Raja Mansingh Tomar Music & Arts University Gwalior (M.P.)
B.Design Annual Program (Bachelor of Design) Regular

B.DESIGN I YEAR

Sr. No.	Subjects Nature core (Main subject) (Section-A)THEORY CORE 1	Subject code	Credit	Class room teaching week Duration/Hours	Total teaching duration/ hours	Mid terms / internal valution & attendence	End term valution marks percentage	Total Marks Percentage	Passing minimum marks
B.DESIGN ANNUAL PROGRAM REGULAR FIRST YEAR (ANIMATION)								
1	Fundamental Of Art		2	2	72	15+05	80	100	33
2	History of Animation		2	2	72	15+05	80	100	33
	PRACTICAL CORE 2								
3	Drawing		3	6	216	15+05	80	100	33
4	Principles of Animation		3	6	216	15+05	80	100	33
5	Pre-Production I		3	6	216	15+05	80	100	33
6	Introduction to Digital Tools		3	6	216	15+05	80	100	33
7	SECTION - B ELEETIVE OPEN SUBJECT ONLY PRACTICAL								
	Choose opposite subject with your own subject i.e. (Photography /Sculpture/painting)		2	2	72	15+05	80	100	33
	SECTION -C FOUNDATION COURES								
8	Hindi Languages Or English Languages		2	2	72	15+05	80	100	33
9	Entrepreneurship Development		2	2	72	15+05	80	100	33
	Total		22	34	1224				

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Mr. Amit Phand

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Mr. Mahendra Damle

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Mr. Vibhuti Pandey

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Mr. Sajan Kurien Mathew

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Mr. Madhusudan Sharma

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Mrs.Sonali Gupta

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Ashish Bhagoria

B.DESIGN I YEAR

Paper – I (Theory) – FUNDAMENTAL OF ART

• Line: Definition of Line, Lines And Visual Illusion, Line And Impression, Different Types of Lines And Drawings, Development And Possibilities of Line Drawings, Knowing The Tools And Materials, Drawing – Its Evolution And Possibilities, Line-Visual Kinetics (Flow And Weight), Energy And Lines, Other Values of Line Etc.

• Form: Definition of form, Classification, Impression, Visual And Formal Weight And Colours, Forms And Proportion, Form And content, Form And Space Etc.

• Colour: Definition, Knowledge of Colours, Colour Wheel, Characteristics of Colour (Guna And Doshas), Classification of Colour, Colour And Feeling, Complementary And Opposite Colours, Cause of Change, Colour Schemes, Experiments In Colours Etc.

• Tone: Definition, Classification, Impression, Tone-Its Importance And Application, Emotional Aspects of Tone, Relation of Tone With Space Etc.

• Texture: Meaning & Definition, Classification, Texture And Space, Texture And Principles of composition, Texture Creating Tools And Ways of Creating Texture, Texture Exploration, Texture And Painting, Texture And Sculpture Etc.

• Space: Definition, Space Division, Theories/Principles Relating Space, Division, Role Of Space (Negative/Passive, Passive/Active, Neutral/Assisting And Their Importance), Organization Of Form And Its Relation To Space Etc.

• What is composition (general meaning and definition)

• Unity: Definition, object, unity and vision, unity and visitor, unity and relativity, unity creation in painting, unity and opposite (discord)

• Harmony: Definition, line-harmony, form-harmony, texture-harmony, conceptual harmony, colour harmony, process of harmony creation etc.

• Balance: definition, balance and visual weight (line, form, colour and tone), principles of balances etc.

• Dominance: Definition and object, fundamentals, dominance and background, ways to create dominance point of interest in a painting space.

• Rhythm: Definition, different types, ways of creating rhythm, feeling of rhythm.

• Proportion – Definition, Proportion and space division, form and proportion, colour and proportion, human forms and proportion etc.

• Perspective – Definition, different types of perspective, terms relating to perspective, geometrical forms and perspective, imaginative perspective.

• Medium and methods – All about painting medium and methods relating to creation

• Drawing and rendering – Definition, problem relating two dimensional drawing and rendering, and three dimensional effects, do's and don'ts in it.

Suggested Reading
1. Art Fundamentals: Color, Light, Composition, Anatomy, Perspective, and Depth by 3DTotal Team (Author), Gilles Beloeil, Andrei Riabovitchev, Roberto F. Castro

PAPER – II (THEORY) – HISTORY OF ANIMATION
• THE FIRST FOUR DECADES (1888-1929)

1. ORIGINS - Pre-Cinema Visual Entertainment- magic lantern, comics, flipbooks, the thaumatrope, the phenakistoscope, the zoetrope, Emile Reynaud and his Praxinoscope.

2. ANIMATION IN USA – Winsor McCay, Birth of the industry, Instruments & language

3. EUROPEAN INDIVISULAISTS – Animation in the Weimar Republic, France's Contributions, Animation in other European countries.

4. Quirino Cristiani – The world's first animated feature film, USA- Breaking the sound barrier, Walt Disney – The World's Most Successful Animation Studio.

• ANIMATION IN 1930's

 1. Europe – Great Britain, France, Italy, Germany

2. USA – Lantz, from the Rabbit to the Woodpecker, Ub lwerks, Mintz, Krazy and Columbia, Van Beuren, The Terrytoons and Mighty Mouse, The Fleischers: Betty Boop, Popeye and two feature films, Warner Brothers: from Harman and Ising through Tex Avery to a republic of equals, Metro-Goldwyn-Mayer: Hanna & Barbera and Tex Avery, Tashlin the Wanderer, The American avant-garde

3. Talent in Japan

4. The Masters of Animation – George Pal, alexander Alexeieff, Norman McLaren, Oskar Fischinger
• ANIMATION FROM 1940-1970
1. USA - The Industry, UPA, Chuck Jones and Warner Bros., The resurgence of Terrytoons, Walter Lantz's Oasis, MGM and Tex Avery's Golden years, From Fleischer to Famous, Bunin's puppets, Animation in the West Coast: Experimental film movement, Jordan Belson and Mandalic Cinema, Harry Smith, heaven and earth magician, The Enigma of Hy Hirsch
2. CANADIAN ANIMATION – Snow White & The Great White North, Animation & the War Effort, Propaganda Message, Hewers & Drawers (Pre 1970 only), A Hard Cell: Evolution of the Commercial (Pre 1970 only), Geeks From the Prairies (Pre 1970 only), Animators of the west coast (Pre 1970 only), Women Animators in Canada (Pre 1970 only), The Silent Minority : Animation's Auteurs.

X _____ Mr. Amit Phand

X _____ Mr. Mahendra Damle

X _____ Mr. Vibhuti Pandey

X _____ Mr. Sajan Kurien Mathew

X _____ Mr. Madhusudan Sharma

X Sonali _____ Mrs.Sonali Gupta

X _____ Ashish Bhagoria

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3. ANIMATION IN ASIA – China & Japan (Kon Ichikawa)

4. ANIMATION IN LATIN AMERICA – Argentina & Brazil

 A NEW WAVE OF ANIMATION (1970 – 1980)

1. USA – Fragmentation, On the big Screen, On the small screen, Independent artists, John and Faith Hubley, Jules Engel, Robert Breer, John Whitney, James Whitney, Visionaries and avant-garde artists, Jane Aaron, Innovators of tradition: the independent par excellence, Will Vinton

2. CANADA –Hockey & Other Canadian Themes, The French Revolution, Hewers & Drawers (Post 1970 only), A Hard Cell: Evolution of the Commercial (Post1970 only), Geeks From the Prairies (Post 1970 only), Animators of the west coast (Post 1970 only), Women Animators in Canada (Post 1970 only), Richard Williams – The Prophet

3. WESTERN EUROPE – Great Britain: the good years, George Dunning, Richard Williams, Bob Godfrey

4. NEW REALITIES IN ASIA – China, India, Singapore, Japans Expansion, Osamu Tezuka, Art Productions, Yoji Kuri

5. The Globe Trotters of Animation – Jan Lenica, Peter Foldes, Jimmy Teru Murakami

• THE ELECTRONIC AGE

• COMPUTERS & ANIMATION
• Twelve Principles of Animation (Timing, Ease In and Out (or Slow In and Out), Arcs, Anticipation, Exaggeration, Squash and Stretch, Secondary Action, Follow Through and Overlapping Action, Straight Ahead Action and Pose-To-Pose Action, Staging, Appeal, Personality)

• Arcs of motion, hook-up and in-between, wave principal, S and C curve, follow through and overlap Action.

• Proportion, Balance, Weight, and Silhouette, What is Arc of movement? Its uses. Its importance in animation.

• Basic Principals of Animation in relation with walk cycle - Timing, staging, arc of motion, mass and weight, center of mass, path of action, squash and stretch

• Different types animation - Rough in-between, key frames, (pose to pose) and straight-ahead animation.

• Principles of anthomorphic walking character.

Suggested Reading
1. Bendazzi: Cartoons: One Hundred Years of Cinema Animation by G Bendazzi
2. Cartoon Capers: The History of Canadian Animators by Karen Mazukewich
3. Animation Survival Kit by Richard Williams

4. Carton Animation by Preston Blair

5. Timing for Animation by Harold Whitaker

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X _____ Ashish Bhagoria
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PRACTICAL 1 – DRAWING
COURSE OUTLINE

Study of various objects in pencil & color , Study of drapery, pots, jugs, glass, random objects. Animating Still life . Draw a still life of random objects. Draw another still life of the same objects but altering the still life showing what would happen if the objects come to life or if an external force acts upon them like wind, water, etc.

Mannequin with Proportions – Male & Female, Front, Profile & Back View, Human Gestures, 2d to 3d Visualization Exercises, Life Drawing – with model & scenes from daily life.

Fundamentals of perspective, One point, Two Point & Three Point Perspective, Eye Level & Vanishing Point, Make free hand sketches of room interiors, etc.

Color Study – Basic Terms & Scales, Complementary Colors, Warm Colors & Cool Colors. Creative Compositions with natural & manmade forms. Landscapes in Monochrome (greyscale, warm colors & cool colors) & Multichrome.

PRACTICAL SUBMISSION

1. Still Life – 5 (2 in pencil shading & 3 in color)

2. Nature Study – 5 (2 in pencil shading & 3 in color)

3. Animated Still Life - 1 (pencil shading only)

4. Mannequin for animation - 2 (1 Male & 1 Female)

5. Front, Front ¾, Profile, Back ¾ & Back View – 2 (1 Male & 1 Female)

6. Human Gestures - 30

7. Life Drawing - 30

8. One Point – 2

9. Two Point – 2

10. Three Point – 2

11. Vanishing Point - 2

12. Composition – 4

13. Landscape – 5 (greyscale, warm colors, cool colors, monochrome, multichrome) + 1 (All Colors)

Suggested Reading
1. Light, Shade and Shadow (Dover Art Instruction) by E. L. Koller
2. How to Draw What You See (Practical Art Books) by Rudy De Reyna

PRACTICAL II - PRINCIPLES OF ANIMATION
COURSE OUTLINE (To be done on light box)

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Mr. Amit Phand   Mr. Mahendra Damle   Mr. Vibhuti Pandey   Mr. Sajan Kurien Mathew   Mr. Madhusudan Sharma

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Mrs.Sonali Gupta   Ashish Bhagoria

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Twelve Principles of Animation (Timing, Ease In and Out (or Slow In and Out), Arcs, Anticipation, Exaggeration, Squash and Stretch, Secondary Action, Follow Through and Overlapping Action, Straight Ahead Action and Pose-To-Pose Action, Staging, Appeal, Personality). Timing for classical animation, Introduction to Exposure Sheet, Introduction to ladder, Arcs of motion, hook-up & in-between, wave principal, S & C curve, follow through & overlap Action. Posing and Gesture, blocking performance through thumbnails. Different types animation - Rough in-between, key frames, (pose to pose) & straight-ahead animation. Ball & Tail : Rough animation with sense of timing and pushing the emotion in the character design. Principles of the anthomorphic walking character. Basic Principals of Animation reviewed in relation with walk cycle - Timing, staging, arc of motion, mass and weight, center of mass, path of action, squash and stretch .

PRACTICAL SUBMISSION
To be submitted on A4 Size blank Paper binded in a book
• Twelve Principles of Animation (Timing, Ease In and Out (or Slow In and Out), Arcs, Anticipation, Exaggeration, Squash and Stretch, Secondary Action, Follow Through and Overlapping Action, Straight Ahead Action and Pose-To-Pose Action, Staging, Appeal, Personality)

• Rolling Coin Animation

• Bouncing BALL – Parallel, Perspective, Iron Ball, Rubber Ball & Plastic Ball

• Wave Principles – Flag Animation, Follow Through with path of action

• Pendulum with follow through , Canon Ball Animation, Overshoot Animation

• Drag Animation, Water Drop Animation

• Weight Lift & Toss Animation (Bean Bag & Real Character)

• Walk Cycle – Thin Person (Male & Female), Heavy Person (Male & Female)

Suggested Reading
1. The Animators Survival Kit by Richard E. Williams
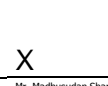2. Cartoon Animation (Collector's Series) by Preston Blair

PRACTICAL 3 – PREPRODUCTION I
COURSE OUTLINE
❖CHARACTER DESIGN

Introduction to Character design & Character rotation, Basic shapes and structure lines used in character design, Proportion, Balance, Weight and Silhouette, Construction of character through the structure of forms that build a character proportions, Character Turn Around, Character construction of the eye structure within a socket, eye direction & eye brows with expression.Gesture drawing & life sketching ,Charcater Size Relation for animation.Character Cleanup , Overview - Bones for 2D Animation – Torso, Hands. Legs, Head, Overview - Muscles & Joints for 2D Animation - Torso, Hands. Legs

❖BG & LAYOUT

X _____ Mr. Amit Phand   X _____ Mr. Mahendra Damle   X _____ Mr. Vibhuti Pandey   X _____ Mr. Sajan Kurien Mathew   X _____ Mr. Madhusudan Sharma

X Sonali _____ Mrs.Sonali Gupta   X _____ Ashish Bhagoria   X _____

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Gestural Drawing - Economy of Line, Filling Up The Frame- Effective Use of Visual Layers, Introduction to Animation Layout. Composition - Principles of Composition, Formal Composition, Technical Aspects of Composition, Framing the Shot, Principles of Staging, Flat Image and Space behind it. Perspective - Types of Perspective, Linear Perspective, Surfaces in Perspective, Perspective and Grids, Freehand, Observational Perspective.

Camera - Position /Angles, From close up to wide shot, Camera Moves: Track in and Track out, Up-shots and Down-shots, Field Guides, Field Charts and Field Positions, "Horizontal, Vert. Pan" (repeat an), Swish Pan. Image + Time, Continuity, (Hook-ups), Storyboard: Exposition, Rising action, Climax (turning point), Falling action, Resolution.Style Explorations, Layout Analysis In Visual Storytelling: An Introduction, Types of Layout: Traditional Layout, Digital layout, Level separation (Foreground, middle ground, background), Layout process, Production Process from Storyboard through Workbook, Rough Layout and Clean Layout to Ready Layout, Layout Clean-up, Adopting given style. Principles from traditional experience into contemporary (modern) digital application. Lighting, Mood Tonal Rendering, Mood development, Strong expression of Story described with stage lighting, Emotions/Atmosphere.

PRACTICAL SUBMISSION
To be submitted on A3, A4 Size sheets

1. Different Mannequin for animation – human & cartoon

2. Design own character with cleanup – Human & Animal

3. Turn around character developed both human & animal

4. Character balance, weight & proportion, Size Relation between characters developed.

5. Character Posing & Gestures Drawing, Character Expressions

6. The students have to develop new layouts adapting the style of these movies –

Emperors New Groove, The Hunchback of Notre Dam, Mulan, Samurai Jack, Leo & Stich

7. Texture & Pattern (color & pencil) – Study texture & patterns of the styles developed in the adopting given style exercise.– 1 sheet on texture (Minimum 6 textures) & 1 sheet on pattern.

8. Camera Angles – Use all camera angles in any one of the styles developed.

9. Lighting & Mood development (In Color) – Using the same area developed in style adaptation develop sheets depicting different moods – Suspense, Happy, Sad, Horror (1 Each)

Suggested Reading

1. Perspective Drawing Handbook by Joseph D Amelio

2. Setting the Scene: The Art & Evolution of Animation Layout by Fraser MacLean

3. Creating Characters with Personality by Tom Bancroft

4. Character Mentor by Tom Bancroft

PRACTICAL 4 – INTRODUCTION TO DIGITAL TOOLS
COURSE OUTLINE

• Introduction to hardware and software - Digital asset management and directory structure, Pros and Cons of Digital Animation, Digital vs Analogue, Screen resolution: NTSC, Wide-screen, PAL

• ADOBE PHOTOSHOP - Introduction to Photoshop, Using Layers, Using the scanner, Raster vs Vector graphics, RGB vs CMYK, Output formats and file compression, Additional tools and work-flows, Using Alpha Channels and Layer Masks, Pixel, Resolution, Render

PRACTICAL SUBMISSION
Output on computer (Photoshop)
1. Photoshop - Digital Painting: Own character that was developed from Practical 3 to be used
2. Character Concept Art (1) ,3. BG Concept (2) , 4. Layout Concept (1)

Suggested Reading
1. Adobe Photoshop CS6 Bible by Lina Danae Dayley

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B.Design Annual Program (Bachelor of Design) Regular

B. DESIGN ANIMATION YEAR II

	B.DESIGN ANNUAL PROGRAM REGULAR SECOND YEAR (ANIMATION)								
Sr. No.	Subjects Nature core (Main subject) (Section -A) THEORY CORE 1	Subject code	Credit	Class room teaching weeklyDuration/Hours	Total teaching duration/ hours	Mid terms/ internal valution & attendence	End term valution marks percentage	Total Marks Percentage	Passing minimum marks/ percentage
1	Art Direction		2	2	72	15+05	80	100	33
2	Cinematography		2	2	72	15+05	80	100	33
	PRACTICAL CORE 2								
4	Advance Principles of Animation		3	6	216	15+05	80	100	33
5	Storytelling		3	6	216	15+05	80	100	33
6	Pre-Production II		3	6	216	15+05	80	100	33
7	2D Digital Animation		3	6	216	15+05	80	100	33
	SECTION - B ELEETIVE OPEN SUBJECT ONLY PRACTICAL								
8	Choose opposite subject with your own subject i.e. (Photography /Sculpture/painting)		2	2	72	15+05	80	100	33
9	Hindi Language Or English Languages		2	2	72	15+05	80	100	33
10	Environmental study		2	2	72	15+05	80	100	33
	Total		22	34					

PAPER –I (THEORY) –ART DIRECTION

• Short films and Animation Aesthetics

• Animation styles and art direction (shorts vs series vs feature productions)

• Producing style guides (series vs feature production)

• Production Design (shorts vs series vs feature productions)

• Art direction and storyboard demands (series vs feature vs independent productions)

• Visual Development & Research

• Inspiration, Composition, Staging & formats, Rhythm & Style Variety, Value & Color, Color scripts

• Aesthetics of full & limited animation

• Digital Animation – Stages of industry development, aesthetic issues, aesthetic challenges

• Animation Audience – Predicting Profitability, Market Research

• Addressing Cultural Difference, Representation of Femininity in animation

• Considering form in abstract animation

Suggested Reading
1. Dream Worlds: Production Design for Animation by Hans Bacher and Don Hahn
2. Art in Motion, Revised Edition: Animation Aesthetics by Maureen Furniss

Paper -II (Theory) – Cinematography

• The tools of Cinematography – The frame, the lens, light and colour, texture, movement, establishing, point of view

• Shooting methods – What is cinematics, the frame, cinema as a language, master seen method, coverage, overlapping or triple take method, free form method

• Cinematic Continuity – Shooting for editing, Types of continuity, The prime directive, screen direction, issues in continuity, types of cuts – Content cut, action cut, POV cut, Match cut, conceptual cut, zero cut

• Camera Movement – Types of moves, Moving shots, camera mounting, the crab dolly, cranes, car shots, aerial shots, other types of camera mounts

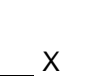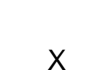• Film formats – Aspect Ratios, Wide Screen, 3-Perf, 2-Perf Techniscope, 16mm

Suggested Reading
1. Cinematography: Theory and Practice: Image Making for Cinematographers and Directors by Blain Brown
2. The Five C's of Cinematography: Motion Picture Filming Techniques by Mascelli, Joseph V.

PRACTICAL 1 – ADVANCE PRINCIPLES OF ANIMATION
COURSE OUTLINE
• Extension and Application of Animation concepts.

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Mrs.Sonali Gupta	Ashish Bhagoria	

• Extension and Application of Animation concepts through a debate of current animation topic. Demo - how to shoot a repeat cycle animation, Character model sheets for possible head turn character. In class critique of "Walk Combo". In class demo of the head turn and breaking characters into shapes. "Head Turn and Lip Sync" with a visual rubric of what is expected from the students by showing examples. Discuss Lip Sync and mouth shapes, Analyzing the effectiveness of solid lip sync principals animation by showing clips from animated films.

• Rough in-betweening animation, balance key frames (pose to pose) and straight ahead animation. Demo of how to approach the in-between and following the arcs and spacing of a good inbetween. Break down the animal walk to a skeleton structure.

• Assign the object for the Flour Sack assignment (Animate a flour sack with gestures, poses, etc).

• Animation Performance techniques through gestures and body language with examples from films clips of animation and character design projects.

• Review on animation principals that will combine with the flour sack assignment: squash and stretch, follow through, S & C curve, anticipation and performance.

• Hierarchy of Drawings, Review of anticipation, Visual indications of weight, Body mechanics of lifting

• Body mechanics of throwing. Importance of balance.

• Mechanics of walks, Emotional components of walks, Runs, Emotional components of runs

• Staging two character scenes, Shift and Trace inbetween system

• Facial expressions Show relationship between eyes, cheeks and mouth in creating strong expressions, Facial acting

• Draw face and body types, stressing distinction in the shape, size and relative placement of the features

• Construction of character through the structure of forms that build a character proportions in a series of thumbnails. In class acting as an anthomorphic character, In class demo, In class drawing exercise. Performance, Posing and Gesture, blocking performance through thumbnails. Introduction to Character Timeline. Explanation of all required components of the exposure sheet and scene package. Components of the scene package, delayed action, anticipation in Performance recovery and balance.

• Critique the anthropomorphic character designs, Design a character as an inanimate object

• Performance & the discovery of the character and his /her responses to objects balance & gravity

• Arc of movement and follow through in relation to poses and how they relate to in-betweening.

• Overview of structure with rough poses of character with in personality.

PRACTICAL SUBMISSION
Output Video & Binded Pages of every assignment to be submitted
1. Morphing Assignment – Text Animation, Figure & Object Mixing Animation
2. Wave Principle Animation – Bird Flying (Small wing & Long Wing), Long Flexible Dragon Type Character Animation, Long Hair & Coat Character Animation, Rat Animation
3. Lip Sync - Two Characters Animation (Mime & with Dialogues)

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4. Pose to Pose Animation (Create passes in various emotions)- Drunken, Comedy, Boldness, Angry, Happy, Sad, Bossy,

5. Straight ahead animation – Throwing, Weight Lifting, Pushing, Breaking, Pulling, Hitting,

6. Study shot from any animation film & create it

7. Key Cleanup & Inbetweening

Suggested Reading

1. Animation Survival Kit by Richard Williams

2. Carton Animation by Preston Blair

3. Timing for Animation by Harold Whitaker

PRACTICAL 2 – STORYTELLING
COURSE OUTLINE

• Analysis In Visual Storytelling : An Introduction

• Introduction to Visual Concepts - Expectations and Procedures, Overview of the Production, The Role of the Storyboard Artist in Animation, The Role of the Storyboard Artist in other Venues

• Introduction to Fundamental Elements of Story - The Storyboarding Process, Interpretation of Story through Film Analysis

• Framing Up The Shot: What Does The Camera See?

• Introduction to Storyboards - Film making Principles and Storytelling Practices

• Storyboard and the Relation to Live Action Camera - Staging, Posing, Gesturing, Storyboard Design (Rule of Thirds)

• Illusion of life vs Moving Illustration.

• Seven Essentials Acting Principles

PRACTICAL SUBMISSION

1. Write a story with script.

2. Individual storyboarding of the same story

1. Create a sample storyboard on the following – Movie, TV – Series, Advertisement

 2. Rough Panels on Display Board

3. Final Storyboard with Camera Notes

4. Rough Animatics according to storyboard

Suggested Reading

1. Film Directing Shot by Shot: Visualizing from Concept to Screen (Michael Wiese Productions)

2. Prepare to Board! Creating Story and Characters for Animated Features and Shorts: 2nd Edition by Nancy Beiman

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3. How to write for animation by Jeffrey Scott

PRACTICAL 3 – PREPRODUCTION II
COURSE OUTLINE
❖ ADVANCE BG & LAYOUT

Extreme shots, design for contrasting emotions, Master scenes and reuse scenes, Advanced Cinematic Visual Language, Advanced mechanics of Layout (Leveling), Advanced multi-plane layout, Advanced Cinematics, Layout package and labeling. Short films and Animation Aesthetics. Painting layouts, Thumbnail Drawing Exercise, Tonal Structure for Animation, Tonal Thumbnail for Mood and Lighting, Perspective Review. Elements of Design, Colour Exploration, Atmospheric Development & Colour Balance.

Taking Story into Layout. Painting Final Exterior Colour Key, Completion of Exterior Study, The Pan and Other Set-ups. Ruff Layout, Grids, Thumbnail Composition, Contrast Structure and Focal Point, Drawing Light and shadow, Background Painting, The Digital Environment - Digital Tools to Create Layout. Colour Development for Digital Background Painting. Style Types, Style Development, Story Board Colour Development, Linking Painting to Layout, Study of Film Continuity, Study of Layout techniques.

Introduction to Photoshop. Exploration of Photoshop painting tools (brush creation, texture maps, transforming, etc.)

• Principles of reuse. Sequential Rough Layout

• Perspective Drawing for layout

• Scene Planning - Camera moves and Pans

• Interior study. Interior Colour

• Perspective Drawing for layout - Projection/ Inclined Planes. Compositing (Resize and Repo, the Compositor's job, software)

• Analysis of story/plot development through layout

• Storyboard art direction.

• Integration of story and Layout

• Development for character colour

• Advanced Cinematography - Staging, Blocking and Composition

• Style analysis (effective balance of character with BG style). Scene Planning

• Tonal Rendering and Clean up Techniques. Advanced Leveling.

• Ratio speeds. Multiplane techniques. Analysis of examples of Live action and Animation for all aspects of filmmaking

❖ ADVANCE CHARACTER DESIGN

• Dynamic gesture: Directional Forces How and Why of Application throughout the Figure, Continuous gesture, multiple poses and memory studies.
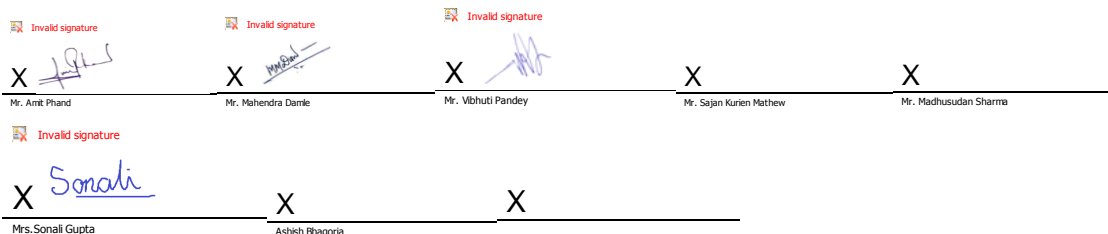
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• Superheroes and Villains: Design, Character Construction, Deconstruction, Continuity of Distortion. Double model. Facial caricature. Media Studies: marker and inks.

PRACTICAL SUBMISSION

1. Make two Key Layouts with shading on A2 size paper.

2. Breakdown of Key Layout according to storyboard (A4)

3. Rendering of Each Breakdown

4. Make two color keys of two key layouts manually.

5. Make two Key Layouts with shading on Photoshop.

6. Breakdown of Key Layout according to storyboard on Photoshop

7. Rendering of Each Breakdown on Photoshop

8. Make two color keys of two key layouts on Photoshop

9. Background submission with four techniques of given layout

10. 100 Life Drawings (Drapery & Shading)

11. Hero Character Design – 2 (A4 Size)

12. Villain Character Design – 2 (A4 Size)

13. Female Character Design - 2 (A4 Size)

14. Anthropomorphic Character Design - 2 (A4 Size)

15. Expressions, Attitude & Posing – 1 Page of each character

16. Color Keys - Digital

Suggested Reading

1. Dream Worlds: Production Design for Animation by Don Hahn

2. Layout & Composition for Animation by Ed Ghertner

3. Setting the Scene: The Art & Evolution of Animation Layout by Fraser MacLean

4. Character Design from the Ground Up: Make Your Sketches Come to Life by Kevin Crossley

Creating Characters with Personality: For Film, TV, Animation, Video Games, and Graphic Novels by Tom Bancroft

PRACTICAL 4 – DIGITAL 2D ANIMATION

COURSE OUTLINE

• Introduction to Adobe Flash

• Intro and Workflow Theory

• Compare differences between Paperless Animation and Traditional Animation - Discuss methods of planning animation to ensure that the student is controlling the performance and not the program.

• Visualize methods to transform a paperless skill from one software package to another

• Introduction to Paperless Animation

• Rough animation methods

• Demonstrate the 'Cleanup process

• Illustrate efficient 'Colouring' methods

• Introduction to Symbol Animation Design and create a character for a cutout character

• Break character down in preparation for rigging

• Construct rig for cutout character

• Pose and Animate cutout character

• Compositing and Editing

• Introduction to Compositing software

• Visualize a scene with existing animation

• Build scene with imported Animation and created layouts from visualization

• Demonstrate the ability to manipulate a camera through this scene

• Introduction and Workflow Theory ❖ How workflows are used in a digital environment Demonstrate proper file usage and management

❖ Reinforce the importance of a backup policy

• Paperless Drawings and Color Management ❖ Explore the use of different references to achieve the visualized animation **o** Evaluate drawing tools to finalize the animation

❖ Justify effective color management and use

❖ Assess visual effects and masking to compliment the animation

• Use of Camera and Pegs ❖ Construct multi-layered scene is 3D space Generate camera motion within a 3D scene

• Symbol Based Animation ❖ Create and prepare character for symbol scene

❖ Define character structure to enable posing

❖ Pose character through time then refine animation

• Introduction to Codecs and Video Resolution, Digital Workflow

• Motion Tweens and Shape Tweens & 3D Transformation - Inverse Kinematics

PRACTICAL SUBMISSION
1. 2D Short Film Project - **This is a group project, Students must work in groups of 3-5.**

❖ Story writing, Make a script

❖ Storyboarding & Animatics of the developed script
❖ Develop the Key Layouts & Color BG

❖ Divide the work & make a short film in 2d in Flash

❖ Insert dialogues & sound effects in the short film.

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Mrs.Sonali Gupta   Ashish Bhagoria

❖ Submit the final output.

Suggested Reading

1. Animation from Pencils to Pixels: Classical Techniques for the Digital Animator by Tony White
1. Adobe Flash Professional CS5 Bible by Todd Perkins
2. The Animation Book: A Complete Guide to Animated Filmmaking--From Flip-Books to Sound Cartoons to 3- D Animation by Kit Laybourne

B. DESIGN ANIMATION YEAR III

B.DESIGN ANNUAL PROGRAM REGULAR THIRD YEAR (ANIMATION)

Sr. No.	Subjects Nature core (Main subject) (Section -A) THEORY CORE 1	Subject code	Credit	Class room teaching weekly Duration/Hours	Total teaching duration/ hours	Mid terms/ internal valution & attendence	End term valution marks percentage	Total Marks Percentage	Passing minimum marks/ percentage
1	Digital Modeling, Lighting & Rendering		2	2	72	15+05	80	100	33
3	Virtual Reality		2	2	72	15+05	80	100	33
	PRACTICAL CORE 2								
4	Dynamic Anatomy		3	6	216	15+05	80	100	33
5	Stop Motion Animation		3	6	216	15+05	80	100	33
6	3D Modeling & Texturing		3	6	216	15+05	80	100	33
7	3D Rigging & Animation		3	6	216	15+05	80	100	33
	SECTION - B ELEETIVE OPEN SUBJECT ONLY PRACTICAL								
8	Choose opposite subject with your own subject i.e. Reproduction technique		2	2	72	15+05	80	100	33

(Photography /Sculpture/painting)								
	Total		18	30	1080			

PAPER –I (THEORY) –DIGITAL MODELING

• What is Digital Modeling?

• Who can become a professional Digital Modeler?

• Fundamentals of a Digital Model – A Models Anatomy, Model Classification: Hard Surface & Organic, Model Styles

• Digital Modeling Methods – Build Out, Primitive Modeling, Box Modeling, Patch Modeling, Digital Sculpting, 3D Scanning, Modeling with Texture & Animation Tools, Importance of mixing methods

• Modeling a Realistic Head – Choosing a method: Edge Extend vs Box Modeling

• 3D Printing – What is 3D Printing, 3D Printing Applications, preparing a 3D model for 3D printing, 3D printing to manufactured toy process

• Fundamentals of Lighting Design – Visual Goals of lighting design, Lighting Challenges, Your Workspace & Creative control

• Types of Lights

• Shadows & Occlusion – The Visual Function of Shadows, Shadow Algorithms, Occlusion

• Lighting in Animation – Three Point Lighting, Functions of Light & Issues in Lighting Character Animation

• Cameras & Exposure – F- Stops & Depth of Field, Shutter Speed & Motion Blur

• Composition & Staging – Camera Angles, Types of shots, improving your shots, Framing for Film & Video

• Shaders & Rendering – Shading Surfaces, Anti- Aliasing, Raytracing, Reyes Algorithm, Global Illumination, Caustics

• Production Pipelines & Lighting on larger productions

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X _____ Mr. Sajan Kurien Mathew
X _____ Mr. Madhusudan Sharma

X _Sonali_ _____ Mrs.Sonali Gupta
X _____ Ashish Bhagoria
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Suggested Reading

1. Digital Lighting & Rendering by Jeremy Birn

2. Aesthetic 3D Lighting: History, Theory, and Application by Lee Lanier
3. Digital Modeling by William Vaughan

PAPER – II (THEORY) – VIRTUAL REALITY

• What is Virtual Reality – Stereoscopic Displays, Motion Tracking Hardware, Eye Tracking, Input Devices, Computing Platforms

• How Virtual Reality is made?

• Hardware & Software Requirements to create Virtual Reality

• Difference between Virtual Reality & Augmented Reality

• Animation in a VR world - Anime VR

• Applications of Virtual Reality – 360º panoramas, etc.

• Virtual Reality Hardware – What is Oculus Rift, Samsung Gear VR, Google Card Board

Suggested Reading

1. Learning Virtual Reality: Developing Immersive Experiences and Applications for Desktop, Web, and Mobile 1st Edition by Tony Parisi

PRACTICAL 1 - DYNAMIC ANATOMY
COURSE OUTLINE

• Contour, shape, proportion, weight, mass and volume will be studied through lectures and drawing exercises. Topics covered include blind contour, straight and curved line, silhouette line, blocking-in and cross contour.

• Introduction to Figure Drawing - Drawing to Animation (any one drawing is only part of a whole)

• Introduction to the Skeleton - Volumetric rotations, axis lines, horizontal and vertical mechanics of the skeleton

• The Spine - Anatomy and Structure Curves, relationship to the skull, rib-cage

• The Pelvis and Shoulder Girdle - Anatomy and Structure, Torso Movement, Relationship to the leg and whole figure

• Upper leg and attachment to the pelvis, knee and foot - Joint Movement, Foot Placement (space)

• The skull - Basic structure, rotations, planes and divisions, Skull/neck relationship, Insertion into torso

• Animal Drawings, Quick Gestures Animals

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• Review of the human skeleton and major joints, Basic Joint Movement Terminology, Introduction to the muscles of the upper torso, front and back

• The Arm and the Shoulder, Relationship to the Torso, Main Muscle Groups

• The Leg and Buttock, Relationship to the Torso, Main Muscle Groups

• Muscles of the Complete Torso, Mass, volume, movement, form and function

• Muscles of the Hand and Foot

• Introduction to the Walk Cycle, Leg movement, Muscles of the hip, knee, ankle, toe

• Muscles of the Head, Neck and Face, Neck insertion, head rotation

• Facial muscles and features, facial triangle, Review of Human Anatomy

• Capture the human and animal form effectively using observational drawing skills.

• Explain the relationship between time and the fundamental elements of life drawing.

• Discuss the characteristics and techniques of visual literacy.

• Create drawings that reflect figurative rhythmic, structural and proportional aspects of the human form

• Analyze observational drawings of animals and humans to enhance visual literacy.

• Field study animal drawing/comparative anatomy

• Head and neck musculature and structure/facial muscles

• Facial expression/mid-term critiques

• Leg and foot anatomy with structure

• The figure in the context of the environment/walk cycles/Perspective

• Field study animal drawing on zoo or farm (class trip)

• Drawing multiple figures in the environment/perspective

• Complete life drawings that reflect economy of style while incorporating significant elements of staging and lighting.

• Create life drawings that incorporate significant use of costume and drapery, environment, and elements of architectural style.

• Generate life drawings that reflect refined application of key observational concepts, principles, and theories related to dynamic anatomy. Extrapolate a wide range of characters that may be integral to the

•   story using one or multiple models

•   • Incorporate volumetric analysis and 3-D performance in life drawings that may be translated to computer generated characters

•   • Exhibit how life drawing augments the film by informing the mythology and humanity of the visual story through visual story arcs

•   • Incorporate historical knowledge of art direction, directorial styles and other media to generate life drawings in appropriate contexts

• • Pay homage to an established film by reconstructing a scene from it in order to incorporate its essence into one's own independent film

PRACTICAL SUBMISSION

1. Complete Human Skeleton rotation -1

2. Torso Movement, Relationship to the leg and whole figure – 1 each

3. Hands- Upper part, Lower part & fingers – 1 each

4. Knee and Foot - Joint Movement, Foot bones – 1 each

5. The Skull - Basic structure, rotations, planes and divisions – 1 each

6. Basic structure of Quadruped Animals & Blocking

7. Character Planes

8. Animal Quick Gestures

9. Life Drawings with staging & lighting – 5 (A3 Size paper)

10. Life Drawings with costume, drapery , environment - 5 (A3 Size Paper)

11. Life Drawing with expression & body language – 5 (A3 Size Paper)

12. Life Drawing incorporating mythology, historical dresses & props – 5 (A3 Size Paper)

Suggested Reading

1. An Atlas of Anatomy for Artists by Fritz Schider

2. Anatomy & Drawing by Victor Perad

3. Drawn to Life- Vol – 1 by Walt Stanchfield & Don Hahn

4. Drawn to Life- Vol – 2 by Walt Stanchfield & Don Hahn

PRACTICAL 2 – STOPMOTION ANIMATION
COURSE OUTLINE

• Basic Geometrical shapes in clay

• Simple compositions in Clay with the use of human figures

• Clay Modeling of human figures using armature

• Introduction to Stop Motion Animation

• Software Intro

• Framing, Staging and Blocking

• Screening, Framing the Shot Blocking The Shot

• Effective Use of Dope Sheets

• Timing and Spacing

• Introduction to Puppets

❖ Screening

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❖ Historical Context

• Introduction to Aluminum Puppets

• Timing
• Introduction to Lighting

• Advanced Puppet Making and Intro to rigging

• Design and Fabrication for Puppets

• Principles of camera lenses

• Production planning for stop motion
PRACTICAL SUBMISSION
Make a short film using stop motion animation (clay animation) – This is a group project & students must work in groups of 3-5.
1. Make a small script , Design Character, Design Background, Do Storyboard.

2. Give final output in clay animation (short film)

NOTES
➢ Compulsory to use aluminum armature (aluminum puppets) for the clay animation.

➢ Use colored modeling clay.
➢ Use Aluminum Craft / Armature Wire
Suggested Reading
1. The Advanced Art of Stop-Motion Animation by Ken Priebe
2. Cracking Animation: The Aardman Book of 3-D Animation by Peter Lord (Author), Nick Park (Author), Brian Sibley (Author)
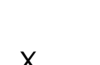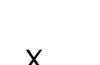
PRACTICAL 3 - 3D MODELING & TEXTURING

COURSE OUTLINE
• Introduction to Maya 3D Modeling Interface, use of mouse and keyboard, basic tools to be used in creating polygonal shapes and models. Descriptions of polygons, and the elements that make up a polygon in Maya, such as vertices, edges, faces, and UVis. Overview of file keeping, saving files and workspace views. Moving, scaling, rotating and placement of objects in the 3D environment.

• Lecture and Demonstration of new tools, including extrusion of faces, extrusion along a curve and Boolean operations. In class project to create a simple snowman, using spheres, cylinders and cubes to create hat, facial features, buttons and arms. Removal of extra intersecting geometry and labeling of polygons to keep clean file with minimal geometry. Students to bring in a toy or a reference drawing of a hard surface, non-organic object for review to begin HARD SURFACE MODEL.

• Hand Model Project. Students will model and entire hand, including 4 fingers, thumb, palm and part of the wrist starting from a primitive cube and adding divisions, splitting polygons, extruding faces to create jointed digits, beveling edges, and refining the topology by adding, scaling and manipulating vertices of

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the geometry. Hand must resemble a human hand,. Wire frame model must remain unsmoothed to retain a smaller file size with minimal geometry.

• Character Model Project. Demonstration and lecture on character designing for 3D modeling. Review of character designs, any revisions required, and importing three views into Maya for reference. Students will learn new techniques of creating a symmetrical model by creating an instance of half the model and mirroring the operations performed to ensure equal geometry on each side of the 'Y' axis. Students are encouraged to model the character only, no drapery. Two or 4 legged traditional characters only, no robotic or non-organic characters. Designs must have head, body arms, legs, feet, and hands. 'Mitt' or cartoon hands permitted in this case. Learn Face expressions & morphing.

 Interior Environment Project. Interior Environment Model with Lighting. Create an interior of a room, any era or style. Simple shapes representing walls, windows, furniture, flooring with various lighting and illumination. Assigning colour or texture to polygon surfaces. This is brief introduction to mapping and lighting techniques. Maya rendered images of 3 views of the model saved as jpg.

• Fur – Introduction to fur & its attributes, Fur on character – baldness & length

• Hair – Introduction to hair attributes, Hair Styling

• N-Cloth – Introduction to nCloth, nDynamics & Dynamics

• Lighting Plugins in Maya For Rendering – Arnold, Mental Ray, V- Ray

• Introduction to Caustic, Creating normal in crazy bump software

PRACTICAL SUBMISSION
1. Hard Surface Model - Students to bring in a toy or a reference drawing of a hard surface, non-organic object (non- living) like cars, architecture, etc.

2. Hand Model - Model an entire hand, including 4 fingers, thumb, palm and part of the wrist.

3. Character Modeling – Human & Animal (High Poly & Low Poly)

4. Creating hair on a character , Create a small creature with fur

5. Interior Environment - Create an interior of a commercial office, bedroom, & kitchen using mental ray & arnold

6. Make an object with the help of caustic on mental ray

Suggested Reading
1. Digital Modeling by William Vaughan

2. Maya Character Creation: Modeling and Animation Controls by Chris Maraffi

3. Aesthetic 3D Lighting: History, Theory, and Application by Lee Lanier

PRACTICAL 4 – 3D RIGGING & ANIMATION
COURSE OUTLINE
• Joints, hierarchies, UV's and textures

• Rig applications problem solving

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• Using constraints, scripts and utilities

• FK/IK joints and skinning

• Advanced Set driven key and rig systems

• Building advanced hierarchies and controls for posing

• Camera Rigging and render settings

• Advanced controls and custom attributes

• Deformation order and blend shapes

• Rivets, follicles, nulls and granular control systems

• Squash and stretch deformations and rigs

• Leg rigging, empty group nodes, custom pivot points

• Looking at different practical rig solutions

• Four-Wheeler Rigging

• Animation Essentials and Perception of Motion. Designing animation in Maya - 3D considerations.
Timing, curves, handles, holds, slow in and out
Walk Cycle: How cycles work and PIXAR walk design. Planning animations-thumbnails and key poses.
Gravity, balance, believable weight and driving forces. Center of gravity and legs. Time allowing begin
upper body, arms and head. Adding squash and stretch

• Quadruped Walk Cycle

• Driving forces: mood, personality, attitude

• Analyzing dialogue: listen for weak and strong parts

• Planning animation: thumbnail out poses you see in your head. Acting it out: become the character for a
few hours

• Blocking Pass: pose your character for basic feel and timing fine tuning and moving holds Second Pass:
critical in-betweens overlapping action and overshoots

• Third Pass: block in facial expressions and simple mouth shapes

• Fourth Pass: head squash and stretch animation, eye and tongue details

• Lip-sync Pass: simplify - show dominant vowels and consonants

• Final Pass: fix mistakes and push the poses

• Character Multiple Action Performance-

• Rig planning: considerations and workflows Hierarchies: grouping, parenting and pivot points Bones:
basic character hierarchy

• Inverse and forward kinematics

• Skinning: volume distribution and custom deformations -The arm, hand and leg The Face: blendshapes

• Advanced overview of squash and stretch rigging

• Camera rigging and motion paths

PRACTICAL SUBMISSION

1. Design a flexible and functional spine rig. This assignment will be an Introduction to using simple Maya constraints, Set Driven Key and groups.

2. Design an FK-IK arm and hand rig. Continue to expand on methods for manipulating maya joints and their related geometry.Editing and designing character skin weights.

3. Design a flexible and easy to pose quadruped rig. This assignment will be an introduction to using simple Maya constraints, SDK, connection editor and other tools.

4. Build a complete head/face rig. The controls developed for the face will reflect the CG animation process. There will be main overall controls for posing of the eyes and facial expressions but also a collection of finer controls for squash and stretch etc.

5. Squash & Stretch, Biped Walk Cycle, Quadruped Walk Cycle Assignment

8. Character Multiple Action Performances (Basic) – 2 Characters

9. Animate a car

Suggested Reading
1. Rig it Right! Maya Animation Rigging Concepts by Tina O'Hailey
2. How to Cheat in Maya 2014: Tools and Techniques for Character Animation by Kenny Roy
3. The Art of 3D Computer Animation and Effects by Isaac V. Kerlow

B. DESIGN ANIMATION YEAR IV

B.DESIGN ANNUAL PROGRAM REGULAR FOURTH YEAR (ANIMATION)

Sr. No.	Subjects Nature core (Main subject) (Section -A) THEORY CORE 1	Subject code	Credit	Class room teaching weeklyDuration/ Hours	Total teaching duration / hours	Mid terms/ internal valution & attendence	End term valution marks percentage	Total Marks Percentage	Passing minimum marks/ percentage
1	Visual Effects		2	2	72	15+05	80	100	33
2	Digital Compositing		2	2	72	15+05	80	100	33
3	Motion Capture		2	2	72	15+05	80	100	33
	PRACTICAL CORE 2								
4	Digital Sculpting		3	6	216	15+05	80	100	33
5	Visual Effects I		3	6	216	15+05	80	100	33
6	Visual Effects II		3	6	216	15+05	80	100	33

7	3D Short Film		3	6	216	15+05	80	100	33
	SECTION - B ELEETIVE OPEN SUBJECT ONLY PRACTICAL								
8	Choose opposite subject with your own subject i.e. Reproduction technique (Photography /Sculpture/painting)		2	2	72	15+05	80	100	33
	Total		20	32	1152				

B. DESIGN ANIMATION YEAR IV

PAPER – I (THEORY) – VISUAL EFFECTS

• Intro to the Motion Picture/VFX Pipeline

• What are movie making & VFX?

• Principles of motion picture & VFX

• Origins of Visual Effects & VFX concepts

• Rotoscoping, Motion Tracking & 2D Matchmoving – The golden rules of roto, Types of 2D motion tracking, comparing good & bad tracking targets & 2D motion tracking applications.

• How 3D CGI is created & its applications. 3D motion tracking & its applications.

Suggested Reading

1. Visual Effects and Compositing by John Gress

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Paper – II (Theory) – Compositing

• Compositing –Compositing Applications, Layer Based Compositors, Nodal Based Compositors, Keyer
   Types & Concepts

• Structure of Digital Images –The Pixel, Grayscale Images, Colour Images & Four Channel Images

• Different of Visual & Special effects, Image Resolution, Image Aspect Ratio, Pixel Aspect Ratio,
   Display Aspect Ratio, Bit Depth, Floating Point, Photographic Images vs Graphics,

• Different between live action & CGI

• What is Blue screen & Green screen. & their use in VFX.

• Methods of warping & morphing

Suggested Reading

1. Compositing Visual Effects by Steven Wright

PAPER –III(THEORY) –MOTION CAPTURE

• History of motion capture – Early Attempts, rotoscoping, beginnings of digital mocap, Optical mocap
   systems, Magnetic mocap systems, Mechanical mocap systems.

• Marker Sets – What are the system limitations? What kind of motion will be captured? Knowing the
   Anotomy.

• Pipeline – Setting up a skeleton for a 3D character, System Calibration, Subject calibration, Capture
   Sessions, Cleaning data, Editing data, Applying motions to 3D character, Rendering & post production.

• Cleaning Marker Data – Types of data, What to clean and what not to clean, labeling, data cleaning
   methods, when to stop, applying marker data to skeleton.

• Mocap data & Math – How data is created, Data types & formats, Coordinates & Coordinate system,
   Order of transformation, Euler angle, Gimbal lock, Quaternions.
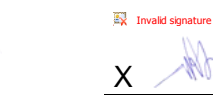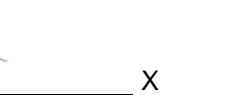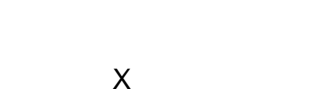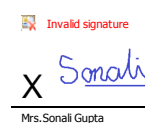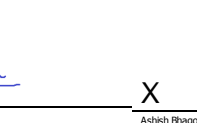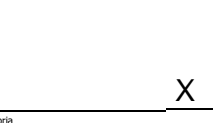
Suggested Reading
   1.   MoCap for Artists: Workflow and Techniques for Motion Capture by Midori Kitagawa

PRACTICAL 1 -DIGITAL SCULPTING (Z -BRUSH)
COURSE OUTLINE

• Sculpting Concepts – Comparing Traditional & Digital Sculpting, Anatomy for Sculptures, Proportions
   & Measurements, Form, Negative Space & Gesture.

• Digital Sculpting - Introduction to UI, Introduction to tools, Methods of Sculpting by the help of meshes
   in z brush, Making of Shield (Brush Strokes, Masking, Displacement)

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• Model a human skull

• Model human head with details

• Model human basic body

• A model imported from maya and fine tune

• Introduction to Z Sphere, Transpose, Modeling Animal using Zsphere

• Gesture poses

• Understanding of UV space and Texturing, Poly paint, Z App link

• Export of Normal, Displacement, Cavity maps

• Assignment - Create a fearsome warrior, a sportsman, a realistic old age face

• Realistic Character Modeling n Texturing - Building up Shapes - (Relative Scale, Form, Detailing), UV Layout & tiles in 3D space - (Planning, Techniques), Create new textures for painting their existing models, Utilize Projection Master to work with detail brushes and alpha, Brushes for highly detailed texture painting.

• Create realistic character texture painting

• Create texture for cartoons

• Create face expressions & morphing

PRACTICAL SUBMISSION
To be done in Z Brush..
1. Create a fearsome warrior

2. Create a sportsman,

3. Create a realistic old age face

4. Paint one figures developed in Assignment 1 or 2 or 3

5. Create 1 displacement maps and apply them in Maya

Suggested Reading
1. Sculpting from the Imagination: ZBrush (Sketching from the Imagination) by 3DTotal Publishing

2. ZBrush Characters and Creatures by Kurt Papstein, Mariano Steiner, Mathieu Aerni, 3DTotal Team

3. Introducing ZBrush 3rd Edition (Serious Skills) by Eric Keller

PRACTICAL 2 - VISUAL EFFECTS I
COURSE OUTLINE

DYNAMICS
• Introduction to particle Menus & its attributes
• Introduction to nparticle

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• Emitters & its Attributes
• Particle - Travel on Surface
• Particle Instancer
• Making Static Cloud With Particles
• Introduction to Fluid Effect
• Assignment - Boat on an Ocean
• Introduction to Soft Bodies
• Soft Body - Rope Simulation
• Introduction to Rigid Body and Constraints
• Assignment - Rope bridge simulation
• Assignment - Particles into Glass
• Cereal Bowl Assignment

AFTER EFFECTS
• What is Broadcasting? Broadcasting Formats. General Discussion about vfx movies
• What is Compositing?
• shortcut for trimming, split layer, jump to next-previous frames, etc.
• Animation principals. How to create Parallax effects in 2D animation through transform properties.
• What is Interpolation? (Describe both Spatial and Temporal Interpolation). Create an example with
  Spatial Interpolation. Example of Raw across time. Define Orient along Path.
• Example of Temporal Interpolation. (Pendulum, etc). Define Child-Parent Relationship.
• Create Curtain, Clouds, etc using different Filters.
• What is Precompositing? Assignment - Make Solar system with Precompositing.
• Various use of Precompositing. Assignment - Make Lava effect with the use of Precompositing.
• Supernova Rays Effects
• Basic one line expressions. Gear System, Clock, Pendulum
• Telephone vibration with sound. Earthquake. Disco light with Sound.
• Control Expression through Expression Controller.
• Describe Different masking tools. Animate a layer using mask path. Vegas and Stroke effects on mask
  path with simple motion graphics.
• Roto Principals. Mask an image using roto principal.
• Make some Double Role with steady camera.
• Assignment - Roto on a moving character.
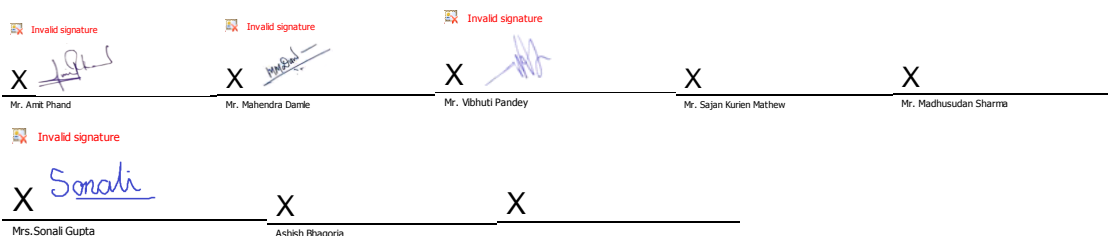• Hair roto, motion blur roto.

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• Assignment - Sin City Effects with use of leave color, level on red dressed lady.

• Assignment - Color Correction - Day to Night.

• Basic chroma removal filter with some simple examples. How to create hollow man effects.

• How to remove semi transparent chroma, grain footage, part-by-part chroma remove.

• 2.5D layer system with an example. Lighting parameters with an example.

• 2D text effects. fire fx, dancing text, etc. 3D .text effects and how to use animation presets.

• Simple tracking and stabilizing. (one point and two point)

• Assignment - Four point tracking. Track extension. Camera Shake

• Assignment - Paint tools and basic wire removal. Complicate wire/rig removal using Photoshop and after fx.

• Assignment - Create water ripple using wave world, caustic. Use of shatter

• Assignment - Fire effects. Particle for motion graphics.

PF TRACK
• UI and basic workflow of PFTrack

• Basic auto tracking and solving

• Use of mask in autotracking. How and when to use masking.

• Solve motion blur footage with autotrack using part by part solving method.

• Manual tracking and solving. Proper selection of user feature.

• Solving problem with combine of user feature and auto features.

• Calculated estimate focal length.

• Assignment – 2 point & 4 point tracking

• Solved zoom camera with steady and rotation camera.

• Solved zoom camera with free motion.

• Solved lens distorted footage.

• Solved lens distorted footage (complicated)

• Geometry based tracking.

• Assignment - Hard track and soft track

• Assignment - Object tracking (using geometry). Hard track

• Object tracking using auto feature and user features. - hard track

• Assignment - Face track - hard track

• Paper fold track using soft track.

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• Face expression track - softtrack

• Assignment - Track stereo footage.

• GD on various kind of camera moves and problems and their solution

• Troubleshooting • Nuke Workflow

• Merge Tools with basic Compositing

• Transformation & Animation

• Assignment - Rotoscope

• Shuffle & Shuffle Copy

• Assignment - Color Management

• Compose Render Passes

• Assignment - Keying

• Assignment - Tracking

• Stabilize

• Assignment - Cleanup

• Introduction to 3D

• Render Project

• Assignment – Integration of a 3D Object in a live action video

FUSION

• What is Compositing? What is Layer based Compositing? What is Node based Compositing? Layer based vs. Node based

• Basic Interface. Custom Preferences. Understanding use of Bins. Show some work of movie/project in Fusion. Discuss how important Fusion in Pipeline.

• Introduce tools. Create a basic compositing with reference to after effects/Photoshop and with their workflow.

• Assignment - Create Curtain, clouds, etc using different creator tools.

• How to apply Transform tools in your workflow.

• How to apply keys on a property with basic example

• Displace a text on curtain.

• Understanding Timeline. Interpolation, looping using Spline.

• Define various tools for masking. Use of pre-mask and post-mask.

• Assignment - Simple character Roto.

• How to check your errors
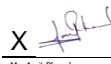
• Motion Blur Roto.

• Roto Assignment

• Introduction to color correction tools with sin city fx example

• Day to Night (extract luma matte)

• Mountain Lava fx

• How to control channels. Control auxilary channels in open .exr format

• Use of Deep pixel tools using channel Boolean and open .exr file

• Compose 3d render passes

• Tools to remove chroma. Basic chroma remove. Garbage masking for keying

• Chroma remove in grainy footage. Part by part chroma remove

• Create macro design according your pipeline. Benefit of Macros.

• One point, two point and four point tracking

• Stabilize shot. Extend the tracking information

• Assignment - Rotoscope using tracking Technique

• Introduction to 3D tools. Render 3d space. Interaction 3d tools with 2D tools.

• Assignment - Create shadow for a chroma shot using camera and lighting.

• Assignment - Camera projection using 3d tools in fusion.

• Import max/Maya file into fusion and use them for camera projection.

• Introduction to particle tools. 2D vs. 3D particle. Basic types of Emitters. Workflow of 3d and 2d particle system. Rain, snow effects using different forces tools.

• Stereoscope render images form Maya. Stereoscope using camera projection.

• Assignment - Water drops on glass. Fireworks. Blood on wall.

• Crowd multiplication using particle system. Ground ripple effect.

• Assignment - How paint tool work. Cloning, Stamping.

• Design Clean plate using Photoshop and fusion. Remove Pimple from a moving face.

• Completed Clean plate with moving shot. Wire remove.

• Wire or rig remove from the face or body.

• How to use text tool.

• Assignment – wire removing of live action video.

• Integration of a 3D Object in a live action video

MOCHA

• User Interface and Mocha preferences

• Rotoscopy - Use of X-spline, B-spline. Editing control point. Keyframing, Timeline control and layer control, Viewing matte and color space, Working with interlace footage

• Tracking - Planner tracking, Adjusting tracking spline, Use of reference track spline, Track corner position for screen, Dealing with lens distortion footage

• Assignment - Advance roto - Deal large area, Stereo conversion, Inspecting your roto

• Assignment - Advance Tracking - Moving the camera with and without parallax, Multiple spline in a layer, Stabilizing

• Export footage and matte

REAL FLOW
• Introduction to Real Flow

• How to make a basic fluid

• How to make an ocean

• How to make snow

PRACTICAL SUBMISSION

   • Assignment – Pouring milk in a glass 1. Submit all the assignments in the course outline

Suggested Reading

1. Nuke 101: Professional Compositing and Visual Effects by Ron Ganbar

2. Creating Motion Graphics with After Effects: Essential and Advanced Techniques by Chris Meyer

3. Adobe After Effects CS6 Classroom in a Book by Adobe Creative Team

4. Visual Effects and Compositing by John Gress

5. Masters of FX: Behind the Scenes with Geniuses of Visual and Special Effects by Ian Failes

PRACTICAL 3 – VISUAL EFFECTS II
COURSE OUTLINE

• Chroma Shoot – Green , Tracking Points , Camera Tracking , 4 Point Tracking, Face Tracking, Motion Blur, Particles Effect , Advanced Lighting, Matt Painting, Roto, Masking, 3D Layer, Learning to Implement Vfx in Live Action Video

PRACTICAL SUBMISSION
   1. Shoot a live action video with chroma for the submission. Edit the video with the help of Visual Effects. Duration – 30 seconds.

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PRACTICAL 4- 3D SHORT FILM PROJECT
COURSE OUTLINE

• Production Meeting #1 - Organization, Roles and Protocols, Contract, Requirements for Story Treatment

• WORKSHOP: Plan, Breakdown, Schedule, The process, Budgeting time.

• Story Reel, Pitch Preparation

• Screenwriting & Script Preparation

• Production Meeting for Character Design Critique

• Story Board to Story Reel, Character and Story

• Typology of Animation Sound Tracks-Temp Music Selection and Editing

• Leica Reel review, Screening of final Leica Reels

• Digital Mapping methods and types of maps. UV Texture editor

• Surface attributes, materials, shaders and shader networks

• Types of lights, Typical lighting approaches

• Shadows, Lighting for mood, time of day, realism

• Rendering editor

• Mental Ray renderer

• Global Illumination, Caustics HDRI

• Sun and sky settings, motion blur, atmosphere, render layers, Z depth

• AfterFX review for compositing, colour correction

• Rendering

• Mattes, transparency, file Management

PRACTICAL SUBMISSION

1. This is a group project. Students have to work in groups of 3-5 students.

2. Make a 3d animated short film using MAYA. VFX has to be used. Minimum – 30 seconds

3. Live Action with an animated character can also be included in the short film. This is optional.