Maulana Abul Kalam Azad University of Technology, West Bengal

Syllabus of B.Sc.in VFX Film Making (CBCS)

Effective from academic session 2021-22

<u>**SEMESTER 4**</u>

Paper: LIGHTING & COMPOSITING (INTRO TO NUKE)

Code: BVFM 401

Course Objective: This paper will focus on understanding the different kinds of lights and light set-up in a Maya Scene. This course is an introduction where you should be able to perform basic 2D and 3D visual effects compositing with Nuke. In this section, you can learn about Nuke channels, node trees, and keyframe animation and get an overview of the compositing workflow. You will also get introduced to 2D compositing: image transformations, color correction, rotoscoping, keying, timing adjustments, and tracking. Similarly, you can expand your skills into 3D: working with lights and cameras, transforming and deforming 3D geometry, applying materials and textures, and rendering.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Introduction to Lighting & Maya Lighting**	8	25		
M 2	**Arnold Lighting**	8	25		
M 3	**Introduction to Nuke & 2D Compositing**	8	25		
M 4	**3D Compositing**	8	25		
		32	100		

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LIGHTING & COMPOSITING (INTRO TO NUKE)
Total Credit: 4
Total hours of lectures: 32 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Introduction to Lighting & Maya Lighting** • Introduction to CG Lighting • Working with Maya Lights 1-Point, Direct, Spot,Ambient, Area and Volume, • Three Point Lighting and Exterior Lighting, Cast shadows, decay rate, Previewing lighting and shadows • Creating depth map Shadow, creating ray traced shadows, • Concept of lighting system and shadows, Creating area light shadows, setting area light visibility	8
2.	**Module 2- Arnold Lighting** • Introducing Arnold and its rendering concepts • Basic Maya Lights for Arnold • Using Arnold lights • Add depth of field in Arnold • Create motion blur in Arnold • Volumetric Lighting in Arnold • Exterior & Interior Lighitng in Arnold • Maya Rendering in Arnold • Enviornmental Lighting	8
3.	**Module 3- Introduction to Nuke & 2D Compositing** • Tour of the interface • TheTimeline • Project Settings • Build Node trees • Working with properties panels • Adjust node parameters • Keyframe Animation • TheDope Sheet • The curve Editor • Introduction to the channels, 2D Viewer Wipe controls • Transfer Images, Corner Pinning, Reformat images, Color Correcting • Rotoscoping • Mask Operations • Compositing multipass CGI • Chromakey basics	8

	• Tracking Basics	
4.	**Module 4- 3D Compositing** • Overview of 3D Compositing • 3D Viewer • Built in geometric Perspectives • Lights • Cameras • Transform Geometry • ThePhong Shader & Material Properties • Camera Projection • Deform Geometry	8

Suggested Software – Autodesk Maya

Nuke

Suggested Reading:

Autodesk Maya 2018 by Ticked Sham

Mastering Autodesk Maya 2017 by Eric Keller.

Advanced Maya Texturing and Lighting – Lee Lanier

Introducing Maya 2017 by Dariush Derakhshani.

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Syllabus of B.Sc.in VFX Film Making (CBCS)

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Paper: LIGHTING & COMPOSITING (INTRO TO NUKE) Lab

Code: BVFM 393

Course Objective: This paper will focus on understanding the different kinds of lights and light set-up in a Maya Scene. This course is an introduction where you should be able to perform basic 2D and 3D visual effects compositing with Nuke. In this section, you can learn about Nuke channels, node trees, and keyframe animation and get an overview of the compositing workflow. You will also get introduced to 2D compositing: image transformations, color correction, rotoscoping, keying, timing adjustments, and tracking. Similarly, you can expand your skills into 3D: working with lights and cameras, transforming and deforming 3D geometry, applying materials and textures, and rendering.

Course Outcome	Mapped modules
Remembering	M1, M2, M3, M4
Understanding the course	M1, M2, M3, M4
Applying the general problem	M1, M2
Analyse the problems	M4
Evaluate the problems after analysing	M3, M4
Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Maya Lighting**	10	40		
M 2	**Arnold Lighting**	10			
M 3	**Introduction to Nuke & 2D Compositing**	10	40		
M 4	**3D Compositing**	10			
		40	**80**		

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Syllabus of B.Sc.in VFX Film Making (CBCS)

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LIGHTING & COMPOSITING (INTRO TO NUKE) Lab

Total Credit: 2

Total hours of lectures: 40 hours

Sl.	Topic/Module	Hour
1.	**Module 1- Maya Lighting** • Set light for Day, Night and Morning • Create FOG nodes in your scene. • Render a frame and video of indoor and outdoor scenes. • Direct Illumination-Creating and Illuminating a Stage Show,	10
2.	**Module 2- Arnold Lighting** • Arnold viewport rendering, Render a frame and video of indoor and outdoor scenes. • Render a photorealistic output of an interior scene. • Render a natural scene show different time by varying lighting. • Advance lighting using arnold render.	10
3.	**Module 3- Introduction to Nuke** &2D Compositing • The User Interface • Loading images • Using Generators • Frame range & Timing • The write & read node • Merging nodes and compositing • Working with shape and grade nodes • Assignments will be done on following above points induvial on different live footages and render images. • Composing fire and smoke stock footages with live footage • Shooting and Collecting Fire references and composite it with footages	10
4.	**Module 4- Compositing & Introduction of Nuke** • Integrating a CGI (Computer Generated Image) render into a real scene • Learn how to make a 3D Scene • Render layers (AOVs) inside of Nuke, and how to break them apart • Create dynamic lens flares based off of source imagery • Studying shadow & light, and how to match the real world • Matching color tones, darks, highlights of an image • Using utility passes to do spot corrections (Position Pass) • Learn the variety of uses for Z-Depth passes • Use ID passes to correct different geometries • Learn how to match camera attribute (Defocus, Grain, Bokeh, Lens Distortion)	10

- Create realistic post-production camera imperfections and artifacts
- Compositing elements / FX into a shot
- How to quality control (QC) your final shot
- How to use the normals AOV to fine tune CG.
- Assignments will be done on following above points induvial on different live footages and render images

Suggested Software – Autodesk Maya

Nuke

Suggested Reading:

1. Autodesk Maya 2018 by Ticked Sham
2. Mastering Autodesk Maya 2017 by Eric Keller.
3. Introducing Maya 2017 by Dariush Derakhshani.
4. Advanced Maya Texturing and Lighting – Lee Lanier

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Syllabus of B.Sc.in VFX Film Making (CBCS)

Effective from academic session 2021-22

Paper : CG PYRO – ADVANCED TECHNIQUES

Code: BVFM 402

Course Objective: The course is designed to learn Maya dynamics skill set needed to make animation projects more realistic and believable. We will teach how to understand atmospheric effects like wind and rain, ocean waves and ripples, as well as the effects of fire and candles, explosions, crumbling, and much more. Introduction to Dynamics, and Dyna motive solver, Particles, Emitters, Fields: Air, Drag, Gravity, Newton, Turbulence, Vortex, Volume, Particle collusions, Particle cache, Goals, Soft bodies, Springs, Rigid bodies, Constraints, Effect: Fire, Smoke, Fireworks, Lightening, Shatter, Curve flow, Surface flow, Rendering particles and effects, Maya Paint Effects, baking simulations, Render types. Fluid Effects Introduction to Fluids, Fluid field interaction, Fluid attributes Creating a non-dynamic 3d fluid effects, Creating dynamic 3D effect, Creating fire and smoke using Fluid dynamics, creating an ocean,liquid simulations. Introduction to nParticles and Nucleus solver, Nucleus node, Nucleus forces, Nucleus plane, Nucleus attributes, nParticles interaction, nConstraints, nCloth: simulations, nCloth dynamics properties, Working with nConstraints, Tearing cloth, Dynamic Property maps, Simulating cloth on moving character, and Particle caching, nConstraints, Creating Smoke simulations in nParticles, Creating liquid simulations in nParticles, Introduction to nHair, Creating Basic hair style, Creating a dynamic curve simulations.

SI	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Particle System Dissipation,Instancing ,Fluids.**	8	25		
M 2	**Goal & Ncloth,Xgen Hair & Mash**	8	25		
M 3	**Bifrost & bullet**	10	25		

M 4	**Introducting Real flow**	4	25		
		30	**100**		

CG PYRO – ADVANCED TECHNIQUES
Total Credit: 4
Total hours: 30 Hrs

Sl.	Topic/Module	Hour
1.	**Module 1- Particle System** • Particle system and Emitter • Particle system Fields • Working with Particle Tool: Learn how to work with Particle tool • Particle Directions • Per-Particle Expressions • Different effects with particle **Dissipation** • Fluid ,particles dynamic simulation theory and stages • Smoke and powder dust • Density, turbulences, color and dissipations • Simulation of a disintegration effect • Efficient mesh for disintegration purposes • Secondary particles and fluid simulations • Per-Particle attributes (RGBPP, Opacity PP) and Rand Expression **Instancing** • Introducing Instancing effect • Instancing with different objects • Animate many identical objects in a scene • Control the motion of the individual instanced objects • Per Particle Attributes Sprite Twist PP, Scale PP, Velocity PP, Mass, RGB PP, Opacity PP, Applying Turbulence and Animating attributes. of Particle Instancer	8
2.	**Module 2- Goal & Ncloth** • Introducing Particle Goal & Ncloth • Goal U and V • Working with force for each particle to move toward a point on the goal • Particles or soft bodies can have multiple goals	8

	• Working with Ncloth and different attributes. • Active & Passive colliders **Xgen Hair & Mash** • Introducing Hair & Mash • Attaching Hair • Painting and Control Attributes • Combing and Styling • Long hair for character Hair • Shading. natural movement and collisions of long hair • Collisions between hair and character • Mash Nodes • Mash workflows • Mash networks	
3.	**Module 3- Bifrost & bullet** • Collisions: Relation Ship Editor, • Collision and Events, Event Expressions • Water Splashes Simulation Fundamentals Bifrost Workspace Solver Attributes Liquid Emitters and Kill-Planes • Accelerators and Collisions Caching and display properties • Meshing particles Rendering setup: implicit and meshes.	10
4.	**Module 4- Introducting Real flow** • Introducing Real Flow • Loading Plug-in and Scripts, Importing and Exporting OBJ and SD Files, • Scene Scale and User Interface, • Emitter types and Attributes, Demons, • Collisions.Introduction to real flow • Working with real flow ,Students will work on creating fluid and water Simulation • Fundamentals,Realflow Workspace ,Solver Attributes , • Liquid Emitters and Kill-Planes.Accelerators and Collisions • Caching and display properties.Meshing particles ,Rendering setup: implicits and meshes.	4

Suggested software : Autodesk Maya
                    Nuke

Suggested Readings:

1. Dariush Derakhshani, Introducing Maya 2009, Sybex; 1 Edition, 2009.

2. Eric Keller, Maya Visual Effects: The Innovator's Guide Sybex; 2 edition. 2013.

3. Learning Maya 7: The Special Effects handbook by Alias Leaning Tools, Sybex; 1 edition, 2005.

4. Steve Wright, Compositing Visual Effects, Second Edition: Essentials for the Aspiring Artist, Focal Press; 2 edition, 2011.

5. RealFlow Beginners Guide - Downloadable PDF

6. Dariush Derakhshani, Introducing Maya 2009, Sybex; 1 Edition, 2009.

7. Eric Keller, Maya Visual Effects: The Innovator's Guide Sybex; 2 edition. 2013.

8. Learning Maya 7: The Special Effects handbook by Alias Leaning Tools, Sybex; 1 edition, 2005.

9. Steve Wright, Compositing Visual Effects, Second Edition: Essentials for the Aspiring Artist, Focal Press; 2 edition, 2011.

Paper: CG PYRO – ADVANCED TECHNIQUES Lab

Code: BVFM 492

Course Objective: The course is designed to navigate the complex structure of Maya Dynamics. Connect seemingly unconnected areas of Maya such as paint effects, soft bodies and particles. Able to create a variety of effects using simple techniques. Comprehend how to use commonly used but little understood expressions.

SI	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hour	%age of questions	Blooms Level (if applicable)	Remarks (If any)

			s			
M 1	**Particle System Dissipation,Instancing,Fluids.**	12	40			
M 2	**Goal & Ncloth,Xgen Hair & Mash**	10				
M 3	**Bifrost & bullet**	12	40			
M 4	**Introducting Real flow**	8				
		40	**80**			

CG PYRO – ADVANCED TECHNIQUES Lab
Total Credit: 2
Total hours: 40 Hrs

Sl.	Topic/Module	Hour
1.	**Module 1- Particle System** • Understanding Physics and natural forces and fields • Analysing timing and colours • article Simulation (Fire, Tornedo, Rain) • Rigid Body Simulation • Concept of Soft Body • Creating Particle portal and working with different attributes **Dissipation** • Creating galaxy with milky way using reference Assignments • Working with Per-Particle attributes (RGBPP, Opacity PP) and Rand Expression as Assignments • Making dust while blast / destructions • Collisions Expression, Collision Position, Collision U and V Attributes, Dynamic texture marks • Forces: Air, Radial, Vortex, Nuton, Uniform, Gravity • Creating Hand dispersion effect Assignments **Instancing** • Instance Particle in different types with different objects • Instancing Paint Effects, Light with Optic Effects, Animated Object for crowd Using Gnomon MEL Scripts	12

	• Falling leafs using instances and rendering using software, hardware and compositing • Creating Sprite images, Sprite Wizard, Smoke Sprite and Per Particle Attributes Sprite Twist PP, Scale PP, Velocity PP, Mass, RGB PP, Opacity PP, Applying Turbulence and Animating attributes • Assignments will be done on following above points induvial on types of objects.	
2.	**Module 2- Goal & Ncloth** • Particle Goal • Goal weights and smooth, • Applications of Goal Tool • Goal U and V, Goal Expressions, • Instancing Goal objects • Dynamics Constraints • Velocity expressions, Goal with deform and Animated objects • Cloth Creation and Conversions, Solver and Dynamic Attributes. • Dropping dynamic cloth • curtain dynamics **Xgen Hair & Mash** • Concept of Fur Simulation • Creating long hair for character • Concept of Hair Simulation • Creating Follicles, Attaching Hair, Painting and Control Attributes, Combing and Styling. • creating long hair for character as assignments. • Hair Lighting Techniques, Shading assignments. **Soft Body** • Creating Tyre Marks on sand or muddy ground. • Creating Character foot prints on snow.	10
3.	**Module 3- Bifrost & bullet** • Introduction to Simulation Fundamentals • Bifrost Workspace • Solver Attributes • Liquid Emitters and Kill-Planes • Accelerators and Collisions	12

	• Caching and display properties • Meshing particles • Rendering setup: implicit and meshes • Bullet Colliding objects • Tweaking simulations in Bullet • Creating Flood and Bottle water as Assignment • Creating tap water assignment and other induvial assignments.	
4.	**Module 4- Introducing Real flow** • working with real flow • Falling soap/ any object into cup of milk • Introduction to Simulation Fundamentals • Real flow Workspace • Solver Attributes • Liquid Emitters and Kill-Planes • Accelerators and Collisions • Caching and display properties • Meshing particles • Rendering setup: implicit and meshes • Creating Flood and boat in water and different water bodies	8

Suggested Softwares- Autodesk Maya

                 Nuke

Suggested Readings:

1. Dariush Derakhshani, Introducing Maya 2009, Sybex; 1 Edition, 2009.

2. Eric Keller, Maya Visual Effects: The Innovator's Guide Sybex; 2 edition. 2013.

3. Learning Maya 7: The Special Effects handbook by Alias Leaning Tools, Sybex; 1 edition, 2005.

4. Steve Wright, Compositing Visual Effects, Second Edition: Essentials for the Aspiring Artist, Focal Press; 2 edition, 2011.

5. **RealFlow Beginners Guide - Downloadable PDF**

6. Dariush Derakhshani, Introducing Maya 2009, Sybex; 1 Edition, 2009.

7. Eric Keller, Maya Visual Effects: The Innovator's Guide Sybex; 2 edition. 2013.

8. Learning Maya 7: The Special Effects handbook by Alias Leaning Tools, Sybex; 1 edition, 2005.

9. Steve Wright, Compositing Visual Effects, Second Edition: Essentials for the Aspiring Artist, Focal Press; 2 edition, 2011.

Paper: ROTO; PAINT & CHROMA KEYING

Code : BVFM 403

Course Objective: The course is designed to learn Rotoscopy that creates a mask by drawing shapes onto a layer. The process of generating matte (aka mask) to extract the required elements in a shot. It is also use to quickly generate garbage matte to remove unwanted elements or block in any gap from less than perfect keying (from tools such as Keyer, Primatte, Keylight, IBK etc).

CHROMA KEYING : This course explains how to use the blue/green screen keyer, ChromaKeyer, in Nuke. ChromaKeyer can take advanta ge of modern GPUs and multi-core CPUs to accelerate the keying process when used for compositing in Nuke's Node Graph. ChromaKeyer is also available as a soft effect in Nuke timeline environment.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Rotoscopy**	10	25		

M 2	**Advanced Rotoscopy**	5	25		
M 3	**Paint**	7	25		
M 4	**Croma Keying**	8	25		
		30	**100**		

ROTO; PAINT & CHROMA KEYING
Total Credit: 4
Total hours: 30 Hrs

Sl.	Topic/Module	Hour
1.	**Module 1-Rotoscopy** Masking, Animating Mask and Paint Masks. ROTO Scoping and Techniques. Using different Techniques and Masking tools.	10
2.	**Module 2- Advanced Rotoscopy** Rotoscoping and luminance keying techniques. Along the way, analysing different planar surfaces. Learning production-proven tips and tricks for compiling various luminance keys and rotoscoped shapes. How to Track with 3d projection camera.	5
3.	**Module 3- Paint** The integrated Matte Channel, Multi source operators: over, mix, subtract, In, Out, Atop. Masks, compositing with pre multiplied images, color difference method. Rotopaint / animations	7
4.	**Module 4- Croma Keying** Image Generation Pixels, Components and channels, Spatial Resolution, Bit depth Normalized values Additional Channels, HSV Color Representation, Image Input Devices, Digital image File formats, File Format Features Vendor Implementations of File formats, Compression Choosing a File Format Nonlinear Color Spaces, Basic Image Manipulation Terminology Color Manipulations, 3D Transforms Warping Expression Language Filtering Algorithms.Introduction to channels / nodes of transformations	8

Suggested Softwares-

Ref Books:

1.Nuke 101: Professional Compositing and Visual Effects Pdf

2.NUKE USER GUIDE by foundry pdf

3. Sze Chianly / Samantha Goh, Digital Compositing with Nuke 101, Fatbars   Limited-   2010

4.Ganbar R, NUKE 101. Professional Compositing and Visual Effects -

 Paper : ROTO; PAINT & CHROMA KEYING Lab

Code: BVFM 493

Course Objective: The course is designed to learn Rotoscopy that creates a mask by drawing shapes onto a layer. The process of generating matte (aka mask) to extract the required elements in a shot. It is also use to quickly generate garbage matte to remove unwanted elements or block in any gap from less than perfect keying (from tools such as Keyer, Primatte, Keylight, IBK etc).

CHROMA KEYING : This course explains how to use the blue/green screen keyer, ChromaKeyer, in Nuke. ChromaKeyer can take advantage of modern GPUs and multi-core CPUs to accelerate the keying process when used for compositing in Nuke's Node Graph. ChromaKeyer is also available as a soft effect in Nuke timeline environment.

SI	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Rotoscopy**	10	40		
M 2	**Advanced Rotoscopy**	10			
M 3	**Paint**	10	40		
M 4	**Croma Keying**	10			
		40	**80**		

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ROTO; PAINT & CHROMA KEYING Lab
Total Credit: 2
Total hours: 40 Hrs

Sl.	Topic/Module	Hour
1.	**Module 1-Rotoscopy** • How to draw points and adjust the tangents - • The handles on each of the points - • To refine the roto shape. • Painting strokes, Editing strokes, • Painting in vectors, • Erasing and deleting strokes. • Animating Roto Shapes. • Working in different footages as assignments.	12
	Module 2- Advanced Rotoscopy • Generating mattes and masks and the Roto node. • Creating includes and excludes. • Viewing Spline Keyframes • Deleting or Rippling Keyframes • Copying, Cutting, and Pasting Animations • Rotoscoping Character Hair Footages and crowd footages for assignments • Single poly and hair roto • Sterio roto with different colour and nodes • VFX and Sterio type Roto shape Operations • Working in different footages as assignments.	8
3.	**Module 3- Paint** • Using the Brush tool • Using the Eraser Tool • Using the Clone Tool • Using the Reveal Tool • Wire removal • Body paint • Garbage matting and distrusting • Working with rig removals and body paint Assignments	10

4.	**Module 4- Croma Keying**	10
	• How to use Luma, Primate and Key light Keyers work.	
	• Generates the processed screen image that preserves the color variations in blue- or greenscreen.	
	• Different types of process of keying. Combining Keyer Nodes	
	• Using the Tree, Erode, Dilate, and Erode, Spill suppressing with Hue Correct.	
	• Working on different types of Croma Footages with hair a detail.	
	• Matching roto and Croma mattes and blurs together.	
	• Working with Hard and soft edges.	
	• working with any green / blue screen footages and compositing CG sets	
	• Working in different footages as assignments.	

Suggested Softwares- Nuke

.**Ref Books:**

1.Nuke 101: Professional Compositing and Visual Effects Pdf

2.NUKE USER GUIDE by foundry pdf

3. Sze Chianly / Samantha Goh, Digital Compositing with Nuke 101, Fatbars   Limited-   2010

4.Ganbar R, NUKE 101. Professional Compositing and Visual Effects –

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Paper: VISUAL COMMUNICATION

Code: BVFM 404

Course Objective: Apply appropriate communication skills across settings, purposes, and audiences.

Demonstrate knowledge of communication theory and application.
Demonstrate critical and innovative thinking. 2. Display competence in oral, written, and visual communication. 3. Apply communication theories.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2
2	Understanding the course	M1, M2, M3, M4
3	Applying the general problem	M3, M4
4	Analyse the problems	M3, M4
5	Evaluate the problems after analysing	M3,M4
6	Create using the evaluation process	M3, M4

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	**Rigging Basics**	6	25		
M 2	Introduction to Basic Perspective	8	25		
M 3	Basic Figure Drawing	8	25		
M 4	Masses of the Figure	8	25		
		30	**100**		

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VISUAL COMMUNICATION

Total Credit: 2

Total hours of lectures: 20 hours

Sl.	Topic/Module	Hour
1.	**Module 1** • Need for and the Importance of Human and Visual Communication. Communication a expression, skill and process, Understanding Communication: SMRC-Model • Communication as a process. Message, Meaning, Connotation, Denotation Culture/Codes etc Levels of communication: Technical, Semantic, and Pragmatic. The semiotic landscape: language and visual communication, narrative representation	10
2.	**Module 2 -** Fundamentals of Design: Definition. Approaches to Design, Centrality of Design, Elements of Design: Line, Shape, Space, Colour, Texture. Form Etc. Principles of Design: Symmetry. Rhythm, Contrast, Balance Mass/Scale etc. Design and Designers (Need, role, process, methodologies etc.)	10
3.	Module 3 - Principles of Visual and other Sensory Perceptions. Colour psychology and theory (some aspects) Definition, Optical / Visual Illusions Etc Various stages of design process- problem identification, search for solution refinement, analysis, decision making, and implementation.	10
4.	**Module 4 –** Basics of Graphic Design. Definition, Elements of GD, Design process-research, a source of concept, the process of developing ideas-verbal, visual, combination & thematic, visual thinking, associative techniques, materials, tools (precision instruments etc.) design execution, and presentation	10

Suggested Readings:

1.Communication between cultures - Larry A. Samovar, Richard E. Porter, Edwin R. McDaniel & Carolyn Sexton Roy, Monica Eckman, USA, 2012

2.Introduction to Communication studies - John Fiske & Henry Jenkins 3rd edition, Routledge, Oxon 2011

3. An Introduction to communication studies - Sheila Steinberg, Juta & Co., Cape Town, 2007

4. One World Many Voices: Our Cultures - Marilyn Marquis & Sarah Nielsen, Wingspan Press, California, 201