Techniques and Surface History – Modeling with Deformers – Editing NURBS Surfaces – Using NURBS Surfacing to Create Polygons – Converting NURBS to Polygons Patch Modeling – Using Artisan to Sculpt NURBS

### **UNIT – 3**

Modeling with Deformers and Subdivisions Surfaces – The Lattice – Creating a Base Poly Model, Converting it to a subdivision Surface and Converting Back to Polygon – Human Hand and Character’s Head

### **UNIT – 4**

Basic Animation – Creating Keys – Setting Breakdown Keys – Bouncing a Ball – Creating and Editing Keys Using the Graph Editor – Adding “Whiz Bang”, Squash and Stretch – Converting Cycled Animation to Curves

### **UNIT – 5**

Character Animation – Skeletons – Clusters and Lattices Forward and Inverse Kinematics – Using the IKRP Solver, IKSC Solver, IK Spine handle Solver, IK Spring Solver, Human IK Solver – Switching between FK and IK – The Animation Process: Posing, Timing and Refining.

## SUGGESTED READINGS

1. Paul Steed : Modeling a Character in 3Ds Max 7, Published by dreamtech, Second Edition – 2005.
2. John Kundert – Gibbs, Eric Kunzen Dort, Dariush Derakhashani, Mick Larkins, Eric Keller, Boaz Livny, Mark E.A. de Soura : Mastering Maya 7, Wiley Publishing Edition 2006.
3. Kelly L.Murudock : 3ds Max 9 Bible. Published by Wiley, Inc. 2007.
4. Boaz Livny and Eric Keller : 3ds Max 9 Essentials First Printed in India 2007. Published by Elsevier, a divisions of Elsevier India Pvt Ltd.2007.
5. John Kundert – Gibbs, Mick Larkins, Dariush Derakhshani, Eric Kunzendort, Eric Keller, Boaz Livny, Mark E. A.de Soursa, with Ed Siomacco. : Mastering Maya 8.5 2007 Published by Wiley Inc.

## **Course 8 :Dynamic Particle Illusion (Practical)**

### **UNIT – 1**

Particle and Environment Aspects – Physics of Dynamics – Static and Dynamics, a Comparative Study – Fluids

### **UNIT – 2**

Fluids and their Props for Environmental Effects – Particles and Fluids Interactions – Simulations and Fluids

### **UNIT – 3**

Sizing and Fixing Properties – Hands On: Sands and Glass Particles, Environment and Physical Structures

### **UNIT – 4**

Effects of Particles with Hair, Fur, Cloth – Dust Particles and Simulations – Subdivisions Properties of Tiny Objects – Particles Containers

### **UNIT – 5**

Integrating Independent Workflows – Hands On: Creating Subdivided Clouds – Overcoming Practical Difficulties of Particle Creation and Simulation – Overcoming Hardware Requirement.

### **SUGGESTED READINGS**

1. Paul Steed : Modeling a Character in 3Ds Max 7, Published by dreamtech, Second Edition – 2005.
2. John Kundert – Gibbs, Eric Kunzen Dort, Dariush Derakhashani, Mick Larkins, Eric Keller, Boaz Livny, Mark E.A. de Soura : Mastering Maya 7, Wiley Publishing Edition 2006.

3. Kelly L.Murudock : 3ds Max 9 Bible. Published by Wiley, Inc. 2007.
4. Boaz Livny and Eric Keller : 3ds Max 9 Essentials First Printed in India 2007. Published by Elsevier, a divisions of Elsevier India Pvt Ltd.2007.
5. John Kundert – Gibbs, Mick Larkins, Dariush Derakhshani, Eric Kunzendort, Eric Keller, Boaz Livny, Mark E. A.de Soursa, with Ed Siomacco. : Mastering Maya 8.5 2007 Published by Wiley Inc.