

BHARATHIAR UNIVERSITY:COIMBATORE - 641 046**B. Sc. ANIMATION AND MULTIMEDIA**

(For the CPP/COP students admitted during the academic year 2013-2014 & onwards)

SCHEME OF EXAMINATIONS : CBCS Pattern

Part	Course Title	Ins.Hrs/Week	Examinations				Credit
			Dur. Hrs	CIA	Marks	Total Marks	
	SEMESTER I						
I	Language – I	6	3	25	75	100	4
II	English – I	6	3	25	75	100	4
III	Core I: Foundation Course in Classical Animation	4	3	20	55	75	3
III	Core Lab I: 2D Animation	3	3	40	60	100	4
III	Core II: Principles of Animation	4	3	20	55	75	3
III	Allied I: Drawing – Practical	5	3	40	60	100	4
IV	Environmental Studies #	2	3	-	50	50	2
	SEMESTER II						
I	Language – II	6	3	25	75	100	4
II	English – II	6	3	25	75	100	4
III	Core III: Introduction to 2D Digital Animation	6	3	25	75	100	4
III	Core Lab II: 2D Digital Animation	4	3	20	30	50	2
III	Allied II : Creative Writing	6	3	25	75	100	4
IV	Value Education – Human rights #	2	3	-	50	50	2
	SEMESTER III						
I	Language – III	6	3	25	75	100	4
II	English – III	6	3	25	75	100	4
III	Core IV: Introduction to 3D	4	3	20	55	75	3
III	Core V: Advanced Concepts Of 3D Material,Lights& Rendering	3	3	20	55	75	3
III	Core VI: 3D Modeling	3	3	25	50	75	3
III	Allied III: Computer Lab on 3D Character Design	3	3	40	60	100	4
IV	Skill Based Subject I: Show Case Project – I	3	-	-	-	75*	3
IV	Non-major elective – I Women’s Rights #/ Yoga for Human Excellence #/ Constitution of India #	2	3	50		50	2
	SEMESTER IV						
I	Language – IV	6	3	25	75	100	4
II	English – IV	6	3	25	75	100	4
III	Core VII: Advanced 3D Animation	3	3	20	55	75	3
III	Core VIII: 3D Character Animation	3	3	20	55	75	3

III	Core Lab III: 3D Advanced modeling, Character rigging & Rendering	3	3	40	60	100	4
III	Allied IV: Production for Animation	4	3	25	75	100	4
IV	Skill Based Subject II: Show Case Project – II	3	-	-	-	75*	3
IV	Tamil @ / Advanced Tamil # (or) Non-major elective –II (General Awareness)#	2	3	50		50	2
SEMESTER V							
III	Core IX:Audio-Video Tools & Technology	6	3	20	55	75	3
III	Core XI: Basic Compositing	6	3	25	75	100	4
III	Core Lab IV: Computer Lab on Basic Compositing	4	3	40	60	100	4
III	Core XI: Basic Motion Graphics	6	3	20	55	75	3
III	Elective I	5	3	20	55	75	3
IV	Skill Based Subject III –Show Case Project in Motion Graphics	3	-	-	-	75*	3
SEMESTER VI							
III	Core XII: Advanced Compositing	6	3	25	75	100	4
III	Core Lab V: Computer Lab on Advanced Compositing	5	3	40	60	100	4
III	Core XIII: Dynamic Simulation	6	3	20	55	75	3
III	Elective II	5	3	20	55	75	3
III	Elective III	5	3	25	75	100	4
IV	Skill Based Subject IV: Show Case Project in Visual Effects and Compositing	3	-	-	-	75*	3
V	Extension Activities @	-	-	50	-	50	2
Total						3500	140

List of Elective Papers (Colleges can choose any one of the paper as electives)		
Elective – I	A	Elements of Film & Video Production
	B	Media Planning
	C	Audio Video Tools
Elective – II	A	Advertising
	B	Screen play
	C	Computer Laboratory on Dynamic Simulation
Elective – III	A	Graphic Production
	B	Event Management
	C	Advanced 3D Composting

§ Includes 25% / 40% continuous internal assessment marks for theory and practical papers respectively.

@ No University Examinations. Only Continuous Internal Assessment (CIA)

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*For Project work : 20% marks & for viva voce: 80% marks

SEMESTER-I**FOUNDATION COURSE IN CLASSICAL ANIMATION****UNIT I:**

Fundamentals of Art, Design & Visualization – Fundamentals of design -Principles of design-Fundamental of drawing,- Introduction to perspective - Colour Theory- Anatomy Study,(man & animal) Introduction to 2D and 3D.Pre Historic paintings-Traditional Art-Variou eras & isms-Prehistoric Sequential Drawings.

UNIT II:

Object - Getting to know about Pencil, Paper- Intro to Lines, shapes and Forms - Drawing with different shapes and forms- Drawing complicated forms with the help of shapes. Layout & Background Painting – Basic and Advanced techniques layout -Basic and Advanced techniques in BG Painting. The Student will learn everything from introductory concepts of perspective, color keys to advanced techniques in layout and Background painting. The class is geared up towards the beginner to intermediate student, and is centered on layout for animation.

UNIT III :

History of animation - Showcase of Animation films- Getting to know about the old Animation film process- Knowing the new Animation technology. 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.

UNIT IV:

Human Anatomy- Hand – Humerous Bone – Ulna Bone – Radius Bone – Carpals Bone – Meta Carpals Bone – Trachea Bone – Inner Cornville Bone – Outer Cornville Bone – Sternum Bone. Film pipeline and the Diff career opportunities in Animation- Development of Traditional Animation & Digital Animation.

UNIT V:

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.

REFERENCES :

Wells, P;“Understanding Animation”. London & New York :Routledge,1998.
Whitaker H & Halas J;“Timing for Animation”. Boston & Oxford : Focal Press,2002.
VikasGubta&Kogent Solutions Inc; “Multimedia and Web Design”, Dream tech,2000
VikasGubta; “A Revolutionary 3-Stage Sub learning System”. Dream tech , 2006.
Adams T. R; “Tom and Jerry : 50 Years of Cat and Mouse” .New York : Crescent Books.1991

CORE LAB I**2D ANIMATION**

1. Perspective drawings - One point perspective ,Two pointperspective,Three- point perspective
2. Live Sketching
3. Object drawing-Flower drawing,Fruit drawing, Sequence drawing- design
4. Colorwheel,Color Harmonies-Painting
5. Anatomy- The Human Form Anatomy & Proportion Character design with anatomy
6. Mechanics - (Rolling coin Uniform,Rolling coin Harmonic, Bouncing Ball, Pendulum with Thread (follow through) ,Double Pendulum ,Hand Lift,Flag
7. Bio-Mechanics - (Bird flight (Cut out),Man Jump,Head Turn, Own character, Man Walk, Front Walk,RunCycle,AnimalWalk,Sfx – Water

Practical Break up of marks for Examination : (Max Marks: 100)

Record	10 marks
Perspective drawings	30 marks
Object drawing	30 marks
Character design with anatomy	30 marks

Total	100 Marks

REFERENCES :

- Missal S. ; ‘Exploring Drawing For Animation’, New York : Thomson Delmar Learning, 2004
- Pilling J; ‘2D and Beyond ‘, Hove &CransPes-Celigny : RotoVision . 2001
- Canemaker J; ‘Storytelling in Animation’, Los Angeles : AFI, Ed., 1988
- Susie Hodge; ‘How To Draw Faces’, Search Press Ltd.TunbridgeWells,UK. 2011.
- Andrew Loomis; ‘Creative Illustration-1947’, Titan BooksLondon, UK.2012.
- George B. Bridgman; ‘Constructive Anatomy (Dover Anatomy for Artists)’, Dover Publications, New York City, 1973.
- George Bridgman; ‘Bridgman's Complete Guide to Drawing from Life’ , Re-Edition, Sterling Publishing Co., Inc. New York. 2001.
- Gary Faigin; ‘ The Artist's Complete Guide To Facial Expression’, Watson-Guptill Publications Inc. 2nd edition- US. 2008

PRINCIPLES OF ANIMATION

UNIT I:

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 - 12 principles of animation.

UNIT II:

Mechanics- Rolling coin Uniform, Rolling coin Harmonic-Simple Harmonic Motion; Demonstrating that one component of uniform circular motion is simple harmonic motion, Bouncing Ball- Animate three different types of 'ball' bouncing down a set of stairs.

UNIT III:

Pendulum with Thread (follow through)- A simple animation viewing a Foucault Pendulum at the North Pole from an inertial frame above the Earth-Double Pendulum -Hand Lift-Flag- A small animation of a vibrating tuning fork producing a sound wave.

UNIT IV:

Bio-Mechanics - (Bird flight (Cut out), Man Jump, Head Turn, Own character. Animation timings on key drawings, indicating clearly the number of inbetweens initially expect to create. Time out the action by going through the motions by using either a stopwatch or a watch with a second hand.

UNIT V:

Man Walk, Front Walk, Run Cycle, Animal Walk, Sfx – Water. Aims- The aim of this short exercise is to extend your understanding of animation timing and to develop an understanding of the basic principles as they apply to a walk cycle.

REFERENCES :

- Susie Hodge; 'How To Draw Faces' , Search Press Ltd. Tunbridge Wells, UK. 2011.
 Andrew Loomis; 'Creative Illustration-1947', Titan Books London, UK. 2012.
 George B. Bridgman; 'The Human Machine' , Dover Publications; First Edition edition- New York, 1972.
 George B. Bridgman; 'Constructive Anatomy (Dover Anatomy for Artists)' ,Dover Publications, New York City . 1973.
 Winsor McCay; 'Gertie the Dinosaur'. 1909.

ALLIED - I**DRAWING - PRACTICAL**

List of Practical :

1. Form and structure
2. Basic geometrical shapes
3. Patterns and structure in day to day life.
4. perspectives
5. Composition
6. Light and shade
7. Birds, Animals
8. Human forms
9. Living and environmental space
10. Life and movement
11. Illustrations
12. Lettering
13. Logo styles
14. Symbols
15. Visual representation of ideas.

Practical Break up of marks for Examination : (Max Marks: 50)

Area I- Pencil/painting	15 marks
Area II- Spray Painting	15 marks
Area III- Cartoons	15 marks
Area IV - Record	5 marks

Total	50 Marks

REFERENCES

:

Susie Hodge; 'How To Draw Faces' , Search Press Ltd.TunbridgeWells,UK. 2011.

Andrew Loomis; 'Creative Illustration-1947' , Titan Books London, UK. 2012.

SEMESTER-II**INTRODUCTION TO 2D DIGITAL ANIMATION****UNIT I:**

Difference Between Traditional Animation and Computer Animation. An Introduction to Computer Animation, Walkthrough a 2D dimensional digital technique of creating cartoon and realistic characters involving anatomy construction, creating environment and to implement the principles involved in animation.

UNIT II:

2D animation application software interface; Introduction to animation softwares; User interface-tools & menus – 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. Tracing – colouring; importance of understanding colors and how to use them – light & shades guide layer-masking-layers & symbols.

UNIT III :

Principles of animation-ease in-out- 2D graphics editing features – basic geometric transformation – Boolean operations on shapes – object stroke attributes – object fill attributes – shading techniques (blends – gradients) – packaged effects (extensions – plugins) – features specific to the program in use. Character animation- lip-synching with sound

UNIT IV:

Pre-production- Overview of pre-production in animation-concept-scripting & storyboarding. Various stages of creating 2D animations, including: script writing, character design, thumbnailing, penciling, inking, page structure, panel composition, and storytelling.

UNIT V:

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. Character design-acting & miming-background design-compositing- audio editing- sound – importing sound – placing sound – button – editing – start and end points of sound – publish setting – swf-html-gif-jpeg-png- Quick time.

REFERENCES :

Burne Hogarth; 'Dynamic Anatomy: Revised and Expanded Edition' Paperback, Watson-Guptill; Rev Exp edition, New York, 2003.

Richard Williams; 'The Animator's Survival Kit' Revised Edition, Faber and Faber; Second Edition', London . 2012

Ollie Johnston ; 'The Illusion of Life: Disney Animation' Disney Editions; Rev Sub edition- New York , 1995.

CORE LAB II**2D DIGITAL ANIMATION**

List of Practical:

1. Character Tracing.
2. Coloring to trace character.
3. Light & shades to an object/character.
4. Solar System With Guide Layer.
5. Image or Text Masking.
6. Animating a text- Bouncing.
7. Ball - Rolling Coin.
8. Walk cycle -Story making.

Practical Break up of marks for Examination : (Max Marks: 100)

Record	10 marks
Coloring,Light& Shades	30 marks
Text Animation	30 marks
Character Animation	30 marks

Total	100 Marks

REFERENCES :

1. Pilling J; '2D and Beyond ', Hove & CransPes-Celigny :RotoVision. 2001
2. Susie Hodge; 'How To Draw Faces' , Search Press Ltd.TunbridgeWells,UK. 2011.
3. Andrew Loomis; 'Creative Illustration-1947' , Titan Books London, UK. 2012.

ALLIED - II

CREATIVE WRITING

UNIT I :

History of writing – Elements of Language – Concept of Literate Societies – Language as a tool of Communication – Writing as coding of contents.

UNIT II :

Readability – Techniques of readability – Gunning's fog Index- Point score – Flesch's reading Ease Score (RES) and Human Interest Score (HIS) – Practical exercises.

UNIT III :

Effective writing – principles and methods – Rules and grammar – paragraphs – Narration – description – sentences – Nouns & Pronouns – verbs – adjectives – sequences of tenses – punctuation marks – Idioms and phrases – Techniques of translation – practical exercises.

UNIT IV :

Writing for special groups: children, woman – Techniques of writing news, editorials, letters to the editor - profiles - Practical exercises.

UNIT V :

Creative writing – principles and practice – feature writing – Essays – Business writing – Sports writing and Technical writing- Practical exercises and review of published articles.

REFERENCES:

1. Mencher, Melvin. „Basic News Writing Universal Bookstall, New Delhi.1993.
2. SreenivasRao. “Handbook for Writers and Editors. Academic Book Centre, Ahmedabad. 1981.
3. Evans, Harold. „,Newsman „s English“ . Heinemann, London:1972.
4. Reah, Danuta. Language of Newspapers (2nd ed.). Routledge, London. 2002.
5. Ferguson, Rowena.„EditingA Small Magazine“. Columbia Univ.Press. 1976
6. Hicks,Wynford. English for Journalism.Routledge, London. 1993.
7. Effective writing – Robert Gunning
8. Modern English Usage – Fowler
- Art of effective writing – Rudolf Flesch

SEMESTER-III**INTRODUCTION TO 3D****UNIT I:**

Introduction to 3D - Interface of 3D Max - Basics of 3D Max Modelling – Exporting - Using the menus. Maya Basic Modeling – Maya Interface – Floating and docking - View port manipulation- Command panel- customising the interface- Using drag and drop feature - Introduction to different workspaces.

UNIT II:

Creating objects using EP curve, CV curve – Making Table Lamp – Polygon Terminology, Polygon over view – Modeling a dice using Boolean – Making an iron box using loft – Modeling some inorganic objects some inorganic objects – Creating Terrain using sculpt geometry tool.

UNIT III:

Geometry :sub objects, Extruding, welding, bridging etc - Recognizing the workspaces - Introduction to modifiers and modifier gizmos. Maya Basic Modeling – Maya Interface – Creating objects using EP curve, CV curve – Making Table Lamp – Polygon Terminology, Polygon over view – Modeling a dice using Boolean – Making an iron box using loft – Modeling some inorganic objects some inorganic objects – Creating Terrain using sculpt geometry tool.

UNIT IV:

Familiarity with common modifier like bend, editpoly, Xform wave, lathes symmetry etc. Using the modifier stack - Navigating the modifier stack - Hot keys, User defined hot keys.

UNIT V:

Material assigning – Hyper Shade over view – Shade over view – Shades and Textures – Material Linking - Light Linking to the materials – Mental Ray Shades – Mental Ray Textures – Image based Lighting Shades – Controlling Photon Emission from shades.

REFERENCES :

Animation Writing and Development, Jean Ann Wright, Focal Press Visual Effects and Animation Series.

Avgeranis George ; Animators Guide to 2D Computer Animation

Digital Animation Bible – AVGERAKIF, Tata McGraw Hill.

Maya – 8 : The Complete Reference, MEADE, Tata McGraw Hill.

ADVANCED CONCEPTS OF 3D :MATERIALS, LIGHTING & RENDERING**UNIT I :**

Character UV Texturing- UV Texturing over View – Applying Texture for Dice – Applying UV's for Inorganic Models- Applying UV's for head – Applying UV's for body – Applying UV's for B.G.

UNIT II :

TEXTURING –Hypershade - Basic overview of hypershade -Overview Different types of surface - Creating or making a wine bottle with glass -Labeling to a bottle with layered shader - Overview of 2d Texture - 3D Texture - UV Mapping - Overview to 3d Paint - Introduction to Visor tool - Texture a military Jacket using layered texturing.

UNIT III :

LIGHTING - Introduction to nature Lights & its properties, Basic Lights - Light Nodes & its attributes - Lighting/Shading - Understanding Making & Breaking Lights link - Three point Lighting - Introduction to Key,Fill& Rim Light - Three point Lighting to a Character - Lighting 3d object with real footage - Indoor Lighting - Outdoor lighting -Environment lighting.

UNIT IV :

CAMERA-Camera setup - Camera attributes & its angles.Batch Rendering – Rendering Formats – Light Pass Rendering – Frames Rendering - F-Check rendering – Occlusion Rendering – Motion Blur rendering – Final Movie Rendering.

UNIT V :

RENDERING- Render types & its parameters. Basic Rendering – Rendering Scene – Interactive Photo Realistic Rendering – Using mental ray for Maya render – Particle Rendering – Software Rendering – Hardware Rendering – Final Gather Rendering – Play Blast Rendering.

REFERENCES :

Marcos Mateu-Mestre; 'Framed Ink: Drawing and Composition for Visual Storytellers'
Publisher: Design Studio Press-USA, 2010.

Graham Webb; 'The Animated Film Encyclopedia: A Complete Guide to American Shorts, Features and Sequences 1900-1999'; Mcfarland; 2 edition- Jefferson, NC, US ,2011.

3D MODELING

UNIT I:

MODELING- User Interface –Curves : Edit Curves, Surface -NurbsModeling - Polygon Modeling-Intoduction to Subdivision Modeling.Introduction to various 3D modelling Techniques :- Organic Modeling.

UNIT II:

B.G & Set Modeling – Creating Mountains – Interior & Exterior Modeling – Modeling a garden – Modeling a Landscape. Mechanical& Technical Modelling- Using Templates for Modeling.

UNIT III:

Polygon, Patch Modeling& NURBS modeling.Managing the display of huge sets and models in the view port – camera clipping - proxy display - Concept of polygon loops. Working with polygons (cont'd) Geometry rules for polygons Polygon interaction tools importing/exporting polygons Polygon warnings Display/selection techniques Polygon intersection Clip and close/ merge.

UNIT IV:

Concept of edit mesh and edit poly: Low poly modelling.Modelling a high poly model - Technical issues related to managing a high poly model. Modifiers and compound objects-How to manage vertex, faces and polygon selections.

UNIT V:

Maya Character Modeling – Modeling the eyes, nose – Modeling the Leg of the Character – Modeling the body – Modeling a Female Character – Modeling a Male Character – Modelinga High Polygonal.

REFERENCES :

Richard Williams ; ‘The Animator's Survival Kit: A Manual of Methods, Principles, and Formulas for Classical, Computer, Games, Stop Motion, and Internet Animators by Cartoon Animation’
Frank Thomas, Ollie Johnston (Contributor), Collie Johnston; ‘The Illusion of Life: Disney Animation ‘
Peter Ratner ; Mastering 3D Animation

ALLIED - III**COMPUTER LAB ON 3D CHARACTER DESIGN**

Nurbs Modeling: Chesseboard using Surface - Modeling a Slipper - Stair case -Spaceship - Room Interior

Polygon Modeling: HandModeling - Face Modeling - Torso Modeling - Leg Modeling - Arm Modeling - Complete Human Character.

Practical Break up of marks for Examination : (Max Marks: 100)

NurbsModeling	20 marks
Polygon Modeling	20 marks
Set Design(BG Modeling)	20 marks
Character Modeling	40 marks

Total	100 Marks

REFERENCES :

Ratner P. White T. (1999) ; ‘The Animator’s Workbook’, New York : Watson-Guptill Publications, 2003.

Marcos Mateu-Mestre ‘s ‘Framed Ink: Drawing and Composition for Visual Storytellers’ Publisher: Design Studio Press-USA,2010.

Ratner P; ‘Mastering 3D Animation’, New York : Allworth Press. 2004

Patmore C.;’The Complete Animation Course’, London : Thames & Hudson, 2003

SKILL BASED SUBJECT I**SHOW CASE PROJECT- I**

Students produce short projects as experiments in concepts, style or technology and are encouraged to take risks, break rules and explore their own unique creative potential. Students may either work in 2D or 3D, according to their inclination prerequisites, or with consent of the Faculty, they may work in any medium appropriate to their experience and resources. While producing their own work, students also serve as production planning team and production crew for all other projects.

REFERENCES :

Ratner P; ‘Mastering 3D Animation’, New York : Allworth Press. 2004

Formulas for Classical, Computer, Games, Stop Motion, and Internet Animators by Cartoon Animation’

Marcos Mateu-Mestre; ‘Framed Ink: Drawing and Composition for Visual Storytellers’ Publisher: Design Studio Press-USA, 2010.

AvgeranisGeorge ; Animators Guide to 2D Computer Animation

SEMESTER-IV**ADVANCED 3D ANIMATION****UNIT I :**

Basic Animation – Animation Principles – Camera animation – Key Frame Animation – Dope Sheet Editor – Track Editor. Non-Linear Animation – Motion Path Animation – Using Clusters – Using Deformers – Key Frame Animation Flow Path Objects – Snap Shot Animation.

UNIT II :

Introduction to 3D animation using a commercial 3D graphics application. Storyboarding techniques, Principles of anthropomorphic animation Process and manipulate motion captured data. Exporting animation sequences into pre-existing scenes, Importing animation into real-time games.

UNIT III :

Non-Linear Animation – Motion Path Animation – Using Clusters – Using Deformers – Key Frame Animation Flow Path Objects – Snap Shot 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 IV:

Basic Rigging – Creating Bones For Character – Creating Bones For Four Leg Character – Biped Rig – Quadruped Rig – Vehicle Rig – Facial Rig- 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.

UNIT V :

Character Rigging – Creating Ik's for Character – Creating bone's for Character – Facial Rigging - Binding Shape – Binding & Weight for character – Full body IK. Advanced rigging - Vertex weighting techniques.

REFERENCES :

The Art of 3D Computer Animation and Effects by Isaac Kerlow .

Beginner's Guide to Animation: Everything you need to know to get started by Mary Murphy.

The Animator's Survival Kit, Expanded Edition: A Manual of Methods, Principles and Formulas for Classical, Computer, Games, Stop Motion and Internet Animators by Richard Williams

3D CHARACTER ANIMATION

UNIT I :

Applying classical 2D animation techniques i.e. Stretch and squash for 3D characters. Walkcycles and Run cycles - creating the illusion of weight. Animation - solve for action parameters - Initialization - solve for shape parameters.

UNIT II :

Character Animation – Creating Walk Cycle – Creating Run Cycle – Female Walk – Male Walk – Four Leg Character Walk cycle – Four Leg Character Run cycle – Lazy Walk – Brisk Walk – Facial Animation – Expressions. Body Language, Attitude, Acting, Character Interaction, Animal walks & runs, snakes & birds.

UNIT III :

Character Animation – Continue working in the animation by adding in secondary animations and better timing. Also, add additional animations to other props, elements of the environment, or cameras, as necessary to enhance the overall effectiveness of the performance.

UNIT IV:

Move through the principles and practical techniques of animation. principles of animation, blocking and smoothing, timing and facial animation. Creating and working with biped characters - bone system.

UNIT V :

Rigging the characters and rigging solutions to Anatomical Problems. Introduction to scene animation and key framing - Animation modifiers, track views, constrains and controllers. Introduction to automated rigging systems and methods- Embedding small scripts in the hierarchy control system to save time and facilitate handling. Animating and rendering layered scenes - Using advanced rigs to achieve natural articulation of characters.

REFERENCES:

Understanding Motion Capture for Computer Animation, Second Edition (The Morgan Kaufmann Series in Computer Graphics) by Alberto Menache.

Tom Bancrofts 'Character Mentor: Learn by Example to Use Expressions, Poses, and Staging to Bring Your Characters to Life' Publisher: Focal Press; 1 edition- Oxford, UK (April 24, 2012).

Francis Glebas's 'The Animator's Eye: Adding Life to Animation with Timing, Layout, Design, Color and Sound' Publisher: Focal Press; 1 edition- Oxford, UK (September 24, 2012)

CORE LAB III**3D ADVANCED MODELLING, CHARACTER RIGGING & RENDERING**

Animation tools & interface: - Animation tools & interface animation editors -keyframe animation - IK \ FK-ANIMATION - IK \ FK-ANIMATION.

1. Principles: Introduction to Animation Principles - Follow Through \ Secondary Movement.
2. Bouncing Ball: Acquainted with keys of Basic concept of bouncing ball- Bouncing the ball in a single place - Bouncing ball with spacing - Bouncing ball with timing - Bouncing ball with distance - Different materials bouncing balls together with Concept - Continuation of previous session - Final correction with graph editor - Understanding the usage of Graph Editor - Progressive Bouncing Ball with timing, spacing & distance - Previous session with Stretch and Squash - Final correction with Graph Editor
3. Pendulum: Pendulum Basic - Pendulum with Settlement - Box With Antenna
4. Posing: Posing for understanding the body balance & arc - Posing with self reference
5. Walk: Biped Walk cycle progressive with distance - Continuation of previous session - Final correction with graph editor & Drop Sheet - Quatrupeds Walk cycle progressive with distance - Continuation of previous session - Final correction with graph editor & Drop Sheet - Body Mechanics: Pulling/Lifting/Pussing Heavy weight objects - Continuation of previous session - Final correction with graph editor & Drop Sheet
6. Run : Run Cycle - Continuation of previous session - Final correction with graph editor
7. Jump: Jump with distance - Continuation of previous session - Final correction with graph editor/Drop Sheet
8. Constrain: Moving object from one place to another place - Point Constrain and Aim constrain - Orient Constrain and Scale Constrain - Moving object with both the hands (Constrain) - Use of Parent Constrain - Continuation of previous session
9. Hide & Show: Throwing ball on usage of hide & show - Continuation of previous session - Final correction with graph editor/Drop Sheet
10. Lip-Sync: Basic mouth expression with - A E I O U - Continuation of previous session - Lip-sync with simple song - Continuation of previous session - Understanding of timeline for audio synchronization - Correction & Final output with audio - Lip-sync with dialogue - Continuation of previous session - Correction & final output
11. Expressions: Expressions with Joy, anger, shock, etc. - Self expressions with Head, Lips, Eyebrow, Eyes etc
12. Continuation of previous session - Correction with Graph Editor
13. Acting Scene with dialogue: Work on personal showreel under the guidance of mentor - Continuation of previous session
14. Use of camera angles & lights.

Practical Break up of marks for Examination : (Max Marks: 100)

Basic Animations(Non linear Animation)	30 marks
Character Rigging	30 marks
Advanced Character Animation	40 marks

Total	100 Marks

REFERENCES:

Tom Bancrofts; 'Character Mentor: Learn by Example to Use Expressions, Poses, and Staging to Bring Your Characters to Life', Focal Press; 1 edition- Oxford, UK , 2012.
Francis Glebas; 'The Animator's Eye: Adding Life to Animation with Timing, Layout, Design, Color and Sound' Publisher: Focal Press; 1 edition- Oxford, UK (September 24, 2012)

ALLIED - IV**PRODUCTION FOR ANIMATION****UNIT I :**

Directing and Analyzing a film - Animation film techniques - Film language in action - Adaptation of film language into animation - Student project- Character Designs, Overview, Working with a script/ screenplay.

UNIT II :

Camera angles - Movements of the camera- Pans - Tilts Truck in and Truck outs - Shots and Scenes - Dramatic effects - Visual language and readability - Visual continuity -Timing the storyboard - Analyze storyboard of a film - Student project- story boarding - Layout and design.

UNIT III:

Focus on the design of the film- background design and composition as well as camera aspects and film language - Working with storyboard - Field size - Design and rendering the scenes layout and composition - Pans, Trucks and Multiple Pans - Scene planning - Realistic touches.

UNIT IV :

Character interaction with the scene and the backgrounds - Analyze film layouts -Design and layouts - clean up of BGs and BG painting.introduutory concepts of perspective, color keys to advanced techniques in layout and Background painting.

UNIT V :

Sound concepts and effects for the film - The sound track - Sound equipment and theory - Dialogue and Voice-over - Exposure-sheet doping Break down - reading the sound track - editing- Image and voice -sound FX and Music.

REFERENCES :

The Invisible Art by Mark Cotta Vaz
Visual Effects Cinematography [Paperback] ZoranPerisic (Author)
Industrial Light & Magic: The Art of Special Effects by Thomas G. Smith

SKILL BASED SUBJECT II**SHOW CASE PROJECT- II**

Students produce short projects as experiments in concepts, style or technology and are encouraged to take risks, break rules and explore their own unique creative potential. Students may either work in 2D or 3D, according to their inclination prerequisites, or, with consent of the Faculty, they may work in any medium appropriate to their experience and resources. While producing their own work, students also serve as production planning team and production crew for all other projects.

REFERENCES :

Marcos Mateu-Mestre 's 'Framed Ink: Drawing and Composition for Visual Storytellers'
Publisher: Design Studio Press-USA, 2010.

Missal S. ; 'Exploring Drawing For Animation', New York : Thomson Delmar Learning, 2004

Pilling J; '2D and Beyond ', Hove &CransPes-Celigny : RotoVision . 2001

SEMESTER-V**AUDIO-VIDEO TOOLS AND TECHNOLOGY****UNIT I :**

Post-production - Introduction to Postproduction;Process,Principles&Elements - Basic Tools and Techniques.Sound Recording Studios - Motion Picture and Video Production –Products and Operations.

UNIT II :

Working with Audio - Role of audio in storytelling -Waveforms and editing audio; Frequency range- sound- wave length - the speed of sound - musical sounds - noise – signal - dynamic range - pitch – harmonics-equalization.Recording session - laying tracks, mono, stereo, panning, surround, filters and pad.

UNIT III :

Video streaming and Editing - Introduction toEditing:workspace -Tools & Menus - Editing principles;various techniques of editing.Frame size, Frame rate, Quality- Differences between linear and non-linear editing.

UNIT IV :

Basic Animation and Interpolation – Animation Principles; Parallax - Transform Properties.Cleanup and In-between introductory concepts to basic techniques in Animation, Principles of animation Production of cleanup and in-betweens.

UNIT V :

Interpolation; Spatial and Temporal Interpolation - Orient along Path - Define Child-Parent Relationship.Intermediate level – Introductory concepts to basic techniques in Animation Principles of Animation Production.

REFERENCES :

Sight, Sound, Motion: Applied Media Aesthetics, by Herbert Zettl.

Rethinking Media Change: The Aesthetics of Transition (Media in Transition) by David Thorburn and Henry Jenkins.

VOICE: Vocal Aesthetics in Digital Arts and Media (Leonardo Book Series) by NorieNeumark, Ross Gibson and Theo van vanLeeuwen.

BASIC COMPOSITING

UNIT I :

Basic compositing - Introduction to Compositing - Understanding the different techniques. Separate foreground elements from background elements. Alpha Blending- Blend foreground elements with new background footage.

UNIT II :

Tracking and Stabilizing - Motion tracking with 1-point tracking - Motion stabilize with 1-point tracking, Four point Tracking - Track extension- UNIT-IV: Motion Caption – Formats – Methods – Usages – Motion Capture Software – Merge with Software – Expression – Formats – Methods – Usages – Expression Capture Softwares.

UNIT III :

Keying and Color Correction - Showcase of Chroma Shoot films - Simple Chroma Removal: Industry standard Tools - Grain Footage - Part by part Chroma Removal; Garbage masking for keying-Color Theory; Brightness-Contrast, Level, Curves, Color Balance, HSB, etc.

UNIT IV :

Rotoscope(masking)- Different Masking Tools - Animation of Mask path - Basic Roto; Roto on moving character, Hair Roto, Motion blur Roto. 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 :

Layer Blends-Using the Styles Panel- Creating Custom Layer Styles - Smart Filters - Sharpen and Blurs- Noise Filter - Filter Gallery - Clean Up, Wire and Rig Removal - Paint tools; Clone tool - Basic wire removal - complicate wire/rig removal. Remove unwanted elements in footage.

REFERENCES :

Scott Kelby ; ‘Photoshop book for Digital Photographers’

Ken Dancyger ; ‘The Technique of Film and Video Editing, Fourth Edition: History, Theory, and Practice’

Michael Wohl ; ‘Editing Techniques with Final Cut Pro’

Micheal J. McAlister; ‘The Language of Visual Effects

CORE LAB IV**COMPUTER LAB ON BASIC COMPOSITING**

1. Make some double role using steady camera.
2. Motion Stabilize with 1 and 2-point tracking.
3. Semi-transparent Keying.
4. Chroma remove in grainy footage.
5. Sin City effects with use of leave Colour, Level on Red dressed lady.
6. Day to night Conversion.
7. City wire removal.
8. Sign board replacing.
9. Creating Lava and Cloud using different effects and filters.
10. Create water ripple using wave world, Caustic.
11. Fire, Rain Effects.
12. Camera panning and parallax effects using Transform Properties.
13. Displace a text on curtain.
14. Logo and Lower third Animation.
15. Particle Motion Graphics.

Break up of marks for Examination: (Max Marks: 100)

Chroma - Keying	30 marks
Colour Correction	30 marks
Motion Graphics.	40 marks

Total	100 Marks

REFERENCES:

Ken Dancyger ; 'The Technique of Film and Video Editing, Fourth Edition: History, Theory, and Practice'

Michael Wohl ; 'Editing Techniques with Final Cut Pro'

Micheal J. McAlister; 'The Language of Visual Effects'

BASIC MOTION GRAPHICS

UNIT I :

Filters-Introduction to Broadcasting - Introduction to Motion Graphics - Introduction to Filters - Different types of filters. Composite using luminance-based track matte.Introduction to Channels.

UNIT II :

Particles - Introduction to Particles; Particles for Motion Graphics - Rain and Fire Effects.Inserting Particles-Changing the Look of Particles- Set a Field on Particles- Particle Grid- Particles on an Object- Emit from Object- Collisions- Curve Flow

UNIT III :

Working with Tools – Tools and Menus; Different Creator tools - Introduction to Animation, Displacement - Understanding Timeline – Interpolation; and Looping using timeline.Create a comp with matte, foreground, and background stacked inlayers.

UNIT IV :

Title Graphics - Text Tools – Concept; Designs, Graphic design principles and techniques. Understanding Different Fonts - Logo Designs; Various tools and techniques. Advanced design special effect techniques, overlays, photo manipulation, and type styling.

UNIT V:

BG creation - Lighting and Look Development- Perform color correction, contrast, image correction, check bluelines - 2D v/s 3D texts -Animation Pre-sets.Animate Mask- Move mask to cover rig in subsequent frames.

REFERENCES :

Keying, Tracking, Bullet Time Sequence; The Wachowski's “**Matrix**” (1999).
Digital Non-Linear Desktop Editing by Sonja Schenk
Nonlinear - A Field Guide to Digital Video and Film Editing by Michael Rubin
The Art and Science of Digital Compositing, Second Edition: Techniques for Visual Effects, Animation and Motion Graphics (The Morgan Kaufmann Series in Computer Graphics) by Ron Brinkmann
Professional Digital Compositing: Essential Tools and Techniques by Lee Lanier
Audio in Media by Stanley R. Alten
Color Correction, Roto; Frank Miller's “**Sin City**” , 2005.

Elective – IC**AUDIO VIDEO TOOLS****UNIT I :**

Post-production - Introduction to Post-production; Process, Principles & Elements - Basic Tools and Techniques. Sound Recording Studios - Motion Picture and Video Production – Products and Operations.

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Interpolation; Spatial and Temporal Interpolation - Orient along Path - Define Child-Parent Relationship. Intermediate level – Introductory concepts to basic techniques in Animation Principles of Animation Production.

REFERENCES :

Keying, Tracking, Bullet Time Sequence; The Wachowski's "**Matrix**" (1999).
Color Correction, Roto; Frank Miller's "**Sin City**" (2005).
Lava, Particles; Mick Jackson's "**Volcano**" (1997).
Various TV Advertisements; Pepsi, Coca-Cola, Audi etc

SKILL BASED SUBJECT III**SHOW CASE PROJECT IN MOTION GRAPHICS**

Students produce short projects as experiments in concepts, style or technology and are encouraged to take risks, break rules and explore their own unique creative potential. Students may either work in motion graphics or digital art works according to their inclination prerequisites, or, with consent of the Faculty, they may work in any medium appropriate to their experience and resources. While producing their own work, students also serve as production planning team and production crew for all other projects.

REFERENCES :

Nonlinear - A Field Guide to Digital Video and Film Editing by Michael Rubin
The Art and Science of Digital Compositing, Second Edition: Techniques for Visual Effects, Animation and Motion Graphics (The Morgan Kaufmann Series in Computer Graphics) by Ron Brinkmann

SEMESTER-VI**ADVANCED COMPOSITING****UNIT I :**

Nodes & its workflow - Introduction to Workflow; Understanding the Nodes - Working with viewport controls - Using the Toolbar- Using the Menus- Setting Up the Project-Introduction to basic Animation.

UNIT II :

Advanced Roto and Keying -Matte, Roto Using Tracking Technique - Transformation and Animation - Shuffle & Shuffle Copy - Color Management - Motion Blur and Hair Chroma Removal from Moving Camera.

UNIT III :

Render Pass Composition - Introduction to 3D render pass; Advantages of Using Render Passes- Channels, Understanding Pass Contribution Maps. Custom Frame Buffers- Open Exr format, Axillary channels.

UNIT IV :

Different types of passes - Light Loop Material Passes- Non-Material Passes- 2D Motion Vector- 3D Motion Vector- Camera Depth- Normalized 2D Motion Vector- 5.2.5. Volume Passes- Floating points - Data types - Image Formats - Various tools - Blending modes - Advanced Color Correction.

UNIT V :

Basic 3D Compositing - 2.5D layer System - Introduction to 3D tools; 3D Production Environment - 3D compositing - basic lights and Camera system. 2D v/s 3D Compositing; 3D tools, Cards, Geometry - Pipeline between Various 3D software; Import and Export – Camera - Lights, Shaders.

REFERENCES :

Nuke 101: Professional Compositing and Visual Effects by Ron Ganbar
Professional Digital Compositing: Essential Tools and Techniques by Lee Lanier
Lava, Particles; Mick Jackson's "Volcano" (1997).

CORE LAB V**COMPUTER LAB ON ADVANCED COMPOSITING**

1. Roto on a moving Character, Car, Hair, Motion Blur Roto.
2. Remove pimple from a moving face.
3. Water drops on glass.
4. Fireworks.
5. Crowd Multiplication using particle system.
6. Rain, Snow effects using different forces tools.
7. Grapes Interaction with fluids.
8. Ultra Motion water splash with Rigid Body.
9. Tsunami in City.
10. Princess came from Water.
11. Manual tracking for shot were auto tracking is not properly work.
12. Set extension using camera projection.
13. Rig removal using 3D camera tracking and projection.
14. 3D matte painting and Compositing.
15. Render pass compositing.
16. 2.5D Relighting.
17. Stereoscope Compositing.

Practical Break up of marks for Examination : (Max Marks: 100)

Tracking and Rotoscopy	30 marks
Fluid Simulation	30 marks
Compositing(Mutipass/Stereoscope)	40 marks

Total	100 Marks

DYNAMIC SIMULATION

UNIT I :

Introduction and Workflow - Different types of simulation - Industry standard tools, Importance of Physics, and Mathematics in Dynamic Simulation - Emitters, Forces - 2D v/s 3D particle system - Introduction to cloth - fluid and Water simulation.

UNIT II :

Particles, Emitters & Forces - Overview of different Emitter types; Attributes - Global and Exclusive Links - Basic Particle System with Forces - 2D and 3D fluid Container; Dynamics - Particle and nCloth system - Wind, Turbulence, Vortex.

UNIT III:

Mesh Interaction - Importing and scaling 3D geometry - Object Emission - Particle interaction with 3D Geo; Morph daemon, Magic Daemon - Multiple Particle system with Different Daemons.

UNIT IV :

Rigid Body and Soft Body Dynamics - Introduction to Rigid and Soft Body; Different Types of tools for Rigid Body Dynamics - Particle Interaction with Rigid Body - Breaking Objects and optimizing Simulation.

UNIT V :

High Dynamic Simulation - simulate a scene with fixed substeps. Real wave - Hybrid large Dimension Liquid Solver - Multiple Rigid Body Interaction with Fluid - Particle Mesh - Integration with various 3D Software.

REFERENCES :

Particle Effects; Katy Perry's "**Firework**" Music video '**Teenage Dream**' (2010).
 Fluid Effects, Destructions, Explosions; "**2012**" By 'Roland Emmerich' (2009).
 Stereoscopy, Destructions, Explosions, Color Correction; James Cameron's "**Avatar**" (2009).
 300 (2006)
 Matte Painting, 3D Compositing; Peter Jackson's "**Lord of the Rings**" Trilogy (2001, 2002, 2003).
 Tsunami Effects; Clint Eastwood's "**Hereafter**" (2010).

Elective – II - B

SCREENPLAY

UNIT I :

The Current Campfire: Film as a Storytelling Device- The history of storytelling - Plays vs. novels vs. film - What is a "story"? - The "idea" vs. "story" vs. "screenplay"

UNIT II :

The Screen Story- What is it? - The logline - The essence of a screen story - Conflict (and why we love it) - Form, format and formula.

UNIT III :

The Structure of a Screenplay- Back to story- Aristotle (and what he had in common with Superbad) - The three act screenplay - The scene - Plot points.

UNIT IV :

The First Act- Establish, introduce and hook- The inciting incident - The first act plot point
The Second Act- Rising conflict and overcoming obstacles - The second act plot point
The Third Act- The “final battle” - The outcome of the final battle - The denouement - Happy vs. hopeful endings.

UNIT V :

Character - Plot vs. Character - Character vs. Characteristics- Actions speak louder than words - The main character (our hero!)- Other characters and character types Dialogue - The functions of dialogue – Voiceover. The Kitchen Sink-Back story & exposition- Subplots- Setup and payoff - Flashbacks- Theme Breaking the Rules - How screenwriters break them and why Genre - “What is this movie anyway?”

REFERENCES :

The Writer’s Journey by Christopher Vogler
Adventures in the Screen Trade by William Goldman
The New Screenwriter Looks at the New Screenwriter by William Froug

Elective – III – C**ADVANCED 3D COMPOSITING****UNIT I :**

3D Tracking - Introduction to 3D tracking; Advantage of 3D tracking, 2D v/s 3D Match moving - Pipeline Between various 3D software - Production Principles; Tools and Technique - Auto Tracking and Solving - Manual Tracking - Solving Lens Distortion - Object Tracking – Solving - Tracking Stereo Footage - Integration with various 3D applications.

UNIT II :

Camera Projection - Introduction to Camera Projection; Importance of Projection; Practical Examples - Advanced Camera Techniques - Reading External Models and Cameras from various 3D packages.

UNIT III :

Advanced Particle - Introduction to 3D particle System - Importance of 3D Particles - 2D v/s 3D Particle; Basic Emitters - Introduction to Forces; Turbulence, Vortex, Gradient Force - Custom Particle Effects - Showcase of Practical Examples.

UNIT IV :

Relighting - Introduction to Relighting; Position pass, Normal Pass - Understanding the Normal and the Point Position passes. Point cloud - Practical Examples. Applying the Relight Pass to the Beauty: Light Fusion Methodology.

UNIT V :

Stereoscope - Introduction to Stereo 3D - Showcase of 3D moves - Different Types; Active 3D, Passive 3D, Anaglyph 3D - Understanding Principles and Rules - Camera System; Stereo 3D Match moving - Stereo 3D Compositing - Rendering Stereoscope images from 3D software - Render Final Output.

REFERENCES:

Particle Effects; Katy Perry's "**Firework**" Music video '**Teenage Dream**' (2010).
Fluid Effects, Destructions, Explosions; "**2012**" By 'Roland Emmerich' (2009).
Stereoscopy, Destructions, Explosions, Color Correction; James Cameron's "**Avatar**" (2009).
300 (2006)
Matte Painting, 3D Compositing; Peter Jackson's "**Lord of the Rings**" Trilogy (2001, 2002, 2003).
Tsunami Effects; Clint Eastwood's "**Hereafter**" (2010).

SKILL BASED SUBJECT IV**SHOW CASE PROJECT IN VISUAL EFFECTS AND COMPOSITING**

Students produce short projects as experiments in concepts, style or technology and are encouraged to take risks, break rules and explore their own unique creative potential. Students may either work in 3D Compositing or Dynamic simulation works according to their inclination prerequisites, or, with consent of the Faculty, they may work in any medium appropriate to their experience and resources. While producing their own work, students also serve as production planning team and production crew for all other projects.

REFERENCES:

Professional Digital Compositing: Essential Tools and Techniques by Lee Lanier

Stereoscopy, Destructions, Explosions, Color Correction; James Cameron's "**Avatar**"
Color Correction, Roto; Frank Miller's "**Sin City**" (2005)
