

RAJA MANSINGH TOMAR MUSIC & ARTS UNIVERSITY

B. DESIGN IN ANIMATION Scheme / Practical / Syllabus 2026-2027



Mr. Bhupendra Raul
3D Faculty



Mr. Ayush Chakravarty
Post Production Faculty



Mr. Nilanjan Bhattacharya
2D Animation Faculty



Mr. Shivam Arzare
Pre Production Faculty



Dr. Parul Dixit
HOD Fashion Dept. RMTU

B.Design in Animation - 1st Year - Scheme

Paper	Time (in hours)	Size paper	Ext Marks		Midterm / CCE		Total
			Max. Marks	Min. Marks	Max. Marks	Min. Marks	
THEORY							
1. Fundamentals of Art & Design	3 Hours	-	70	23	30	10	100
2.Principles of Animation	3 Hours	-	70	23	30	10	100
3.History of Animation	3 Hours	-	70	23	30	10	100
PRACTICAL							
1.Character Design Fundamentals	6 Hours	A3	70	23	30	10	100
2.Backgrounds & Spatial Construction	12 Hours	A3	70	23	30	10	100
3.Principles of Animation	6 Hours	Digital	70	23	30	10	100
4.Storyboard & Digital Art	12 Hours	Digital	70	23	30	10	100
TOTAL							700

NOTE: For Passing examination, the candidates shall be required to secure 33% marks in each of the prescribed subject, separately in

1. The University Theory Exam
2. The University Practical Exam
3. Internal Assessment, i.e., CCE done at college/university level

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B.Design in Animation - 1st Year– Theory

Paper 1 – Fundamentals of Art & Design

Unit 1: The 7 Elements of Art

- Definition of Line, its types, expressive qualities (flow, weight, energy), visual illusion, and materials used in line drawing
- Definition of Shape, its types, and relationship with composition and visual impression
- Definition of Form, types of forms, and their 3D dimensional quality and visual impression
- Understanding Space, types of space (positive and negative), its relationship with other elements, and importance in composition
- Understanding Value/Tone, its importance, and relationship with space
- Color: definition, classification (primary, secondary, tertiary), warm and cool colors, properties, color wheel, color schemes, applications, and color psychology
- Texture: definition, types, methods of application, tools used, and its use in painting and sculpting

Unit 2: Composition its meaning and principles

- Meaning and importance of composition, along with techniques such as Rule of Thirds, Golden Ratio, and Fibonacci Sequence
- Understanding key principles of composition and their role in visual design
- Concept of unity, its objectives, visual perception, viewer relationship, and methods to achieve unity while avoiding discord
- Exploration of harmony, including its types (line, shape, form, color, texture, conceptual) and methods of creation
- Balance in composition, its principles, visual weight (line, form, color, tone), and types such as symmetrical, asymmetrical, and radial
- Role of contrast in design, its importance, relationship with space, and variations through line, shape, value, color, and texture

Unit 3: Advanced Composition Principles

- Concept of dominance, its objectives, relationship with background, and creation of focal points or areas of interest
- Use of emphasis in composition, its objective, and methods such as proportion, dominance, and contrast



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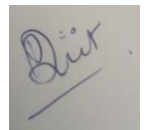
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- Understanding rhythm, its types, methods of creation, and visual and emotional impact
- Creating movement in composition through different techniques and approaches
- Application of proportion in space division and its relationship with form, color, and human proportions

Unit 4: Perspective

- Understanding perspective, its importance, and types such as linear and aerial perspective
- Study of linear perspective, including horizon line/eye level, vanishing points, and orthogonal lines
- Different types of linear perspective such as one-point, two-point, three-point, and multiple point perspective
- Use of aerial perspective and the role of color and value in creating depth.

Unit 5: Mediums and Rendering

- Exploration of different mediums, painting techniques, and processes of visual creation
- Fundamentals of drawing and rendering, including creating 3D effects on 2D surfaces, best practices, and common errors
- Introduction to digital art, including types such as vector and raster graphics

Suggested Reading:

- *Art Fundamentals: Color, Light, Composition, Anatomy, Perspective and Depth.*
- *Color & Light: A Guide for Realist Painters by James Gurney*

Paper 2 – Principles of Animation

Unit 1: Fundamental Principles of Animation (Part I)

- Introduction to principles of animation
- Timing and spacing
- Ease In and Ease Out (Slow In and Slow Out)
- Anticipation
- Exaggeration
- Squash and Stretch
- Secondary Action



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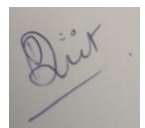
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Unit 2: Fundamental Principles of Animation (Part II)

- Follow Through and Overlapping Action
- Straight Ahead Action and Pose-to-Pose Action
- Staging and visual clarity
- Appeal and personality in animation
- Arcs and natural motion

Unit 3: Motion Dynamics and Flow

- Arcs of motion and their application
- Concepts of “hook-up” and in-betweening
- Wave principle and overlapping motion
- S-curve and C-curve in animation
- Continuity and flow of action

Unit 4: Character Mechanics and Movement Analysis

- Proportion and character design basics
- Balance and visual stability
- Weight and mass in animation
- Center of mass and path of action
- Silhouette and readability
- Arc movement: definition, uses, and importance
- Application of animation principles in walk cycles (timing, staging, arcs, squash and stretch, weight)

Unit 5: Animation Techniques and Character Application

- Types of animation techniques
 - Rough and in-between animation
 - Keyframing
 - Pose-to-pose animation
 - Straight-ahead animation
- Principles of anthropomorphic character movement
- Fundamentals of walk cycles for animated characters



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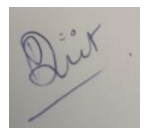
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Suggested Reading:

- *Animator's Survival Kit* by Richard Williams
- *Timing for Animation* by Harold Whitaker
- *Cartoon Animation with Preston Blair*
- *Disney Animation: The Illusion of Life* by Frank Thomas & Ollie Johnston.

Paper 3 – History of Animation

Unit 1: Pre-Animation Techniques and Early Developments

- Study of pre-animation optical devices: Zoetrope, Praxinoscope, Flipbook, Thaumatrope, Phenakistoscope. Development of early motion technologies: Kinetoscope, Filmstrip, Cinematograph, Theatre Optic, Zoopraxiscope
- Early animation innovations (1900–1920), birth of animation techniques, and introduction of cel animation by John Bray and Earl Hurd (1914). Landmark early animated works: Gertie the Dinosaur and Felix the Cat (1919)

Unit 2: History of American Animation

- The Golden Age of American animation (1928–1960), major studios: Metro-Goldwyn-Mayer, Warner Bros., Paramount Cartoon Studios, and Disney Studio
- The Nine Old Men of Disney: Frank Thomas, Ollie Johnston, Milt Kahl, Ward Kimball, Les Clark, John Lounsbery, Eric Larson.
- Silver Age of Disney (1950–1967) and development of iconic characters: Mickey Mouse, Looney Tunes characters, Tom and Jerry, Popeye, Betty Boop, and DC characters
- Warner Bros. animation and animators: Chuck Jones, Friz Freleng, Tex Avery, Bob Clampett, Robert McKimson, Frank Tashlin; Warner Bros. Seven Arts Animation
- MGM animation unit contributions: William Hanna, Joseph Barbera, Hugh Harman, Rudolf Ising; evolution of studio systems and character-driven storytelling

Unit 3: European and Canadian Animation

- History of French animation: The Dawn (1890–1910) led by Émile Cohl and development through films like *The Tale of the Fox* (1930–1937)
- French animated features and artists: *Asterix and the Gaul*, *Asterix and Cleopatra*, and animators Michel Ocelot and Sylvain Chomet
- French animated short films across decades (1930s, 1940s, 1950s, 1980s) and contributions of female animators: Lotte Reiniger, Evelyn Lambart, Irene Starewicz, Claire Parker



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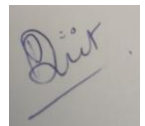
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- Canadian animation history: early pioneers (1900–1930), Raoul Barré, and development of the National Film Board of Canada during the Golden Age (1940–1960)
- Key Canadian contributors and studios: Norman McLaren, Nelvana (1971), Teletoon (1997), and overall animation history (1910–2000)

Unit 4: Asian Animation – India, Japan, and China

- History of Indian animation: roots in Indian classical art, folk art, and Magic Lantern; pre-independence developments and introduction of classical animation
- Contributions of pioneers: Dadasaheb Phalke etc.
- Development of storyboarding in Indian cinema and Bengali cinema traditions
- History of Japanese animation (Anime): origins (1907–1922), dawn (1917), pre-war (1923–1939), post-war productions, and establishment of Toei Animation
- History of Chinese animation: Shanghai Animation Film Studio, phases of development (1946–1949), Cultural Revolution (1966–1976), Reform Period (1978–1989), and the digital era

Unit 5: Evolution to Modern Animation and Techniques

- Transition from classical animation to digital animation and hybrid styles in modern production pipelines
- Integration of AI and real-time production technologies in contemporary animation workflows
- Comparative study of art styles: classical vs modern, including 2D and 3D animation techniques
- Technical foundations: difference between video timelines and frame-based animation systems
- Types of video formats and overall evolution of animation from early devices to present-day digital media

Suggested Reading:

- *The World History of animation by Stephen Cavalier*
- *Disney Animation: The Illusion of Life by Frank Thomas & Ollie Johnston.*
- *Cartoons: One Hundred Years of Cinema Animation by Giannalberto Bendazzi*
- *The Anime Machine by Thomas Lamarre*



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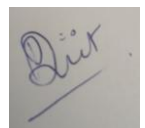
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B.Design - Animation - 1st Year– Practical

Paper 1 – Character Design Fundamentals

Overview- This course introduces the foundational skills required for figure drawing and character design in animation preproduction. Students will develop an understanding of gesture, proportion, and anatomical construction through exercises such as line of action studies, mannequin construction of male and female figures, and structural drawing of heads, hands, and feet. The course also explores facial construction, expression sheets, character turnarounds, and original character design, while emphasizing the simplification of anatomy using basic forms for animation. Additional assignments focus on drawing characters with drapery and creating dynamic key poses using different camera and perspective angles.

Assignment List:

1. Line of Action and Gesture Drawing- 20 Drawings in A3 Sized Paper
2. Mannequin construction for Male and Female Human Figures (Cartoon Characters and Semirealistic)- 15 Drawings in A3 Paper.
3. Head, Hand and Feet Construction - 10 Drawings in A3 Paper.
4. Face Construction & Expression Sheet- 5 Drawings in A3 Paper.
5. Full Body Turnaround- 3 Turnarounds (Basic Cartoon character, Bird, Quadruped Character turnaround)- 3 Turnaround sheets in A3 Paper.
6. Basic Character Design- 3 Character Designs in A3 Paper.
7. Simplification of Muscles- Anatomy for Animation (With Cylinders and Box)- 10 Drawings in A3 Paper.
8. Character with Drapery- 10 Drawings in A3 Paper.
9. Character Key Poses using different camera/perspective angles- 10 Drawings in A3 Paper.

Suggested Reading:

- *Cartoon Animation with Preston Blair*
- *The Art of Zootopia by Jessica Julius*

Paper 2 – Backgrounds & Spatial Construction

Overview- This course focuses on developing a strong understanding of perspective and visual composition for animation preproduction. Students will learn to construct space and depth through exercises in 1-point, 2-point, and 3-point perspective, along with drawing circles, cylinders, and objects in perspective with turnarounds, exploring spatial environments through studies such as staircase perspective, natural forms, fisheye lens perspective, and scene



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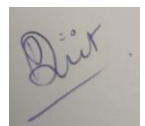
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composition. Composition techniques using the rule of thirds, Notan composition, and movie frame analysis. Emphasis is placed on creating animation layouts with foreground, middleground, and background depth layering, along with stylistic studies inspired by artists such as Edgar Payne, Samurai Jack's visual style and shape language, and the color work.

Assignment List:

1. Boxes, Circles and Cylinders in 1 Point, 2 Point and 3 Point Perspective- 8 A3 Sheets
2. Object Construction and Turnaround (Front, $\frac{3}{4}$ Profile, Back $\frac{3}{4}$ and Back)- 2 A3 Sheets
3. Lighting and Shading Fundamentals using pencils and grey markers- Objects lit from different angles- 2 A3 sheets.
4. Natural and Manmade Object drawing with crosshatching - 2 A3 Sheets
5. Drapery Study with different kinds of folds- 1 A3 Sheet
6. Perspective in Staircase- 1 A3 Sheet.
7. Sketchbook Submission- Student need to submit a sketchbook filled with observational and intuitive drawings showcasing quick sketching approach- A5 Sized Sketchbook of 50-80 Pages
8. Perspective in Natural Forms- 2 Drawings in A3 Sheets
9. Fisheye Lens Perspective Construction- 1 Drawing in A3 sheet
10. Composition with Rule of thirds & Notan technique Thumbnails- 3 A3 sheets
11. Layout Composition in Animation with depth layering (Background, middleground and Foreground)- 1 Layout Submitted Digitally in 4K Size
12. Style Study- Edgar Payne (Artist's Color Perspective and Composition) & Samurai Jack (2D Animated Show's Shape Language and Color Design)- 2 Paintings in A3 Sheet (With Poster, Acrylic, Gouache Paints or Digitally)

Suggested Reading:

- *Layout and Composition for Animation* by Ed Ghertner
- *Setting the Scene: The Art & Evolution of Animation Layout* by Fraser MacLean
- *Animation - The Art of Layout and Storyboarding* by Mark Byrne
- *Framed Ink: Drawing and Composition for Visual Storytellers* by Marcos Mateu-Mestre
- *Framed Perspective* by Marcos Mateu-Mestre



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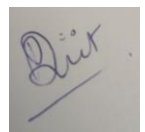
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Paper 3 – Principles of Animation

Overview- This course introduces students to the fundamental principles of animation and how movement is created through timing, spacing, and physical motion. Through traditional lightbox exercises and digital animation, students will practice core animation concepts such as timing, slow in and slow out, squash and stretch, anticipation, overlap, and follow-through. Assignments include classic animation exercises such as a rolling coin, bouncing ball, pendulum motion, and flag and cloth movement, helping students understand weight, gravity, and natural motion. Students will also create digital animations using Clip Studio Paint and Adobe Animate, including bean bag jump animations, walk cycles from multiple views, push and pull actions, and ball throw animations.

Assignment List:

(To be done with Lightbox)

1. Timing for Animation, Slow in & Slow out (Rolling Coin)- 1 Animation in .avi format.
2. Bouncing Ball (Same Place & Progressive with Tail)- 2 Animations in .avi format.
3. Pendulum with string- 1 Animation in .avi format.
4. Flag and Cloth animation (Overlap and Follow-through action) 2 Animations in .avi.

(To be done digitally in Clip Studio Paint and Adobe Animate)

5. Bean Bag Animation (Jump Animation with Squash and Stretch and Anticipation)- 2 Animations.
6. Walk Cycle Animation (Progressive - Profile view, Front and Front ¾ view)- 3 Animation.
7. Push and Pull Animation
8. Ball Throw Animation

Suggested Reading:

- *Animator's Survival Kit* by Richard Williams
- *Timing for Animation* by Harold Whitaker



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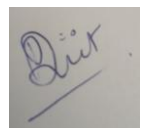
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Paper 4 – Storyboard & Digital Art

Overview- This course focuses on introducing students to industry-standard digital software used in animation production such as Adobe Photoshop, Animate CC and Clip Studio Paint. Students will learn digital illustration, painting, and layout creation using Adobe Photoshop, producing assignments such as prop designs, layout thumbnails, color keys, background paintings, panning layouts, set designs, and character turnaround sheets on 4K canvases. The course also introduces basic character animation techniques in Adobe Animate, where students will explore character rigging, eye-blink and lip-sync animation. In addition, students will learn the fundamentals of storyboarding and timeline-based visual storytelling using Clip Studio Paint EX, including panel creation, establishing shots, camera movement, and camera notes.

Assignment List:

(To be done in Adobe Photoshop)

1. Prop Design & Digital Painting Techniques - 2 Props Design in 4K Sized Canvas
2. Layout Design & Thumbnailing (from PR 2 Assignment 10) - 1 Layout
3. Colorkeys and BG Paint (From PR 4 Assignment 2) - 1 BG Paint
4. Vertical or Horizontal Panning Layout - 1 Layout Submitted Digitally in 4K Size.
5. Set Design- 1 Design in 4K sized canvas
6. Character Design and Turnaround (from PR 1) - 1 Character Sheet in 4K Sized Canvas.

(To be done in Adobe Animate)

7. Character Rig, Eyeblink and Lip sync
8. Character Staging for Animation

(To be Done in Clipstudio Paint)

9. Introduction to Storyboard and Timeline
10. Paneling, Establishing shot, camera movement, camera notes

Suggested Reading:

- *The Art of Storyboard by John Hart*
- *Animation - The Art of Layout and Storyboarding by Mark Byrne*



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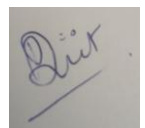
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B.Design in Animation - 2nd Year - Scheme

Paper	Time (in hour)	Size paper	Ext Marks		Midterm / CCE		Total
			Max. Marks	Min. Marks	Max. Marks	Min. Marks	
THEORY							
1. Cinematography	3 Hours	-	70	23	30	10	100
2.Art Direction	3 Hours	-	70	23	30	10	100
3.Storytelling	3 Hours	-	70	23	30	10	100
PRACTICAL							
1.Visual Development	12 Hours	Digital	70	23	30	10	100
2.Visual Storytelling	12 Hours	Digital	70	23	30	10	100
3.Digital 2D Animation & Video Editing	12 Hours	Digital	70	23	30	10	100
4.Introduction to 3D Art	12 Hours	Digital	70	23	30	10	100
TOTAL							700

NOTE: For Passing examination, the candidates shall be required to secure 33% marks in each of the prescribed subject, separately in

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B.Design in Animation - 2nd Year - Theory

Paper 1 – Cinematography

Unit 1: Tools of Cinematography

- The frame and composition
- The lens and its applications
- Light and color in cinematography
- Texture and visual detail
- Movement within the frame
- Establishing shots and point of view

Unit 2: Shooting Methods and Cinematic Language

- Understanding cinematics and cinematic language
- The frame as a storytelling device
- Master scene method and coverage
- Overlapping and triple-take methods
- Free-form shooting techniques

Unit 3: Cinematic Continuity and Editing

- Shooting for editing
- Types of continuity
- The prime directive in continuity
- Screen direction and spatial consistency
- Common continuity issues
- Types of cuts: Content cut, Action cut, POV cut, Match cut, Conceptual cut, Zero cut

Unit 4: Camera Movement and Mounting

- Types of camera movements
- Moving shots and dynamic framing
- Camera mounting techniques
- Use of crab dolly, cranes, and rigs
- Car-mounted shots and tracking shots
- Aerial shots and specialized mounts



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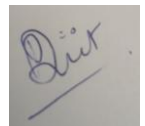
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Unit 5: Film Formats and Visual Presentation

- Aspect ratios and their significance
- Widescreen formats
- 3-Perf and 2-Perf (Techniscope)
- 16mm and other film formats

Suggested Reading:

- *Cinematography: Theory and Practice* by Blain Brown
- *The Five C's of Cinematography* by Joseph V. Mascelli

Paper 2 - Art Direction

Unit 1: Animation Aesthetics and Styles

- Introduction to animation aesthetics
- Short films and their visual language
- Animation styles and art direction
- Comparative study: short films, series, and feature productions

Unit 2: Production Design and Style Development

- Creating and understanding style guides (series vs. feature production)
- Production design in animation
- Role of art direction
- Storyboard requirements across series, feature, and independent productions

Unit 3: Visual Development and Research

- Visual development processes and research methods
- Sources of inspiration in animation design
- Composition and staging principles
- Format considerations and stylistic variation
- Rhythm and visual style diversity
- Value and colour in visual storytelling
- Development and use of colour scripts

Unit 4: Animation Techniques and Aesthetic Evolution

- Aesthetics of full animation vs. limited animation
- Digital animation: stages of industry development
- Aesthetic challenges in contemporary animation
- Technical and stylistic considerations in digital workflows



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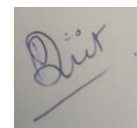
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Unit 5: Audience and Market

- Influence of target audience on visual style and aesthetic choices
- Adapting art direction for different formats and viewing platforms
- Balancing artistic intent with audience expectations
- Case studies focusing on how art direction aligns with audience and market context

Suggested Reading:

- *Dream Worlds* by Hans Bacher
- *Film Directing Shot by Shot: Visualizing from Concept to Screen* by Steve Katz
- *Art Direction and Production Design: A Modern History of Filmmaking (Behind the Silver Screen)* by Lucy Fischer

Paper 3 – Storytelling

Unit 1: Foundations of Storytelling

- Purpose of storytelling: why audiences engage with films
- Concept of dramatization through questions
- Understanding entertainment in narrative media
- Reverse engineering approach to storytelling
- Story delay and narrative pacing
- Role of intuition in story development

Unit 2: Storyboarding Fundamentals

- History and function of storyboards
- Types of storyboards
- Storyboarding in the production pipeline
- Beat boards and story reels
- Refinement and iteration process
- Pitching and presenting story ideas
- Visual storytelling: conveying narrative through images
- Staging and depiction of action

Unit 3: Narrative Development

- Generating and selecting story ideas
- Scene Exposition- Seeding, Planting, Foreshadowing, Payoff.
- Believability- Consistency, Coincidences, Surprise, Shock, Spectacle.
- Animated Storytelling as medium of Expression with Social, Emotional & Cultural Connectivity



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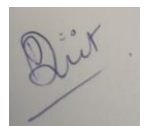
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- Creating compelling and relatable characters, their motivation and goals.
- Building empathy in storytelling
- Drama and conflict construction
- Character roles: protagonists, antagonists, and supporting characters
- Developing themes and narrative endings
- Writing for animation: comedy and gag writing

Unit 4: Direction and Dramatic Devices

- Techniques for capturing and maintaining audience attention
- Selective attention and visual focus
- Use of suggestion in storytelling
- Continuity and causality in narrative
- Types of causality in film
- Eyeline match and timeline continuity
- Role of editing in storytelling
- Purpose and function of cuts

Dramatic Irony:

- Information control: who knows what, when, and how
- Use of secrecy and suspense
- Placement and effectiveness of dramatic irony

Unit 5: Story Structures and Analysis

- Three Act Structure
- Story functions and narrative roles
- The Hero's Journey framework
- Levels of story analysis
- Narrative paradigms and structural variations
- Types of scenes and their functions
- Impact of restructuring narrative sequences

Suggested Reading:

- *Directing the Story* by Francis Glebas
- *Animated Storytelling* by Liz Blazer
- *Pixar Storytelling* by Dean Movshovitz
- *Animation Writing and Development* by Jean Ann Wright



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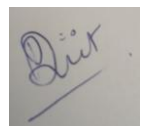
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B.Design in Animation - 2nd Year - Practical

Paper 1 – Visual Development

Overview: This course focuses on Visual Development for animation, students will strengthen character design through anatomy studies, dynamic gestures, and film-based case studies, producing hero, villain, anthropomorphic, and game characters. They will also develop backgrounds, parallax animations, cityscapes, and sequential art while creating a cohesive visual style for animated projects.

Assignment List:

Advance Character Design - (To be done in Photoshop & ClipStudio Paint Ex)

1. Torso Construction- 5 Drawings
2. Pelvis, Spine, Ribcage and shoulder relationship, Torso Muscle simplification- 3 Different Actions - 4 Drawings
3. Hand Muscles and Movement (Shoulder blade, Upperarm, forearm and hand)- 4 Drawings.
4. Head and Neck Muscles and its movement- 2 Drawings
5. Anatomy legs and feet- 4 Drawings.
6. Dynamic Gestures- 10 Drawings.
7. Character Design Package using Art styles from animated movies such as Lilo & Stitch, Hercules, Incredibles etc- (Hero, Villain, Side kick, Mentor etc.) 1 Lineup of all characters in Front $\frac{3}{4}$ Pose and Action Poses.
8. Realistic Character Turnaround.
9. Anthropomorphic Character Design & Game Character Design-- 4 Character Design

Advance Background Design- (To be done in Photoshop & ClipStudio Paint Ex)

10. Parallax Effect in Background- 1 Animated Background in .mov format
11. Style studies from different animated movies: Sleeping Beauty, Pocahontas, Kiki's Delivery Service, Spirited Away, Wolfwalkers etc- 4 BG in 4K Sized canvas.
12. Architectural Study and Cityscape Design- 2 BG BG in 4K Sized canvas.

Suggested Reading:

- *Force Drawing Human Anatomy by Mike Matessi*
- *Anatomy & Drawing by Victor Perard*
- *The Legend of Zelda: Breath of the Wild-Creating a Champion by Nintendo*
- *The Art of Zootopia by Jessica Julius*



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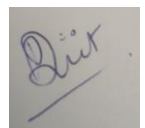
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Paper 2 – Visual Storytelling

Overview: This course focuses on advanced practices of Storyboard for animation. The curriculum emphasizes the development of animatics as a critical pre-visualization tool, alongside the continued refinement of storyboard methodologies to effectively structure narrative, control pacing, and articulate camera language. Students will critically apply principles of cinematography, shot composition, and visual continuity, while translating live-action filmmaking techniques into structured illustrated sequences. The course fosters analytical thinking and precision in visual communication, aligning student output with established industry standards in animation pre-production.

Assignment List:

1. Create a Script for **2nd year PR3, Assignment 5**
2. Create an Animatics with Basic sound for **2nd year PR3, Assignment 5** (20 seconds to 2 Minutes).

Suggested Reading:

- *Professional Storyboarding by Sergio Paez & Anson Jew*
- *Animation - The Art of Layout and Storyboarding by Mark Byrne*

Paper 3 – Digital 2D Animation & Video Editing

Overview- This course focuses on developing advanced skills in digital 2D animation production using industry-standard software such as Adobe Animate, Clip Studio Paint EX, Adobe Premiere Pro, and Adobe After Effects. Students will create performance-driven animations including acting exercises, character dialogue with lip-sync, quadruped walk cycles, and bird flight animation, emphasizing timing, expression, and character movement. The course also includes a collaborative group project where students work in teams to produce a short acting-based animation sequence. In addition to animation production, students will learn basic video editing in Adobe Premiere Pro for assembling and refining their final animation outputs, and explore motion graphics, scene compositing, color grading, and lighting adjustments in Adobe After Effects.

Assignments:

1. Acting for Animation- 2 Animations.
2. Create effect animations (Wind, fire & Smoke)
3. Character Dialogue & Lip sync Animation- 2 Animations.
4. 4-Legged Character Walk (Profile view) - 2 Animations.
5. Bird Flying Animation (Front $\frac{3}{4}$ view)- 2 Animations.



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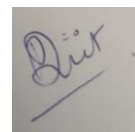
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6. Group Project: Students will form teams of 6-10 members to collaboratively produce an acting-based animated sequence with at least a duration of 20–30 seconds covering the following parameters-
 - Create Character Design, their Turnaround and prepare Rig for the Animation.
 - Explore and create art style for the Animation.
 - Create a Storyboard covering the visual narrative of the Animation.
 - Create Backgrounds as per Storyboard sequence and Animation's requirement.
7. Adobe Premiere Pro Assignment: Students will use Adobe Premiere Pro to edit and finalize the animation created in 2nd year PR3, Assignment 5. This includes performing basic video editing tasks such as cutting and arranging shots, maintaining visual continuity, adjusting shot speed (speed up or slow down), reversing shots where required, and applying basic effects and transitions to produce the final output.
8. Adobe After Effects Assignment:
Students will create a short exercise using Adobe After Effects that demonstrates basic motion graphics animation, scene compositing, color grading, and the addition of lighting effects such as shadows and highlights to enhance animated scenes.

Suggested Reading:

- *Animator's Survival Kit* by Richard Williams
- *Timing for Animation* by Harold Whitaker

Paper 4 – Introduction to 3D Art

Overview - This course introduces the fundamental principles and workflows of 3D modeling, texturing, rigging, and basic animation using industry-standard software such as Maya, ZBrush, Photoshop, and Substance Painter. It begins with a hands-on exercise in physical clay modeling, where students create a stylized character to develop an understanding of form, proportion, and volume before transitioning into digital 3D practices. Students will then learn prop modeling, UV mapping, and texturing techniques, followed by basic character rigging and animation, including tail and spine rig setups, ball rig animation, and simple camera-based cinematic sequences, enabling a comprehensive foundation in 3D visual development and animation.

Assignments:

1. Create a Stylized/ Antropomorphic character with clay - 1
2. 3D Prop Modeling- 3D object creation and modeling exercises to understand topology and geometry - 1 Prop Model
3. UV Mapping Introduction - Introduction to UV unwrapping techniques for textures and materials.



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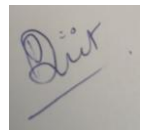
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4. Texturing in 3D - Applying textures and materials to models using software like Photoshop and Substance Painter.
5. Basic Tail or Spine Rig – 1 maya Rig file and 10 second animation and 1 Video file resolution 1920*1080 in .MOV format
6. Ball Rig & Animation – (1 maya Rig file and 10 second animation and 1 Video file resolution 1920*1080 in .MOV format
7. Camera Cinematic Animation – 10 to 20 second camera- 1 cinematic Animation maya file in .mov format.

Suggested Reading:

- *Digital Modeling – William Vaughan*
- *3D Art Essentials: The Fundamentals of 3D Modeling, Texturing, and Animation by Ami Chopine*



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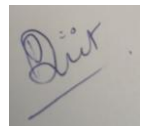
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B.Design in Animation - 3rd Year - Scheme

Paper	Time (in hours)	Size paper	Ext Marks		Midterm / CCE		Total
			Max. Marks	Min. Marks	Max. Marks	Min. Marks	
THEORY							
1. Psychology of Films	3 Hours	-	70	23	30	10	100
2.Film Production Pipeline	3 Hours	-	70	23	30	10	100
3.Visual Effects	3 Hours	-	70	23	30	10	100
PRACTICAL							
1. 3D Animation & Unreal Cinematics	12 Hours	Digital	70	23	30	10	100
2.3D Modeling, Texturing & Lighting	12 Hours	Digital	70	23	30	10	100
3.Visual Effects	12 Hours	Digital	70	23	30	10	100
4.Advanced Studio Practices	12 Hours	Digital	70	23	30	10	100
TOTAL							700

NOTE: For Passing examination, the candidates shall be required to secure 33% marks in each of the prescribed subject, separately in

1. The University Theory Exam
2. The University Practical Exam
3. Internal Assessment ,i.e., CCE done at college/university level.

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B.Design in Animation - 3rd Year– Theory

Paper 1– Psychology of Films

Unit 1: Attention, Engagement & Visual Perception

- Why audiences remain engaged with moving images
- Visual hierarchy and eye-direction techniques
- Curiosity gaps and narrative hooks
- Fundamentals of perception and how the brain processes visuals
- Gestalt principles: grouping, continuity, closure
- Framing, composition, and visual misdirection

Unit 2: Emotional Engineering in Film

- Construction of emotions: tension, relief, excitement, sadness
- Psychological triggers in storytelling
- Role of music, silence, and timing in emotional impact
- Build-up vs payoff in narrative design
- Case studies on the movies which have tension through sound and pacing
- Case studies on the movies which have emotional storytelling without dialogue

Unit 3: Time Perception & Editing Psychology

- Psychological perception of time in cinema
- Editing rhythm and temporal manipulation
- Use of cuts, transitions, and repetition
- Fast vs slow pacing: impact on audience experience
- Case studies on the movies which have contrast between high-intensity and calm sequences

Unit 4: Sound Psychology & Narrative Influence

- Role of background score in shaping emotion
- Silence as a narrative and psychological tool
- Diegetic vs non-diegetic sound
- Audio cues and anticipation building
- Interaction between sound and image in storytelling



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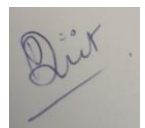
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Unit 5: Audience Bias & Interpretation

- Why different people interpret the same scene differently
- Influence of cultural context on perception
- Role of prior experience and memory in shaping interpretation
- Use of symbolism and its varied meanings
- Subconscious reading and hidden psychological cues in films

Suggested Reading:

- Understanding Cinema: A Psychological Theory of Moving Imagery — *Torben Grodal*
- Lessons in Perception: The Avant-Garde Filmmaker as Practical Psychologist — *Charlie Keil & Davide Panagia*
- Story: Substance, Structure, Style and the Principles of Screenwriting — *Robert McKee*
- The Soul of Cinema: An Appreciation of Film Music — *Larry M. Timm*
- *Film Theory and Criticism: Introductory Readings* — *Leo Braudy & Marshall Cohen (Eds.)*

Paper 2 – Film Production Pipeline

UNIT 1: Introduction to Film Production

- What is a Film Production Pipeline
- Overview of filmmaking stages (Pre-production, Production, Post-production)
- Key differences between Live-Action Films vs Animation Films
- Evolution of filmmaking techniques and technology
- Understanding storytelling formats across mediums
- Understanding Departments for Live action
- Understanding Departments for Animation film

UNIT 2: Pre-Production Process

- Scriptwriting and screenplay development
- Storyboarding and pre-visualization (Animatics)
- Casting vs Character Design (Live-action vs Animation)
- Location scouting vs Environment design
- Budgeting, scheduling, and planning



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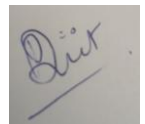
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UNIT 3: Production Stage

- Live-action production: cinematography, lighting, directing actors
- Animation production: modeling, rigging, layout, and animation
- Tools and technologies used in both pipelines
- On-set workflow vs Digital production workflow
- Common challenges during production (technical, creative, logistical)

UNIT 4: Post-Production Process

- Editing workflows (live-action vs animation timelines)
- Visual Effects (VFX) and CGI integration
- Sound design, dubbing, and music
- Color grading vs rendering and compositing
- Final output formats and delivery

UNIT 5: Roles, Responsibilities & Industry Pipeline

- Key roles in live-action (Director, Cinematographer, Editor, etc.)
- Key roles in animation (Animator, Rigger, Texture Artist, etc.)
- Team structure and collaboration pipelines
- Similarities between live-action and animation workflows
- Industry pipeline case studies and production breakdowns
- How animation film solves problems in film industry

Suggested Reading:

- *On Directing Film* by David Mamet
- *Film Directing Shot by Shot* by Steven D. Katz
- *Directing: Film Techniques and Aesthetics*
- *The VES Handbook of Visual Effects*

Paper 3 – Visual Effects

UNIT 1: Fundamentals of Virtual Reality & Motion Capture

- Overview of Motion Picture Production & VFX Pipeline
- What is Filmmaking & Visual Effects?
- Role of Compositing in the VFX Pipeline
- Types of Compositors – Layer-based vs Node-based Systems
- Introduction to Keying & Basic Compositing Concepts



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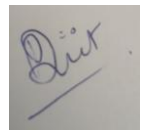
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UNIT 2: Principles of VFX & Digital Image Fundamentals

- Principles of Motion Picture & Visual Effects
- Structure of Digital Images – Pixels, Resolution, Bit Depth
- Color Theory – Grayscale vs Color Images
- Image Properties – Aspect Ratio, Pixel Aspect Ratio, Display Ratio
- Photographic Images vs Computer Graphics

UNIT 3: History, Concepts & Production Techniques in VFX

- Origins & Evolution of Visual Effects
- Difference between Visual Effects (VFX) & Special Effects (SFX)
- Live Action vs CGI Workflows
- Fundamentals of CGI Creation & Its Applications
- Integration of CGI with Live Footage

UNIT 4: Tracking, Rotoscopy & Matchmoving

- Rotoscoping – Techniques & Applications
- Motion Tracking Fundamentals
- 2D Matchmoving – Concepts & Workflow
- Good vs Bad Tracking Targets
- Applications of 2D Tracking in Compositing
- Introduction to 3D Motion Tracking & Camera Solving

UNIT 5: Advanced Compositing Techniques & Applications

- Chroma Keying – Blue Screen vs Green Screen Techniques
- Warping & Morphing Methods
- 3D Tracking Applications in VFX
- Multi-pass Compositing & Scene Integration
- Final Output & Rendering for Film/Media
- Industry Applications of VFX & Compositing

Suggested Reading:

- *Visual Effects and Compositing — John Gress*
- *Digital Compositing for Film and Video — Steve Wright*



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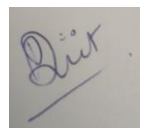
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B.Design in Animation - 3rd Year - Practical

Paper 1 – 3D Animation & Unreal Cinematics

Overview - This course unifies 3D rigging (Maya) and real-time animation & cinematics (Unreal Engine) into one cohesive pipeline. Students move from asset preparation → rigging → animation cinematic storytelling. They begin by building production-ready rigs (mechanical and organic), mastering IK/FK systems, weight painting, and control hierarchies. These rigs are then animated in Maya using core principles like timing, spacing, and body mechanics.

The pipeline then shifts into Unreal Engine, where students integrate animations, refine them using Control Rig, and build cinematic sequences using Sequencer, MetaHumans, and motion capture.

Assignment List:

1. Rigging & Animation Preparation (Maya)

- Create a rig of table lamp 3D model and Animate using IK Handle - (1 maya Rig file and 10 second animation and 1 Video file resolution 1920*1080 in .MOV format)
- Create a rig of Spider model with using Weight Paint ,Set Driven Key and groups - 1 Spider Rig maya file.
- Create a Human hand rigging and create an animation with using weapon prop- (1 maya Hand Rig File, 5 to 10 second animation maya File and 1 Video file resolution 1920*1080 in .MOV format)
- Character full body Rig Study and Create key Posing in maya - (20 key poses) in maya file.
- Character Walk cycle - 1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format
- Character Run cycle - 1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format
- Character Weight Lifting Animation -1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format

2. Game Cinematic Scene 1 (Unreal)

Create a high-intensity chase scene where one character pursues or escapes another within a designed environment. The sequence must demonstrate cinematic storytelling, character animation, camera dynamics, and real-time rendering in Unreal Engine.



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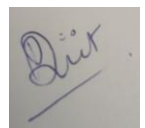
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Submissions

- Rendered video (45–60 sec, Full HD)
- Unreal project files
- Storyboard PDF
- Short production breakdown (1–2 pages)

3. Game Cinematic Scene 2 (Unreal)

Create a character-driven cinematic moment focused on emotion, interaction, or decision-making. The scene must communicate a clear story arc using performance, camera, and environment—not action speed.

Submissions

- Final cinematic video (60–90 sec, high quality)
- Unreal Engine project (organized)
- Maya rig + animation files (if custom)
- Detailed storyboard + shot breakdown
- Production document (3–5 pages)

Suggested Reading:

- *The Animator's survival kit* by Richard Williams
- *Cinematic Photoreal Environments in Unreal Engine* - [Giovanni Visai](#)

Paper 2 – 3D Modeling, Texturing & Lighting

Overview- This course introduces students to intermediate to advanced 3D modeling and texturing using tools like Autodesk Maya, ZBrush, Arnold, Substance Painter, Unreal Engine, and Marmoset Toolbag. Students will practice hard surface modeling, high-poly sculpting and environment creation to present their work using proper lighting setups in Arnold, Unreal Engine, and Marmoset Toolbag.

The course also covers organic modeling techniques for creating hair and other detailed features, while applying textures and materials to produce polished, production-ready 3D assets suitable for both offline rendering and real-time visualization pipelines.



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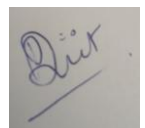
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Assignment List :

1. Hard Surface Model- 1 Model
2. High Poly Creation - ZBrush Introduction
3. 3D Environment Maya to Unreal
4. Texturing - using Substance Painter
5. Asset Lighting & rendering in marmoset toolbag
6. Organic Modeling – Stylized Character.
7. Arnold rendering- 1 Interior or Exterior Environment
8. Creating hair on a character

Suggested Reading:

- *3D Art Essentials: The Fundamentals of 3D Modeling, Texturing, and Animation*
- *Digital Modeling – William Vaughan*

Paper 3 – Visual Effects

This course introduces students to professional VFX pipelines using Adobe After Effects, Nuke, DaVinci Resolve, and Autodesk Maya Dynamics. Students will learn to composite live-action footage with computer-generated elements, create simulations, and develop visual effects suitable for film and game production. Emphasis is placed on technical precision in keying, tracking, compositing, and dynamics workflows.

Assignment List:

After Effects: VFX Compositing Essentials

1. Basic Visual FX Creation: Create smoke overlays, light leaks, and energy glow using masks and blending modes.
2. Fire & Explosion FX (2D): Create stylized fire and explosion effects and composite into background footage.

Nuke : Node-Based Compositing

3. Green Screen Keyer – Composite actors into 3D environment; match lighting/shadows using 3D camera tracker.
4. Multi-Layer Roto & Paint – Rotoscope complex motion (e.g., crowd removal), paint cleanups, integrate CG with color correction.



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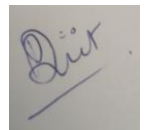
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Maya Dynamics : Simulations

5. Basic FX (nParticles / Bifrost Intro): Create sparks, dust, and rain and preview using playblast or render.
6. Fluid FX Simulation: Create smoke or fire simulations and adjust turbulence, density, and shading.

Da- Vinci Resolve: Color Correction

7. Balance exposure, contrast, and white balance for a raw clip. Ensure natural skin tones and consistent luminance.
8. Isolate specific elements (skin, sky, objects) using qualifiers and power windows. Apply selective color enhancements.
9. Create a stylized grade (e.g., teal-orange, moody, high contrast). Maintain visual consistency across multiple shots.

Suggested Reading:

- *Hands-On Motion Graphics with Adobe After Effects CC by David Dodds*
- *Foundry for Nuke- Official Documentation*

Paper 4 – Advance Studio Practices

This course lets students choose a specialization such as 3D Animation & Cinematic, 3D Modeling, Environment Design, Storyboarding, Concept Art, 2D Animation, Stop Motion & Visual effects to build advanced skills through practical assignments. It focuses on creating strong, portfolio-ready work with proper techniques, creativity, and professional workflow. By the end students will have a polished project that meets industry standards.

(Student must select one of the following modules and submit the assignments of the selected module)

Module 1 - Advance 3D Animation

Overview: This course builds on foundational skills to develop advanced techniques in 3D animation, with a focus on performance, acting, and expressive movement. Students create animations that emphasize body mechanics, weight, and timing, including action-based scenes with strong anticipation and semi-realistic or realistic timing.



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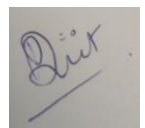
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Assignment List:

- 1) Car Rig And car cinematic Animation. (1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format)
- 2) Character full body Rigging with facial rig. (1 maya rig file)
- 3) Idle Animation or game breathing animation. (1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format).
- 4) Character Sword Fight Animation (1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format)

Suggested Reading:

- *Rig it Right! Maya Animation Rigging Concepts* by Tina O'Hailey
- *An Essential Introduction to Maya Character Rigging* by Cheryl Briggs

Module 2 - World Building (Environment Design)

Overview: Students will master advanced Unreal Engine workflows to build immersive, high-performance 3D environments and cinematics, from procedural foliage and rock generation to optimized open worlds. They'll create pro-level materials like snow/moss blends, dynamic water/puddles/mud, decals, and vertex painting. Expertise in lighting includes Lumen audits, 3-point setups, IES functions, baked GI, and cinematic/character lighting for realistic atmospheres. Topics that will be covered are Advanced Material creation, Procedural content generation, Lighting & Atmosphere & World building

Assignment List:

1. Create 10 environment blockouts in unreal using modeling tools like maya , Blender.
2. Create an Environment design using Modular assets and Fab. The Environment should be optimized and ready for cinematics. Follow the guidelines below -
 - Use any of the material structure like (Landscape layer blend logic or blending multiple materials)
 - Need proper naming and clean node graph, use proper reroute nodes.
 - Texture resolution should not be more than 2K
 - Use proper PCG for creating foliage (Trees, Grass, Ferns, Rocks, etc.)
 - Use Attribute node, Difference node, Spline and all other needed nodes which can be used to create an optimized PCG workflow.



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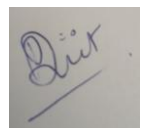
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4. Create a small set of environments using RVT for blending of materials, also use proper level instancing to show variations.

Suggested Reading:

- *Cinematic Photoreal Environments in Unreal Engine* - [Giovanni Visai](#)
- *Unreal Engine 5 Character Creation, Animation, and Cinematics* by Henk Vetner & Wilhem Ogterop

Module 3 - Advanced 3D Modeling

Overview: This course focuses on developing advanced skills in 3D modeling for creating high-quality, production-ready assets used in games and films. Students will learn to build detailed models with a strong emphasis on form, proportion, topology, and design accuracy. The course covers the complete workflow, including high-poly sculpting, retopology, UV mapping, and texturing, ensuring assets are both visually compelling and technically optimized. Students will explore both realistic and stylized modeling approaches, gaining the ability to adapt to different artistic requirements. By the end of the course, students will be able to create portfolio-ready models with professional presentation, demonstrating a clear understanding of industry standards and efficient asset creation pipelines.

Assignment List:

1. Vehicle Modeling

- Develop a highly detailed **hard-surface 3D model** of a vehicle incorporating advanced armored design elements (e.g., war tank, spacecraft, or modified heavy-duty truck).
- Focus: Hard surface modeling, Clean topology, Render-ready detailing

2. Advanced Character Sculpt (ZBrush)

- Create a high-detail Stylized character
- Focus: Anatomy, Secondary/tertiary details, Stylization

3. Retopology & Game-Ready Model

- Convert sculpt to low-poly
- Focus: Edge flow, Optimization, UV unwrapping

4. Texturing & Look Development

- Use Substance Painter and create a final texturing of the vehicle designed in assignment no -1.
- Focus: Material realism, Surface storytelling, Wear & tear



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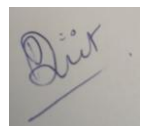
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5. Final Portfolio Render / Cinematic

- Create final presentation
- Focus: Lighting, Composition, Rendering (Marmoset/Unreal)

Suggested Reading:

- *3D Art Essentials: The Fundamentals of 3D Modeling, Texturing, and Animation*
- *Digital Modeling – William Vaughan*

Module 4 - Advanced 2D Animation

Overview: This course builds on foundational skills to develop advanced techniques in 2D animation, with a focus on performance, acting, and expressive movement. Students create animations that emphasize body mechanics, weight, and timing, including action-based scenes and cartoony performances with strong anticipation and comic timing. The course also explores character dialogue and action-reaction sequences, helping students understand lip-sync, emotional expression, and interaction.

Assignment List:

1. Acting for Animation (Walking Stairs with Acting) – 1 Animation.
2. Acting for Animation (Pulling Heavy Sack and Fall) – 1 Animation.
3. Cartoony Acting with Comic Timing (Hammer Hit with Anticipation) – 1 Animation.
4. Character Dialogue & Action-Reaction Animation – 1 Animation.
5. Animated Sequence Preparation – 1 Animation.
6. 2D Effects Animation – 1 Animation. [e.g. water drops, etc.]

Suggested Reading:

- *Animator's Survival Kit by Richard Williams*
- *Timing for Animation by Harold Whitaker*
- *Cartoon Animation with Preston Blair*

Module 5 - Advanced Storyboard

Overview: This course introduces the advanced techniques of visual storytelling through the creation of a complete storyboard project. Students develop an original story by pitching and writing a script in a chosen genre, followed by designing characters that reflect the narrative. They then translate the script into storyboard panels, focusing on composition, sequencing and visual continuity. The course concludes with the production of a 2–4-minute animatic with



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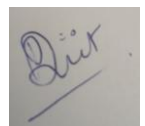
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sound, helping students understand timing, pacing and the integration of audio and visuals in pre-production.

Assignment List:

1. Story Pitching and Script Creation- 1 Story from any given genre
2. Character Design for the Script developed
3. Storyboard Paneling based on the script
4. Animatics with sound 2-4 Minutes

Suggested Reading:

- *Professional Storyboarding by Sergio Paez & Anson Jew*
- *Animation - The Art of Layout and Storyboarding by Mark Byrne*

Module 6 - Advance Concept Art

Overview: This course focuses on advanced concept art development within the preproduction pipeline of a 2D animated show. Students create a comprehensive visual package that includes character design for key roles such as protagonist, villain, and supporting characters, along with interior and exterior set designs. The course emphasizes stylization exploration, color and mood studies, and the creation of key background artworks. Students also develop environment paintings across different times of day to understand lighting and atmosphere.

Assignment List:

1. Create Concept Art (Character Design & Background art) following the production pipeline of a 2D Animated Show including-
 - Character Design Package (Protagonist, Villain, sidekick, Mentor etc)- 2-4 Character Sheets
 - Set Design (Exterior & Interior)- 2
 - Stylization Exploration- 2
 - Key Backgrounds- 2
 - Color & Mood exploration - 3
 - Painting the Key Background in different times of a day- 3 (Day, Evening, Night)

Suggested Reading:

- *Framed Environment Design by Marcos Mataeu-Mestre*
- *Art of Wolfwalkers by Charles Solomon and Cartoon Saloon*



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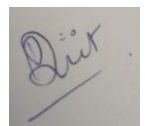
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Module 7 - Stop Motion Animation

Overview: This course introduces the fundamentals of stop motion animation through hands-on exercises focusing on movement, timing, and material exploration. Students work with different materials such as clay, paper, and found objects to understand physical behavior in animation. The module emphasizes frame-by-frame techniques, transformation, and basic storytelling. It culminates in a group short film where students apply learned principles to create a simple narrative using stop motion.

Assignment List:

1. Static Ball Bounce (Material Study): Create a stationary bouncing ball using 3 different materials to understand weight and timing.
Submission: 3 video files
2. Progressive Ball Bounce (Movement Study): Animate a ball moving across the frame to explore spacing, direction, and motion arcs.
Submission: 3 video files (3 materials)
3. Morphing Stop Motion: Explore transformation through frame-by-frame animation.
Submission:
 - Clay to Object (1 video)
 - Object to Clay (1 video)
 - Abstract Morphing (1 video)
4. Group Project: Stop Motion Short Film (3–5 students)
Develop: Basic script, character design, set design, storyboard
Submission:
 - Final film (1–2 minutes)
 - Storyboard sheets

Suggested Reading:

- *Stop Motion: Craft Skills for Model Animation* by Susannah Shaw
- *Stop Motion Animation: A Complete Step-by-Step Guide* by Don Dohler



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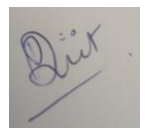
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B.Design in Animation - 4th Year - Scheme

Paper	Time (in hours)	Size paper	Ext Marks		Midterm / CCE		Total
			Max. Marks	Min. Marks	Max. Marks	Min. Marks	
THEORY							
1. AR/VR & Motion Capture Fundamentals	3 Hours	-	70	23	30	10	100
2. Business for Animation Industry	3 Hours	-	70	23	30	10	100
3. Sound Design for Film	3 Hours	-	70	23	30	10	100
PRACTICAL							
1. Specialized Studio Practices	12 Hours	Digital	70	23	30	10	100
2. AI in Animation	6 Hours	Digital	70	23	30	10	100
3. Short Film Submission	1 Hour	Digital	70	23	30	10	100
4. Portfolio Submission	1 Hour	Digital	70	23	30	10	100
TOTAL							700

NOTE: For Passing examination, the candidates shall be required to secure 33% marks in each of the prescribed subject, separately in

1. The University Theory Exam
2. The University Practical Exam
3. Internal Assessment, i.e., CCE done at college/university level.

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B.Design in Animation - 4th Year– Theory

Paper 1 - AR/VR & Motion Capture Fundamentals

UNIT 1: Fundamentals of Virtual Reality & Motion Capture

- Introduction to Virtual Reality (VR) – Concepts, Immersion, Presence
- Stereoscopic Displays & Motion Tracking Systems
- Basics of Motion Capture – Definition & Importance in Animation
- History of MoCap – From Rotoscoping to Digital Motion Capture
- Types of MoCap Systems – Optical, Magnetic, Mechanical

UNIT 2: VR Development Process & MoCap Anatomy

- VR Creation Workflow – Concept to Final Experience
- Hardware & Software Requirements for VR Development
- Introduction to Human Anatomy for Motion Capture
- Marker Sets – Placement, Purpose & System Limitations
- Understanding Human Movement, Constraints & Capture Accuracy

UNIT 3: MoCap Pipeline & VR Integration

- Motion Capture Pipeline:
 - Skeleton Setup for 3D Characters
 - System & Subject Calibration
 - Capture Sessions
- Data Processing – Cleaning, Editing & Retargeting
- Applying Motion Data to 3D Characters
- Integration of MoCap in VR Environments
- Rendering & Post-Processing for VR Content

UNIT 4: Creative Applications & Production Practices in VR & MoCap

- Role of Motion Capture in Performance & Storytelling
- Acting for Motion Capture – Body Language & Expression
- Direction & Pre-Visualization in VR Projects
- Designing Interactive VR Experiences – User-Centric Approach
- Production Challenges – Budgeting, Team Roles & Pipeline Coordination
- Ethical Considerations in VR & Performance Capture



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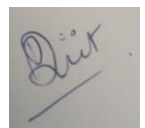
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UNIT 5: VR Technologies, Devices & Applications

- Comparison: Virtual Reality (VR) vs Augmented Reality (AR)
- VR Content Creation – Animation in VR (including Anime-style VR)
- Applications of VR – Gaming, Film, Simulation, 360° Panoramas
- VR Devices & Ecosystem: Oculus Rift, Samsung Gear VR, Google Cardboard
- Future Trends in Immersive Media & Motion Capture

Suggested Reading:

- *Understanding Virtual Reality* – William R. Sherman & Alan B. Craig
- *Motion Capture in Performance* – Margaret Williams
- *The VR Book: Human-Centered Design for Virtual Reality* – Jason Jerald
- *The Filmmaker's Guide to Virtual Reality* – John Bucher
- *The Fourth Transformation* – Robert Scoble

Paper 2 – Business for Animation Industry

Unit 1: Introduction to the Animation Industry & Business Fundamentals

- Overview of Animation, VFX, and Gaming Industries
- Global vs Indian Animation Industry Landscape
- Types of Animation Businesses (Studios, Freelancing, Outsourcing)
- Production Pipelines and Business Integration
- Roles and Responsibilities in an Animation Studio
- Basics of Business Models in Creative Industries

Unit 2: Production Management & Pipeline Economics

- Pre-production, Production, and Post-production Workflows
- Budgeting and Cost Estimation in Animation Projects
- Resource Allocation and Time Management
- Pipeline Design for Film, TV, and Game Production
- Outsourcing and Co-production Models
- Risk Management in Animation Projects

Unit 3: Legal Aspects & Intellectual Property Rights

- Copyright Laws and Animation Content
- Intellectual Property Rights (IPR) in Animation
- Licensing, Contracts, and Agreements
- Ownership of Characters, Stories, and Assets
- Legal Issues in Freelancing and Studio Work
- Case Studies of IP Disputes in Animation Industry



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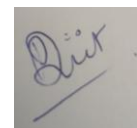
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Unit 4: Marketing, Distribution & Client Management

- Branding and Promotion of Animation Content
- Marketing Strategies for Films, Series, and Games
- Digital Platforms and OTT Distribution
- Client Acquisition and Relationship Management
- Pitching Ideas and Proposal Development
- Networking and Industry Communication Skills

Unit 5: Entrepreneurship & Career Development in Animation

- Starting an Animation Studio or Freelance Business
- Business Planning and Funding Sources
- Revenue Models (Advertising, Licensing, Merchandising)
- Portfolio Development and Personal Branding
- Industry Trends (AR/VR, Metaverse, AI in Animation)
- Career Opportunities and Professional Ethics

Suggested Reading:

- *The Animation Industry – Maureen Furniss*
- *Understanding Animation – Paul Wells*
- *Animation Production Management – Katherine Ulrich*
- *Entertainment Law – Donald E. Biederman*
- *Entertainment Marketing – Lynnette Porter*
- *The Freelancer's Bible – Sara Horowitz*

Paper 3 – Sound Design for Film

Unit 1: Fundamentals of Sound, Perception and Storytelling

- Nature of Sound – Frequency, amplitude, pitch, timbre
- Psychoacoustics – Psychology of sound perception and emotional response
- Soundscapes and audience engagement
- Role of sound in storytelling – narrative enhancement
- Character development through sound and voice
- Mood, tone, and symbolic use of sound and music
- Introduction to audio formats – analog vs digital, WAV, MP3, AIFF

Unit 2: Sound Language, Structure and Design Principles

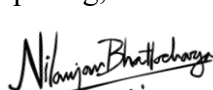
- Sound design principles – contrast, motif, layering
- Sound-image relationship and visual synchronization
- Time and rhythm in sound – pacing, transitions, continuity



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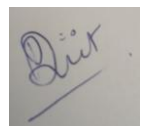
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- Spatial sound – acoustics, depth, surround sound concepts
- Frequency spectrum and equalization basics
- Aesthetics of sound – building a cohesive sonic identity
- Introduction to sound design pipeline and workflow

Unit 3: Dialogue, Voice and Recording Techniques

- Voice recording fundamentals – microphones and polar patterns
- Sound recording devices – field recorders, audio interfaces, boom setups
- On-set sound recording techniques and challenges
- Role of recording artists and sound engineers
- Dialogue editing – cleaning, syncing, layering
- ADR (Automated Dialogue Replacement) techniques
- Noise reduction and voice enhancement

Unit 4: Foley, Effects and Creative Sound Production

- Foley art – techniques, props and performance
- Recording and designing sound effects
- Environmental and ambient sound creation
- Sound transformation and manipulation (reverb, delay, modulation)
- Designing “otherworldly” and stylized sounds
- Use of digital audio workstations (DAWs) in sound design
- Integration of music, effects and ambience

Unit 5: Post-Production, Mixing and Industry Practice

- Complete sound design pipeline – pre-production to final output
- Editing, layering and track organization
- Sound mixing – levels, panning, dynamics
- Audio mastering and final delivery standards
- Output formats for film, OTT and broadcast
- Collaboration in industry – director, editor, sound designer workflow
- Case studies of film sound design and professional practices

Suggested Reading:

- *Sound Design for Film: from first mark to full expression* by Tim Harrison
- *A Filmmaker’s Guide to Sound Design: Bridging the Gap Between Filmmakers and Technicians to Realize the Storytelling Power of Sound* by Peter Rea & Matthew Polis



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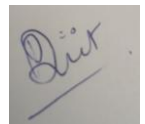
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B.Design - Animation & VFX - 4th Year– Practical

Paper 1 – Specialized Studio Practices

This course lets students further specialize in the streams such as Animation & Cinematic, Modeling, Environment Design, Storyboarding, Concept Art & Stop Motion and build advanced skills through practical assignments. It focuses on creating strong, portfolio-ready work with proper techniques, creativity, and professional workflow. By the end, students will have a polished project that meets industry standards.

(Student must select one of the following modules and submit the assignments of the selected module)

Module 1 -Advance 3D Animation

Overview: This course structure is designed to provide industry-oriented skills with a specialization in Advanced 3D Animation. Students will focus on developing high-quality animation projects, enhancing their understanding of character emotion, storytelling and production workflows. Emphasis is placed on creative problem-solving, technical precision, and professional studio practices. By the end students will be prepared for industry-level roles in 3D animation. The course also explores character dialogue and action-reaction sequences, helping students understand lip-sync with dialogue, emotional expression and interaction.

Assignment List:

1. Lipsync and expression Animation to improve Character Dialogue & Action-Reaction Animation. (1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format)
2. Body mechanics animation (Example - game fight action , parkour , spider man swinging etc.) (1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format)
3. Character Acting Animation (1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format)
4. Creature Animation (Lion, Dinosaur, Flying Dragon etc) (1 maya animation file and 1 Video file resolution 1920*1080 in .MOV format)

Suggested Reading:

- *Rig it Right! Maya Animation Rigging Concepts by Tina O'Hailey*
- *An Essential Introduction to Maya Character Rigging by Cheryl Briggs*



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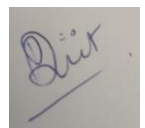
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Module 2 - World Building (Environment Design)

Overview - Students will master advanced Niagara FX using realtime modules and particle systems along with Performance optimization covers Nanite meshes, HLODs, profiling, Lumen tweaks, and World Partition for massive, streaming worlds with data layers in addition with metahuman creation in Unreal Engine. Topics covered-

- Niagara FX
- Optimization & Performance
- World Partition & Open world Design
- Chaos Destruction

Assignment List:

1. Niagara FX-

- Create a flamethrower with smoke and heat.
- Create a Portal
- Create Hit Impact
- Create Meteor Attack
- Create laser
- Create Energy Strike
- Create Projectile
- Create A Showroom with all the effects.

2. Environment design-

Create an Environment concept of yours which should be cinematic ready and can be used in a virtual production set, it should be optimized and production ready. The concept should be yours and original.

Suggested Reading:

- *Cinematic Photoreal Environments in Unreal Engine* - [Giovanni Visai](#)
- *Unreal Engine 5 Character Creation, Animation, and Cinematics* by Henk Vetner & Wilhem Ogterop



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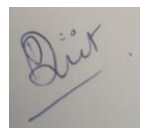
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Module 3 - Advanced 3D Modeling

Overview: This course focuses on creating high-quality, game-ready 3D characters or creatures with a strong emphasis on form, proportion, topology and design. Students will follow a complete production pipeline—from high-poly sculpting to retopology, UV mapping and PBR texturing—while learning both realistic and stylized approaches. By the end, students will produce a portfolio-ready character that meets industry standards for visual quality and real-time optimization.

Assignment List:

1. **Character Development:** Take a concept into a well-proportioned 3D character (realistic/stylized).
2. **High-Poly Sculpt:** Detailed sculpt focusing on anatomy and surface refinement.
3. **Retopology:** Clean optimized , animation-ready low-poly mesh with efficient topology
4. **UV Mapping:** Optimized UV layout with consistent texel density.
5. **PBR Texturing & Baking:** Create maps (Albedo, Normal, Roughness, AO) and bake high-to-low details.
6. **Real-Time Lookdev:** Material and shader setup in Unreal Engine or Marmoset Toolbag.
7. **Final Presentation:** Portfolio-ready renders, turntable, and real-time showcase.
8. **Presentation:** final breakdown of character and presentation in Artstation.

Suggested Reading:

- *3D Art Essentials: The Fundamentals of 3D Modeling, Texturing, and Animation*
- *Digital Modeling – William Vaughan*

Module 4 - Advanced 2D Animation

Overview: This course advances students' skills in 2D animation by focusing on complex character performance and specialized techniques. It includes anthropomorphic character animation with dialogue and acting, helping students refine expression, personality, and lip-sync. Students also learn to plan and execute complete animated sequences, along with exploring creative techniques such as morphing and 2D effects animation.

Assignment List:

1. Anthropomorphic Character Animation (With Dialogue & Acting) – 1 Animation.
2. Morphing Animation Human to dragon or any kind of monster – 1 Animation. [eg. transformer/ ben 10]



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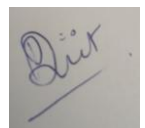
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3. Character Fighting Sequence with multiple camera angles with smear effect - [2 Animation]
4. Animal & Human character interaction animation [eg. tarzan]
5. 2D Effects Animation– Extreme blast with smoke, character magical transition etc .

Suggested Reading:

- *Animator's Survival Kit by Richard Williams*
- *Timing for Animation by Harold Whitaker*
- *Cartoon Animation with Preston Blair*

Module 5 - Advanced Storyboard

Overview: This course focuses on advanced storyboard techniques with an emphasis on dynamic visual storytelling. Students develop an action, thrilled and suspense-based story through pitching, followed by designing characters that support the narrative. They translate the script into detailed storyboard panels, exploring dynamic camera angles, composition and cinematic movement. The course culminates in the creation of a 2 – 4 minute animatic with sound, allowing students to refine pacing, intensity and visual flow suited to action-driven storytelling.

Assignment List:

1. Story Pitching and Script Creation- 3 Story from Action, thrill and suspense genre
2. Advance Storyboard Paneling based on the script
3. Create 3 Animatics based on scripts with sound- 2/4 Minutes each.

Suggested Reading:

- *Professional Storyboarding by Sergio Paez & Anson Jew*
- *Animation - The Art of Layout and Storyboarding by Mark Byrne*

Module 6 - Advance Concept Art

Overview: This course focuses on advanced concept art creation by integrating 2D and 3D techniques within a modern production pipeline. Students design character packages and environment concepts, then translate these assets into 3D models to explore form, structure, and lighting. The rendered outputs are further refined through 2D painting using tools like Photoshop or Clip Studio Paint, combining technical accuracy with artistic expression. Emphasis is placed on stylization, color and mood exploration, and the creation of key art, enabling students to develop cohesive, production-ready visuals for animated projects.



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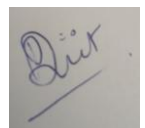
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Assignment List:

1. Create Concept Art (Character Design & Background art) while integrating 3D techniques in the production pipelines. Students need to design the environment assets and then model them in 3D, create renders with lighting and then paint the environment in 2D using tools like Photoshop/Clip Studio Paint EX. Students need to submit the following-
 - Character Design Package (Protagonist, Villain, sidekick, Mentor etc)- 2-4 Character Sheets
 - Set Design (Exterior & Interior) and Callout sheets - 2
 - Stylization Exploration- 2
 - 3D Models of the Set elements
 - Color & Mood exploration- 4
 - Key Art- 2

Suggested Reading:

- *Framed Environment Design* by Marcos Mataeu-Mestre
- *Art of Wolfwalkers* by Charles Solomon and Cartoon Saloon

Module 7 - Sound Design

Overview: This course focuses on creating high-quality, production-ready sound for games and film. Students will learn core principles of sound design, including recording, editing, layering, and processing audio to enhance storytelling and immersion. The course covers the complete workflow—from raw sound creation to final implementation—while exploring both realistic and stylized approaches. By the end, students will produce a polished, portfolio-ready sound design project that meets industry standards.

Assignment List:

1. Sound Recreation

Recreate everyday sounds (footsteps, cloth, impacts)

Goal: Understanding layering & realism

2. Foley Exercise

Record and design sounds for simple actions

Goal: Sync + natural sound creation



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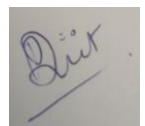
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3. **Game Sound Pack** - Create sounds for

- ❖ UI clicks
- ❖ Weapon / action
- ❖ Environment loop
- ❖ Goal: Game-ready asset creation

4. **Scene Sound Design**

Design audio for a short video clip
Goal: Atmosphere, timing, storytelling

5. **Final Project**

Full sound design for a game scene or cinematic
Deliverables: Mixed audio + breakdown

Suggested Reading:

- *Sound Design for Film: from first mark to full expression* by Tim Harrison
- *A Filmmaker's Guide to Sound Design: Bridging the Gap Between Filmmakers and Technicians to Realize the Storytelling Power of Sound* by Peter Rea & Matthew Polis

Module 8 - Stop Motion Animation

Overview: This course focuses on advanced stop motion production with an emphasis on character animation and puppet fabrication. Students design and construct articulated puppets using armatures and develop expressive performances through animation. The module follows a professional production pipeline, including pre-production planning, controlled shooting, and post-production refinement. Students create a final short film that demonstrates technical skill, storytelling, and visual quality at an industry level.

Assignment List:

1. **Puppet Design and Fabrication:** Design and construct a functional stop motion puppet suitable for animation, focusing on structure, detailing, and usability.
Develop: Character concept sheets, turnaround sheets, expression sheets, armature-based puppet, surface detailing
Submission:
 - ❖ One functional puppet
 - ❖ Design sheets (2–3)
 - ❖ Process documentation



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3D Faculty



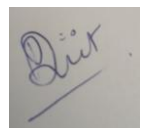
Mr. Ayush Chakravarty
Post Production Faculty



Mr. Nilanjan Bhattacharya
2D Animation Faculty



Mr. Shivam Arzare
Pre Production Faculty



Dr. Parul Dixit
HOD Fashion Dept. RMTU

2. **Character Performance Animation:** Animate the puppet to demonstrate movement, acting, and interaction.
Submission:
 - ❖ Walk cycle (1 video)
 - ❖ Emotional performance (2 videos)
 - ❖ Object interaction (1 video)
3. **Advanced Stop Motion Technique:** Execute an advanced technique to enhance complexity and control (multi-character interaction or camera movement).
Submission:
 - ❖ Advanced technique exercise (1 video)
4. **Final Stop Motion Short Film:** Produce a high-quality puppet-based stop motion film integrating design, animation, and production techniques.
Develop: Script, character package, set design, storyboard, animatic, shot breakdown
Submission:
 - ❖ Final film (2–5 minutes)
 - ❖ Production documentation (PDF)

Suggested Reading:

- *Stop-motion Animation: Frame by Frame Film-making with Puppets and Models* by Barry J.C. Purves
- *Stop Motion Filmmaking: The Complete Guide to Fabrication and Animation* by Christopher Walsh

Module 9 - Advanced VFX

Overview: This course focuses on hands-on training in Houdini FX, Silhouette, and DaVinci Resolve Studio for professional VFX workflows. Students will create simulations (fire, smoke, particles), perform rotoscoping and paint cleanup, and execute advanced color grading.

The course emphasizes real-world pipeline integration, enabling learners to produce polished VFX shots and develop a strong industry-ready portfolio.

Assignment List:

1. Houdini -

- **Procedural Particle FX:** Create sparks and dust bursts using node-based workflow.
- **Advanced FX Simulation:** Create explosion, fire with smoke, and destruction effects with render passes.



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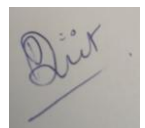
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2. Silhouette

- Perform detailed roto on a complex moving subject (hair, motion blur, transparency). Focus on clean edges, motion tracking, and matte consistency across frames.
- Remove unwanted elements (wires, rigs, logos, or background distractions) using paint and clone tools. Maintain texture continuity and seamless background reconstruction.
- Create layered mattes (foreground, midground, background) for a compositing pipeline. Organize nodes and export passes for use in compositing software.

3. Da-Vinci Resolve (Fusion):

- Fusion Compositing Basics: Create node-based composites using merges, masks, and transforms within Fusion.
- Tracking & Integration: Apply planar tracking or 3D tracking to insert CG elements into live footage; refine with color matching and light wrap techniques.
- Export the graded project in multiple formats (web, broadcast). Apply proper color management and render settings.

Paper 2 – AI in Animation

Overview: The course introduces fundamental prompt engineering techniques for generating scripts, storyboards, visuals, and audio using the latest AI tools, with an emphasis on clarity, narrative precision, and stylistic control. Students progress to AI-assisted production workflows, including image and video generation, voice synthesis, and editing for short-form content. The final assignment focuses on creating a 20–30 second animated advertisement using AI-generated assets, demonstrating effective visual communication, brand alignment, and seamless integration of AI outputs into a polished, industry-relevant video.

Assignment List:

1. Create an animated advertisement with a runtime of 20-30 seconds using the latest AI tools.

Suggested Reading:

- *AI-Augmented Animator: How to Leverage Artificial Intelligence for Motion Design, Storyboarding, and Animation Efficiency-* Article by Research Gate
- *Animating Intelligence: The Role of AI in Modern Animation* by Siik Books



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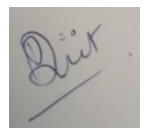
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Paper 3 – Short Film Submission

Overview: This course is designed to develop students' ability to conceptualize and produce a short film in either live-action or 3D animation format. Students are required to create a 2–5 minute live-action film incorporating VFX techniques such as green screen compositing, or a 45–60 second 3D animated film featuring basic character animation, environment design, and sound integration. The project focuses on visual storytelling, technical proficiency, and the effective integration of production elements into a cohesive and polished final output.

Assignment List: Students need to choose one of the following modules

Module 1- Live Action Shortfilm

- Produce a 4–5 minute live-action short film on a topic of choice, incorporating at least one key VFX green screen shot
- Apply cinematic storytelling techniques including camera work, lighting, and sound design
- Execute green screen shooting and VFX compositing for seamless integration using industry tools (e.g., Unreal Engine, Nuke, Silhouette)
- Work collaboratively in teams of 5–6 across pre-production, production, and post-production stages
- Ensure inclusion of a mandatory VFX sequence (10–15 seconds) such as virtual environments, digital effects, or composited scenes

Submission: Final Film (MP4), a behind-the-scenes video (1–2 minutes), and a technical report detailing challenges, solutions, and workflow pipeline

Module 2- 3D Shortfilm

- Produce a 45–60 second 3D animated short film on a topic of choice, focusing on storytelling and visual execution
- Apply cinematic techniques along with 3D modeling, animation, environment design, lighting, and rendering
- Develop original assets, including a protagonist and supporting elements, as part of the film
- Work collaboratively in teams of 5–6 across pre-production, production, and post-production stages
- Ensure the film meets duration requirements and demonstrates technical and aesthetic quality.

Submission: Final film (MP4), a behind-the-scenes video (1–2 minutes) with breakdown, and a technical report outlining challenges faced.



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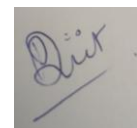
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Paper 4 – Portfolio Submission

Overview: Students are required to submit a comprehensive portfolio aligned with their chosen specialization within the animation and related creative disciplines. The portfolio must demonstrate a high level of technical competence, adherence to industry standards, and a well-developed understanding of core principles relevant to their area of expertise. Additionally, the work presented should reflect originality, critical thinking, and a consistent level of creative rigor.

1. All submissions must be curated and presented in a professional format, either as a showreel or through a structured digital portfolio hosted on recognized platforms such as ArtStation, Behance, or a personal website. The portfolio should be systematically organized, clearly labeled, and include only the student's best and most relevant work.



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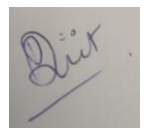
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