

NAAC 'A'



St. Xavier's College, Ranchi

(NAAC Accredited 'A' Grade College)

(College of "Centre for Potential of Excellence" Status)

(An Autonomous College of Ranchi University)

Syllabi

(Under Choice Based Credit System)

w.e.f.

(Academic Year-2016-17)

Department of Vocational & Management Studies

Bachelor of Arts (B.A) Honours Programme

Animation & Interior Design

Course Curriculum

<u>Sem</u>	<u>Course Status & No</u>	<u>Title of the Course</u>	<u>Marks</u>	<u>Credit Th+Pr</u>
I	Core-1	Image Editing with Photoshop	100	1+5
	Core-2	2D Animation with Adobe Flash	100	1+5
	AECC-1	English Communication	100	2
	GE-1	Pre-Production workflow with Visual Media & Designing with Coral Draw	100	1+5
II	Core-3	Advance 2D animation and Designing with Adobe Flash	100	1+5
	Core-4	3D Modeling & Texturing with AUTODESK MAYA	100	1+5
	AECC-2	Environmental Science	100	2
	GE-2	Audio Editing with Adobe Audition	100	1+5
III	Core-5	3D Lighting & Rendering with Autodesk Maya	100	1+5
	Core-6	Rigging & Animation with Autodesk Maya	100	1+5
	Core-7	2D Computer Aided Architectural Drafting with AutoCAD	100	1+5
	SEC-1	3D Sculpting with ZBrush	100	2
	GE-3	Video Editing with Adobe Premiere Pro	100	1+5
IV	Core-8	3D Modeling & Texturing with Autodesk 3DS Max	100	1+5
	Core-9	Motion Graphics with After Effects	100	1+5
	Core-10	Advance 2D & 3D Computer Aided Architectural Drafting with AutoCAD	100	1+5
	SEC-2	Stop Motion Animation	100	2
	GE-4	Photography	100	1+5
V	Core-11	3D Lighting & Rendering with Autodesk 3DS Max	100	1+5
	Core-12	Visual effects with Autodesk Maya	100	1+5
	DSE-1	Computer Generated Imagery and Live Shoot Integration	100	1+5
	DSE-2	Interior and Exterior design Visualization	100	1+5
VI	Core-13	Advance visual Effects with Autodesk 3DS Max	100	1+5
	Core-14	Composition with Fusion	100	1+5
	DSE-3	Architectural Walkthrough and On-Job Training	100	1+5
	DSE-4	3D Portfolio	100	1+5

- ❖ *Core Courses Marks are based on 30:70 systems. 30 marks are allotted for the Mid-Semester Examination and 70 marks are allotted for the End-Semester Examination. For AECC, GE, SEC, DSE Courses there is no Mid-semester exam and 100 marks are allotted for the End Semester Exam.*
- ❖ *Pass marks for each course is 45 (Total Combined marks of mid semester examination, internal assignment, attendance and End Semester Examination).*
- ❖ ***Core Course:** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a core course.*
- ❖ ***Generic Elective (GE):** An elective course chosen generally from an unrelated discipline/subject with an intention to seek exposure to other discipline.*
- ❖ ***Ability Enhancement Compulsory Course (AECC):** These courses based upon the content that leads to knowledge enhancement.*
- ❖ ***Skill Enhancement Course (SEC):** These courses designed to provide value based and/or skill-based knowledge.*
- ❖ ***Discipline Specific Elective (DSE):** These elective courses may be offered by the main discipline/subject of study.*

1 Credit =15 Learning Hours, Th=Theory, Tu=Tutorial, Pr=Practical

Semester I-Bachelor in Arts (Animation & Interior Design)

Core Course-I-Image Editing with Photoshop

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(1 Lecture)

Introduction to Image Manipulation, Graphic Design, Illustrations, Matte and Digital Painting, Caricatures

Unit 2: Graphical User Interface

(1 Lecture)

Image, Pixel, Resolution, Aspect Ratio

Unit 3: Images and their types

(1 Lecture)

Raster Images, Vector Images, Uses, Examples, Combining Raster with Vector

Unit 4: Color Theory

(2 Lectures)

Primary Colors, Secondary Colors, Tertiary Colors, Artistic Color Wheel, Color Schemes, Monochromatic, Analogous, Neutral, Warm, Cool, Complementary, Technical Color Wheel

Unit 5: Layers

(1 Lecture)

Creating and Managing Layers, Multilayered psd files, Transforming Layers, Deleting Layers

Unit 6: Mask

(3 Lectures)

Properties and Uses of Mask, Layer Mask, Quick Mask, Vector Mask, Clip Masking

Unit 7: Color Correction

(3 Lectures)

Properties of Channels, Alpha, Shadows, Midtones, Highlights, Converting Greyscale to Color, RGB and CMYK

Unit 8: Introduction to Blend Modes

(2 Lectures)

Properties of Blend Modes, Normal, Darken, Multiply, Color Burn, Linear Burn, Lighten, Screen, Color Dodge, Linear Dodge, Overlay, Soft Light, Hard Light, Vivid Light, Linear Light, Pin Light, Difference, Hue, Saturation, Color, Luminosity

Unit 9: Cloning

(1 Lecture)

Concept of Cloning, Uses and Properties of Clone, Heal, Patch and Stamp Pattern

Unit 10: Vanishing Point

(1 Lecture)

Perspective, Edit Plane, Create Plane, Marquee, Stamp, Grid Size, Angle between Selected Plane and Parent, Replace Designs Based on Vanishing Point

Unit 11: Digital Painting

(2 Lectures)

Creating Outline with Photocopy, Greyscale Mode, Blocking, Control Opacity and Flow, Using Screen and Multiply, Adding Color

Unit 12: Matte Painting

(2 Lectures)

Multilayer Compositing, BG Plate, Perspective, Camera, Light Match, Aesthetics

PRACTICAL LECTURES: 100

Unit 1: Photoshop Interface

(5 Lectures)

New Document, Menu Bar, Toolbar, Docking Palette, Canvas, Color Modes

Unit 2: Tools

(10 Lectures)

Selection, Marquee, Lasso, Quick Selection, Crop, Fill, Dropper

Unit 3: Working with Layers

(5 Lectures)

Creating and Managing Layers, Multilayered psd files, Transforming Layers, Deleting Layers

Unit 4: Brushes Properties

(5 Lectures)

Presets, Brush Palette, Brush Tip Shape, Diameter, Flip, Angle, Roundness, Hardness, Spacing, Shape Dynamics, Jitter, Scattering, Texture, Pattern, Dual Brush, Color Dynamics, Creating Custom Brush

Unit 5: Working with Mask

(10 Lectures)

Method of creating Layer Mask, Quick Mask, Vector Mask, Clip Masking

Unit 6: Tools for Color Correction

(10 Lectures)

Levels, Curves, Color Balance, Brightness Contrast, Hue Saturation, Histogram, Color Range, Match Color, Replace Color, Invert, Converting from one color mode to another

Unit 7: Using Gradient

(5 Lectures)

Linear, Radial, Angle, Reflected, Diamond, Custom Gradient, Presets, Creating Depth Fog with Gradient, Metallic Ring with Gradient, Paint Bucket tool

Unit 8: Working with Blending Modes

(5 Lectures)

Normal, Darken, Multiply, Color Burn, Linear Burn, Lighten, Screen, Color Dodge, Linear Dodge, Overlay, Soft Light, Hard Light, Vivid Light, Linear Light, Pin Light, Difference, Hue, Saturation, Color, Luminosity

Unit 9: Layer styles

(5 Lectures)

Drop Shadow, Inner Shadow, Outer Glow, Inner Glow, Bevel Emboss, Satin, Color Overlay, Gradient Overlay, Pattern Overlay, Stroke

Unit 10: Using Cloning Tools

(10 Lectures)

Using Clone, Heal, Patch and Stamp Pattern Tool

Unit 11: Filter Effects

(5 Lectures)

Blur, Distort, Noise, Pixelate, Sharpen, Stylize, Liquify, Filter Gallery, Smart Filters

Unit 12: Using Vanishing Point

(5 Lectures)

Replace Designs Based on Vanishing Point

Unit 13: Creating a Digital Painting

(10 Lectures)

Creating Outline with Photocopy, Blocking, Control Opacity and Flow, Using Screen and Multiply, Adding Color

Unit 14: Developing a Matte Painting

(10 Lectures)

BG Plate, Perspective, Matching Camera and Light

Suggested Readings

- 1. Adobe Photoshop CC Classroom in a Book by Adobe Creative Team*
- 2. Photoshop CC Bible: Lisa DaNae Dayley, Brad Dayley*

Semester I-Bachelor in Arts (Animation & Interior Design)

Core Course II: 2D Animation with Adobe FLASH

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Flash Basics

(2 lectures)

Interface, Flash Document, Reviewing the Interface, Managing the Workspace, Importing Files

Unit 2: Tools in Flash

(2 lectures)

Fundamentals of Shapes, Primitive Tools, Pen, Pencil and Line Tools, Selection Tools, Managing Color and Gradients

Unit 3: Flash Graphics

(3 lectures)

Rectangles, Gradient Filling, Making Selections, Drawing Ovals, Lines, Objects, Masking

Unit 4: Creating Symbols

(3 lectures)

Definition of Symbols, Converting Objects to Symbols, Bitmaps, Buttons, Transparency, Alpha

Unit 5: Content Management

(2 lectures)

New Document Settings & Navigation, Simple Vector Shapes, Curves, Other Drawing Tools, Interaction between Shapes, Groups

Unit 6: Timeline

(2 lectures)

Timeline Basics, Span of Frames, Playhead, Keyframes, Layers, Frame-by-Frame Animation, Onion Skin

Unit 7: Motion Presets

(2 lectures)

Motion Presets, Introduction to Motion Tween, Tween Spans, Custom Presets, Layer Folders, Static Frames

Unit 8: Flash Animation Techniques

(4 lectures)

Slideshow Content, Non-linear Animation, Swapping Objects, Distribute to Layers Command, Timeline Options

PRACTICAL LECTURES: 100

Unit 1: Getting Started

(10 lectures)

Interface, Creating a Flash Document, Creating Shapes, Using the Primitive Tools, Drawing with Pen, Pencil and Line Tools, Editing Shapes, Using the Selection Tools, Managing Color and Gradients, Importing Files

Unit 2: Working with Graphics

(10 lectures)

Creating Rectangles, Using a Gradient Fill, Making Selections, Drawing Ovals, Creating a Simple Animation, Working with Lines, Manipulating Objects, Masking Objects, Testing a Movie

Unit 3: Creating and Editing Symbols

(20 lectures)

Importing Illustrator Files, About Symbols, Converting Objects to Symbols, Importing Bitmap Images, Adding Bitmaps to a Movie Clip Symbol, Working with Buttons, Adding Transparency, and Bouncing Ball animation

Unit 4: Creating & Managing Content

(10 lectures)

Drawing & Selecting Simple Vector Shapes, Drawing Curves with the Pen & Pencil Tools, Exploring Other Drawing Tools, Interaction between Shapes, Grouping Objects.

Unit 5: Working with Timeline

(10 lectures)

Create a Span of Frames & Control the Play head, Creating Key frames, Layers, Insert Blank Key frames & Clear Key frames, Frame-by-Frame Animation, Working with Onion Skin.

Unit 6: Creating a Motion Tween

(20 lectures)

Adding a Motion Tween, Setting Property Keyframes for Scale & Rotation, Creating a Motion Tween from a Shape, Easing Keyframes, Creating a Fade-in by Adjusting the Alpha, Making a Motion Preset

Unit 7: Animation Techniques

(20 lectures)

Working in a Movie Clip Timeline, Animating the First Image in the Slideshow, Using the Distribute to Layers Command, Animation Timing, Creating Scenes using different layers, Short story based animation

Suggested Readings

1. *Adobe Flash Professional CC Classroom in a Book Paperback* by Adobe Creative Team
2. *Adobe Flash Professional CS6 Essentials (Essentials (John Wiley) Paperback* by William Heldman
3. *The Illusion of Life: Disney Animation Hardcover* by Ollie Johnston, Frank Thomas
4. *Cartoon Animation (Collector's Series) Paperback* by Preston Blair
5. *Adobe Flash Professional CS5 Bible Paperback* by Todd Perkins

Semester I-Bachelor in Arts (Animation & Interior Design)

AECC I- English Communication

Objective: *The purpose of this course is to introduce students to the theory, fundamentals and tools of communication and to develop in them vital communication skills which should be integral to personal, social and professional interactions. One of the critical links among human being and an important thread that binds society together is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal. In the context of rapid globalization and increasing recognition of social and cultural pluralities, the significance of clear and effective communication has substantially enhanced.*

The present course hopes to address some of these aspects through an interactive mode of teaching-learning process and by focusing on various dimensions of communication skills. Some of these are:

Language of communication, various speaking skills such as personal communication, social interactions and communication in professional situation such as interviews, group discussion and office environments, important reading skills as well as writing skills such as report writing, note-taking etc.

While, to an extent, the art of communication is natural to all living beings, in today's world of complexities, it has been acquired some elements of science. It is hoped that after studying this course, student will find a difference in their personal and professional interactions.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various suits/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

- 1. Introduction: Theory of communication, Types and modes of communication.*
- 2. Language of Communication: Verbal and non-verbal (Spoken and Written), Personal, Social and Business, Barriers and Strategies, Intra-personal, Inter-personal and Group communication.*
- 3. Speaking Skills: Monologue, Dialogue, Group discussion, Effective Communication / Miscommunication, Interview, Public Speech.*
- 4. Reading and Understanding: Close reading, Comprehension, Summery Paraphrasing, Analysis and Interpretation, Translation (from Indian language to English and vice-versa), Literary/Knowledge Texts.*
- 5. Writing Skills: Documentation, Report Writing, Making notes, Letter writing.*

Recommended Books:

- 1. Fluency in English-Part- II, Oxford University Press 2006.*
- 2. Business English, Pearson, 2008*
- 3. Language, Literature and Creativity, Orient Blackswan, 2013*
- 4. Language through Literature (forthcoming) ed. Dr. Gauri Mishra, Dr.Ranjan Kaul, Dr.Brati Biswas*

Semester I-Bachelor in Arts (Animation & Interior Design)
GE I: Pre Production Workflow of Visual Media & Designing with CoralDRAW
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Pre-Production (3 Lectures)

Introduction to Pre Production, Requisites, Workflow

Unit 2: Understanding Perspective (2 Lectures)

Vanishing Horizons, One Dimension, Two Dimensions, Three Dimensions, One Point Perspective, Two Point Perspective, Three Point Perspective, Camera Angles

Unit 3: Understanding Gesture (2 Lectures)

Anatomy, Figure Drawing, Line of Action, Changes in line of action to express attitude, Body Language, Pose Construction, Dynamic and Expressive poses, Balance and Center of Gravity, Motion and Action

Unit 4: Character Development (2 Lectures)

Types of Characters, Cartoon, Fantasy, Realistic, Anthropomorphic, 2-head Characters, 4-head Characters, 5-head Characters

Unit 5: Script writing (2 Lectures)

Story Building, Making a Script Visual, Rules of Scriptwriting, Character Appearances, Dialogues, Timing

Unit 6: Storyboard Making (2 Lectures)

Rules for Storyboarding, Simplify, Focus, Combine characters, Camera Movements, Cut scenes, Pre Viz. and Animatics for Animation

Unit 7: Introduction to Coral DRAW (2 Lectures)

Interface, Navigation, Selecting and Manipulating Objects, Tools, Text

Unit 8: Designing with CorelDraw (3 Lectures)

Fundamentals of Designing, Document Settings for Covers, Cards, Book Covers, Brochures, Advertisements, Banner, Web Graphics

Unit 9: Advanced Effects (2 Lectures)

Printing, Layouts and Layers, Symbols, Clipart, Layers Styles, Templates, Bitmaps, Exporting

PRACTICAL LECTURES: 100

Unit 1: Types of Strokes on Paper

(2 Lectures)

Vertical and Horizontal, Round and Spiral, Rhythmic and Zigzag, Wave, Circle and Triangles, Rectangle and Squares, Sphere

Unit 2: Perspective Drawing on Paper

(10 Lectures)

One Point Perspective, Two Point Perspective, Three Point Perspective

Unit 3: Stick Figure Drawing on Paper

(8 Lectures)

Anatomy, Drawing Stick Figures, Basic Human Proportions, Line of Action, Balance, Pose Construction, Scribbling, Live Sketching

Unit 4: Character Development on Paper

(5 Lectures)

Drawing types of Characters, Cartoon, Fantasy, Realistic, Anthropomorphic, Character Construction with Basic Shapes, Character Blocking, Character Dynamic Poses

Unit 5: Model Sheets on Paper

(5 Lectures)

Creating Character Model Sheets, Front view, Side View, Three-fourth view, Aligning

Unit 6: Traditional Scriptwriting

(5 Lectures)

Building a story and writing a screenplay

Unit 7: Traditional Storyboarding

(10 Lectures)

Converting a Script into a Visual Storyboard

Unit 8: Classical Animation on Paper

(15 Lectures)

Sketching using Light Box, Principles of Classical Animation, Bouncing Ball

Unit 9: Shapes & Graphics in CoralDRAW

(10 Lectures)

Drawing and Shaping Objects, Arranging Objects, Working with Logos & Artistic Text

Unit 10: Designing with CoralDRAW

(10 Lectures)

Tools for Designing, Design Covers, Cards, Book Covers, Brochures, Advertisements, Banner, Web Graphics

Unit 11: Advanced Effects in CoralDRAW

(20 Lectures)

Printing, Layouts and Layers, Special Page Layouts, Arranging Objects, Using Symbols and Clipart, Using Layers Styles and Templates, Interactive Effects, Custom Creation Tools, Working With Bitmaps, Exporting Drawings

Suggested Readings

1. *The Animator's Survival Kit Book* by Richard Williams
2. *Anatomy & Drawing* by Victor Perard
3. *The Art of the Storyboard: A Filmmaker's Introduction, Second Edition Paperback* by John Hart
4. *Storyboard Design Course: Principles, Practice, and Techniques Paperback* by Giuseppe Cristiano
5. *Adventures In The Screen Trade* by William Goldman
6. *CorelDRAW X6 - Official Guide* by Gary David Bouton
7. *Bring it Home with CorelDRAW* by Roger Wanbolt

Semester-II-Bachelor in Arts (Animation & Interior Design)
Core Course III: Advanced 2D Animation and Designing with Adobe FLASH
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Advanced Tools for 2D Animation

(4 lectures)

Fundamentals of Complex Graphics and Animation, Deco Tool, Spray Brush Tool and Bone Tool

Unit 2: Integrating Sound & Video

(2 lectures)

Usage of Adding Media to applications using Sound and Video, Supported Formats of Audio and Video

Unit 3: Managing Website Content

(3 lectures)

Essentials of Layers, Bitmaps, Text, Regular & Primitive Shape Tools, Adjusting a Symbol, Free Transform Tool, Color Types & Gradients

Unit 4: Introduction to ActionScript

(4 lectures)

Introducing ActionScript, Stop Action, Introduction to Buttons & Setting Button States, Interactive Text Buttons, Introduction to Interactive Programs for Web and Mobile Devices

Unit 5: Code Snippets in Flash

(4 lectures)

Flash Code Snippets, Add to Frame Method, Copy to Clipboard, Options for Advanced Users, Heads Up Display, Modification of Snippets, Multiple snippets uses

Unit 6: Publishing

(3 lectures)

Overview of Flash Publish Settings, Compression in Bitmaps & Sounds, Optimization for Search Engines

PRACTICAL LECTURES: 100

Unit 1: Advanced Tools for 2D Animation

(25 lectures)

Creating Complex Graphics and Animation using Deco Tool, Spray Brush Tool, and Bone Tool

Unit 2: Using Sound & Video

(15 lectures)

Adding Media to applications using Sound and Video, Supported Formats of Audio and Video, Integrating media with file

Unit 3: Managing Website Content

(20 lectures)

Working with Layers, Using Bitmaps, Adding Text, Use the Regular & Primitive Shape Tools to Build a Graphic, Creating & Adjusting a Symbol, Transforming Objects with the Free Transform Tool, Exploring Color Types & Gradients

Unit 4: Introduction to ActionScript

(15 lectures)

Introducing ActionScript, Adding a Stop Action, Creating Buttons & Setting Button States, Creating Interactive Text Buttons, Introduction to Interactive Programs for Web and Mobile Devices

Unit 5: Code Snippets in Flash

(20 lectures)

Using Code Snippets, Add to Frame, Copy to Clipboard, Options for Advanced Users, Applying a snippet, Heads Up Display, Modifying snippets, Combining multiple snippets

Unit 6: Publishing

(5 lectures)

Overview of Flash Publish Settings, Compression in Bitmaps & Sounds, Optimization for Search Engines

Suggested Readings

- 1. Adobe Flash Professional CS6 Classroom in a Book Paperback by Adobe Creative Team*
- 2. Adobe Flash ActionScript 3 Classroom in a Book Paperback by Adobe Creative Team*
- 3. Exploring Adobe Flash CS6 Paperback by Prof. Sham Tickoo , Supriya Mishra*
- 4. Adobe Flash Professional CS6 Essentials (Essentials (John Wiley))Paperback by William Heldman*
- 5. Sketching for Animation: Developing Ideas, Characters and Layouts in Your Sketchbook (Required Reading Range) Paperback by Peter Parr*
- 6. Adobe Creative Suite 6 Design and Web Premium All-in-One For Dummies by Jennifer Smith, Christopher Smith, Fred Gerantabee*

Semester II-Bachelor in Arts (Animation & Interior Design)
Core Course-IV-3D Modeling & Texturing with Autodesk Maya
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

- Unit 1: Introduction to 3D** (1 Lecture)
Properties of 3-Dimensional Objects, Uses,
- Unit 2: Modeling and Texturing User Interface** (1 Lecture)
Workspace, Menu Bar, Status Line, Shelf, Workspace, Channel Box, Toolbox, Outliner
- Unit 3: Modeling Tools** (2 Lectures)
Curves, Surface, Polygons, Subdivide, Shaded mode, Wireframe, Transform, Rotate, Scale
- Unit 4: NURBS** (1 Lecture)
NURBS Primitives, NURBS Attributes, Control Vertex, Isoparm, Surface Point, Surface Patch, Hull, Revolve, Loft, Planar, Extrude, Birail, Bevel
- Unit 5: Poly** (1 Lecture)
Polygon Primitives, Poly Attributes, Vertex, Edge, Face, Vertex face, Combine, Separate, Mirror, Smooth, Split, Extrude, Chamfer, Merge, Extract, Collapse
- Unit 6: Sub Div** (1 Lecture)
Subdiv Primitives, Subdiv Attributes, Vertex, Edge, Face, Polygon, Display finer, Display Coarser, Crease
- Unit 7: Introduction to Shading and Texturing** (2 Lectures)
Diffuse, Specularity, Roughness, Reflectivity, Refractivity, Translucency, Self Illumination
- Unit 8: Maya Shaders** (2 Lectures)
Lambert, Blinn, Anisotropic, Phong, Layered, Use Background
- Unit 9: Textures** (2 Lectures)
Types of Textures, Bitmap Textures, Procedural Textures, Working with Bump Map and Displacement Map, 2D textures, 3D Textures
- Unit 10: Working with Transparency, Reflection and Refraction** (2 Lectures)
Creating Glass Material, Ramp, Connection Editor, Sampler Info Utility, Raytrace, Refractive Index
- Unit 11: Hypershade** (2 Lectures)
Menu Bar, Create, Bin, Work Area, Creating Hypershade Material Workflow, Graph Network, Hierarchy, Hotkeys, Texture Baking
- Unit 12: Unwrap** (2 Lectures)
UVW Co-ordinate System, UV Texture Editor, Mapping, Planar, Cylindrical, Spherical, Automatic, UV Sets, Snapshot, UTE Tools
- Unit 13: Utilities** (1 Lecture)
Blend, Bump2D, Condition, Double Switch, hsv to rgb, Luminance, Multiply Divide, Placement, Average, Reverse, Sampler Info,

PRACTICAL LECTURES: 100

Unit 1: Maya Modeling Interface

(5 Lectures)

Maya Workspace, Using Left, Mid, Right Mouse Buttons for Viewport, Working in Viewport

Unit 2: NURBS Modeling

(10 Lectures)

Creating a 3D Model using NURBS

Unit 3: Poly Modeling

(10 Lectures)

Creating an inorganic 3D Model using Poly

Unit 4: Sub Div Modeling

(5 Lectures)

Creating a 3D Model using Sub Div

Unit 5: Unwrapping

(10 Lectures)

Unwrapping a 3D Model

Unit 6: Texturing

(20 Lectures)

Using Hypershade, Texturing an inorganic 3D Model, Creating Glass, Metal, Matte Surfaces, Raytracing Options

Unit 7: Character Modeling and Texturing

(40 Lectures)

Modeling, Unwrapping and Texturing a complete Human Character

Suggested Readings

1. *Mastering Autodesk Maya 2014: Autodesk Official Press (Sybex Press Edition) by Todd Palamar*
2. *Introducing Autodesk Maya 2014*
3. *The Art of Maya: An Introduction to 3D Computer Graphics by T. Hawken*

Semester-II- Bachelor in Arts (Animation & Interior Design)

AECC 2-Environmental Science

Credits-Theory 2

Objective: *Develop awareness among the students about the necessity and importance of environment for human and its developments.*

Unit-1: Introduction to environmental studies (2 lectures)

(a) Multidisciplinary nature of environmental studies. (b) Scope and importance; Concept of sustainability and sustainable development.

Unit-2: Ecosystems (6 lectures)

What is ecosystem? Structure and functions of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems:

(a) Forest ecosystem (b) Grassland ecosystem (c) Dessert ecosystem (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit-3: Natural Resources: Renewable and Non-renewable Resources: (8 lectures)

(a) Land resources and land use change; land degradation, soil erosion, desertification. (b) Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal population. (c) Water: Use and over exploitation of surface and ground water, floods, droughts, conflicts over water (international and inter-state) (d) Energy resources: Renewable and non-renewable energy source, use of alternate energy sources, growing energy needs Case studies.

Unit-4: Biodiversity and Conversation (8 lectures)

(a) Levels of biological diversity: genetic, species and ecosystem diversity, Biographic zones of India, Biodiversity patterns and global biodiversity hot spots. (b) India as a mega-biodiversity nation; Endangered and endemic species of India. (c) Threats to biodiversity: Habitat loss, poaching wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conversation of biodiversity. (d) Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit-5: Environmental Pollution (8 lectures)

(a) Environmental pollution: Types, causes, effects and controls of Air, Water, Soil, Noise pollution (b) Nuclear hazards and health risks (c) Solid Wastes Management: Control measures of urban and industrial waste. (d) Pollution case studies

Unit-6: Environmental Policies & Practices (7 lectures)

(a) Climate change, global warming, ozone's layer depletion, acid rain and impacts on human communities and agriculture. (b) Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of pollution) Act; Wildlife Protection Act; Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). (c) Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian contract.

Unit 7: Human communities and the Environment (6 lectures)

(a) Human population growth: Impacts on environment, human health and welfare. (b) Resettlement and rehabilitation of project affected persons; case studies. (c) Disaster Management: floods, earthquake, cyclones and landslides. (d) Environmental Ethics: Role of Indian and other religions and cultures in environmental conservation (e) Environmental Communication and public awareness, case studies (e.g., CNG vehicles in Delhi)

Unit 8: Field work (Equal to 5 lectures)

(a) Visit to an area to document environmental assets: river/forest/flora/fauna, etc. (b) Visit to a local polluted site-Urban/Rural/Industrial/Agricultural (c) Study of common plants, insects, birds and basic principles of Identification (d) Study of simple ecosystem-pond, river, Delhi Ridge, etc.

Recommended Books:

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil M., & Guha R. 1993. *This fissured land: An Ecological History of India*, Univ of California Press
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge
4. Gleick, P.H.1993. *Water in Crisis*. Pacific Institute for Studies in Development, Environment & Security
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*.
6. Grumbine, R. Edward, and Pandit, M.K.2013. *Threats from India's Himalaya dams*. *Science*, 339: 36-37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp.29-64).Zed Books.
8. McNeill, John R. *Something New Under the Sun: An Environment History of the Twentieth Century*.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia Saunders.

Semester II-Bachelor in Arts (Animation & Interior Design)

GE II: Audio Editing With Adobe Audition

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(2 Lectures)

Workspace, Input & Output Devices, Control Surfaces, Mono, Stereo, Preferences

Unit 2: Panel Properties

(3 Lectures)

Files, Markers, Effects Rack, Diagnostics, Properties, Mixer, Editor, Selection View, Levels

Unit 3: Waveform and Multi track editing

(3 Lectures)

Introduction to Waveform Editing and Multi track Editing, Properties, Tools and Uses of Both

Unit 4: Importing and Recording Audio

(2 Lectures)

Supported File Formats, Importing, Recording, Fundamentals of Multi Track Editing, Audio Extraction, Exporting File Formats, Compression

Unit 5: Audio Editing

(3 Lectures)

Waveform Ranges, Multiple Clipboards, Zero Crossing Points, Amplitude, Loop, Markers, Playlists, Metronome & Tempo

Unit 6: Audio Restoration

(3 Lectures)

Spectral View, Sibilance, Noise Print, Noise Reduction, Hiss and Click Correction in Audio

Unit 7: Audio Video Integration

(4 Lectures)

Integration of Audio and Video in Audition, Importing Video, Integrating with Premiere Pro

PRACTICAL LECTURES: 100

Unit 1: Getting Started

(5 Lectures)

Interface, Setting Input & Output Devices, Working with Control Surfaces

Unit 2: Panels

(10 Lectures)

Files, Markers, Effects Rack, Diagnostics, Properties, Mixer, Editor, Selection View, Levels

Unit 3: Working with Waveform and Multi track editing

(5 Lectures)

Working with Waveform, Multi track Editing, Tools, Working between Waveform & Multi track View, Zooming & Navigating, Snapping

Unit 4: Importing and Recording Audio

(10 Lectures)

Importing Files into the File Panel, Recording Audio in the Waveform Editor, Recording Audio in the Multi track Editor, Inserting Audio Files into Editor, Adding Tracks into a Multi track view, Extracting Audio from an AV File, Exporting an audio

Unit 5: Editing Techniques

(10 Lectures)

Selecting Waveform Ranges, Skip Selection, Crop Command, Using Multiple Clipboards, Utilizing Zero Crossing Points, Snapping, Clip Stretching, Amplitude Adjustments, Fading, Looping

Unit 6: Working with Effects

(20 Lectures)

Introducing the Audio Effects, Applying Reverb Effects, Applying EQ Effects, Correcting Pitch, Amplify Effects, Metronome & Tempo Settings, Matching Volume across Audio Files

Unit 7: Noise Reduction

(20 Lectures)

Using Spectral View, Applying DeEsser Effects for removing Sibilance from audio, Capturing a Noise Print, Noise Reduction Options, Adaptive Noise Reduction, Removing Clicks, Reducing Noise in the Spectral Display

Unit 8: Editing an Audio

(20 Lectures)

Editing a audio complete with Effects, Noise Reduction, Exporting

Suggested Readings

- 1. Adobe Audition CC Classroom in a Book By Adobe Creative Team*
- 2. Audio Editing with Adobe Audition 1st Edition by Richard Riley*

Semester III-Bachelor in Arts (Animation & Interior Design)
Core Course V: 3D Lighting & Rendering with AUTODESK MAYA
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(2 Lectures)

Physical Properties of Light, Bounce, Decay, Radiosity

Unit 2: Illumination

(2 Lectures)

Direct, Angle of Incidence, Indirect Illumination, Scanline and Mental Ray Illumination Attributes

Unit 3: Three-Point Lighting

(2 Lectures)

Key Light, Fill Light, Back Light, Rim Light, Shadow Areas, Intensity and Angle of Each

Unit 4: CG Artificial Lighting

(3 Lectures)

Types and Properties of Maya Lights, Ambient, Directional, Point, Spotlight, Area, Volume

Unit 5: Shadows

(3 Lectures)

Properties of CG Shadows, Types of Shadows, Shadow Map Introduction and Properties, Ray Traced Shadow Introduction and Properties

Unit 6: Mental Ray

(3 Lectures)

Properties of Photon Emission, Light Emission, Introduction to Global Illumination, Final Gather, Caustics, Radiosity, Environment, Physical Sun and Sky

Unit 7: Advanced Lighting

(3 Lectures)

Attributes and Uses of Global Illumination, Final Gather, Photon Color, Intensity, Exponent, Caustics, Color Bleeding, Ambient Occlusion, Accuracy, Interpolation, Reflections, Refractions, Max Trace Depth, Overrides

Unit 8: Rendering

(2 Lectures)

Managing Render Layers, Creating Render Passes, Render Setup, Renderers, Formats, Batch Render

PRACTICAL LECTURES: 100

Unit 1: Maya Lighting Interface

(5 Lectures)

Working with Maya Lights, Properties of Ambient, Point, Spot, Directional, Area and Volume Light

Unit 2: Interior Lighting

(20 Lectures)

Working with Window Light, Bulb Light, Bounces, Shadows, Occlusion

Unit 3: Exterior Lighting

(15 Lectures)

Working with Sunlight, Skylight, Dome Setup, Exterior Shadows, Environment Properties

Unit 4: Day Lighting

(5 Lectures)

Working with Light Recreating Sunlight and Sky Lighting

Unit 5: Night Lighting

(5 Lectures)

Recreating Moonlight and night Ambience

Unit 6: Mood Lighting

(5 Lectures)

Lighting a scene to create moods

Unit 7: Lighting with Mental Ray

(15 Lectures)

Working with Photon Emission, Light Emission, Introduction to Global Illumination, Final Gather, Caustics, Radiosity, Environment, Physical Sun and Sky

Unit 8: Image Based Lighting

(10 Lectures)

High Dynamic Range Images, Properties, Exposure, Gain, Mapping of HDRI, Samples, Ray Depth, Shadow Controls

Unit 9: Rendering

(5 Lectures)

Creating Render Layers, Rendering various Passes, Batch rendering an animated scene

Unit 10: Working with V-Ray

(15 Lectures)

Realistic Lighting with V-Ray plug-in

Suggested Readings

1. *Mental Ray for Maya, 3ds Max, and XSI: a 3d artist's guide to rendering: introducing autodesk maya 2014* by Boaz Livny
2. *Mastering Autodesk Maya 2014: Autodesk Official Press (Sybex Press Edition)* by Todd Palamar
3. *Introducing Autodesk Maya 2014*
4. *The Art of Maya: An Introduction to 3D Computer Graphics* by T. Hawken

Semester III-Bachelor in Arts (Animation & Interior Design)
Core Course VI: 3D Rigging & Animation with Autodesk Maya
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction (2 Lectures)

What is Rigging and Animation, Relevance, Uses, Work Pipeline

Unit 2: Traditional Principles of Animation (3 Lectures)

Squash and stretch, Anticipation, Staging, Straight Ahead Action and Pose to Pose, Follow Through and Overlapping Action, Slow In and Slow Out, Arc, Secondary Action, Timing, Exaggeration, Solid drawing, Appeal

Unit 3: Graph Editor (2 Lectures)

Graph Editor Interface, Properties of Curves, Types of Curve, Introduction to Graph Editor Tools

Unit 4: Bone Setup (2 Lectures)

Introduction to Bones, Joints, Uses, Hierarchy, Parenting

Unit 5: Kinematics (3 Lectures)

Essentials of Forward Kinematics, Inverse Kinematics, FK-IK Switch

Unit 6: Controllers (2 Lectures)

Introduction to Controllers, Uses of Controllers in rigging and Animation,

Unit 7: Skinning (2 Lectures)

Introduction to Skinning, Process to Skin a 3D Model

Unit 8: Walk Cycle (2 Lectures)

Walk Cycle of a Biped Character and Quadruped Character

Unit 9: Pose-to-Pose Animation (2 Lectures)

Theory of Pose to Pose, Introduction to Trax Editor

PRACTICAL LECTURES: 100

Unit 1: Animation Workspace and Tools

(5 Lectures)

Maya Rigging and Animation workspace, Tools for Rigging and Animation, Keyboard Hotkeys, Setting up FPS and Timeline, Preferences

Unit 2: The Bouncing Ball

(5 Lectures)

Animating a Bouncing Ball according to the Principles, Keyframe Animation, Working with Basic Animation Tools

Unit 3: Graph Editor

(5 Lectures)

Working with the Graph Editor, Using Curves, Types of Curves, In Tangents, Out Tangents, Weighted Tangents, Graph Curve Controls for Speed

Unit 4: Pendulum

(5 Lectures)

Parenting Objects, Animating a Pendulum Loop, Pre Infinity, Post Infinity, Oscillate

Unit 5: Setting up Bones

(5 Lectures)

Creating Bones and Joints in a 3D Model, Using Bones and Joints, Rigging Basic Tools

Unit 6: Kinematics

(10 Lectures)

Working with Forward Kinematics, Inverse Kinematics, Creating FK-IK Switch

Unit 7: Controllers

(10 Lectures)

Setting up Controllers, Using Controllers to control the bones and rig, Animating using Controllers

Unit 8: Biped Rig

(20 Lectures)

Creating a Biped Full Body Rig and setting up IK and FK

Unit 9: Skinning

(10 Lectures)

Skinning a 3D Model to the Rig, Using Quick Selection Sets, Adjusting Influence, Paint Weights, Blend Shapes

Unit 10: Walk Cycle

(20 Lectures)

Creating Walk Cycle of a Biped Character and Quadruped Character

Unit 11: Facial Animation

(5 Lectures)

Facial Pose to Pose Animation, Making Pose to Pose Animation, Working with Trax Editor, Creating a Clip

Suggested Readings

1. *Animation Methods - Rigging Made Easy: Rig Your First 3D Character in Maya Paperback* by David Rodriguez
2. *Mastering Autodesk Maya 2014: Autodesk Official Press (Sybex Press Edition)* by Todd Palamar
3. *Introducing Autodesk Maya 2014*
4. *The Art of Maya: An Introduction to 3D Computer Graphics* by T. Hawken

Semester III-Bachelor in Arts (Animation & Interior Design)
Core Course VII: 2D Computer Aided Architectural Drafting with AUTOCAD
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(3 Lectures)

AutoCAD Workspace, Screen Layout, Command Lines, Navigating Interface

Unit 2: Basic Drawing & Editing Commands

(3 Lectures)

Introduction to Lines, Erasing Objects, Polar Tracking, Rectangles, Circles, Viewing Drawing, Basic Commands for Editing Drawings

Unit 3: Advanced Drawing

(5 Lectures)

Precision and Accuracy in Drawings, Object Snap, Snap Overrides, Polar Tracking Settings, Object Snap Tracking, Using SNAP and GRID, Grips for Editing

Unit 4: Objects Types

(2 Lectures)

Properties of Arcs, Polylines, Polygons, Ellipses

Unit 5: Object Editing

(4 Lectures)

Essentials of Trimming and Extending, Layers, Stretching, Fillets and Chamfers, Offset, Arrays, Blocks, Concept of Hatching

Unit 6: Using Dimensions

(3 Lectures)

Dimensioning Concepts, Fundamentals of Linear Dimensions, Radial and Angular Dimensions.

PRACTICAL LECTURES: 100

Unit 1: Introduction

(10 Lectures)

AutoCAD Interface, Screen Layout, Working with Commands, Opening an Existing Drawing File, Saving, Navigating Workspace

Unit 2: Objects Types

(10 Lectures)

Drawing Arcs, Drawing Polylines, Editing Polylines, Drawing Polygons, Drawing Ellipses

Unit 3: Basic Drawing & Editing Commands

(20 Lectures)

Drawing Lines, Erasing Objects, Drawing Lines with Polar Tracking, Drawing Rectangles, Drawing Circles, Viewing Drawing, Undoing and Redoing Actions

Unit 4: Advanced Drawing

(10 Lectures)

Drawing Precision, Using Object Snap, Object Snap Overrides, Polar Tracking Settings, Object Snap Tracking, Drawing with SNAP and GRID

Unit 5: Editing Drawings

(10 Lectures)

Selecting Objects for Editing, Moving Objects, Copying Objects, Rotating Objects, Scaling Objects, Mirroring Objects, Editing Objects with Grips

Unit 6: Layers

(10 Lectures)

Working with Layers, Creating New Drawings with Templates, Layer State, Changing an Object's Layer

Unit 7: Object Editing

(20 Lectures)

Measuring Objects, Working with Properties, Trimming and Extending, Stretching Objects, Creating Fillets and Chamfers, Offsetting Objects, Creating Arrays of Objects, Blocks, Hatching

Unit 8: Using Dimensions

(10 Lectures)

Working with Dimensions, Adding Linear Dimensions, Adding Radial and Angular Dimensions, Editing Dimensions, Adding Notes to Your Drawing

Suggested Readings

- 1. AutoCAD 2016 and AutoCAD Lt 2016 No Experience Required: Autodesk Official Press Paperback by Donnie Gladfelter*
- 2. AutoCAD 2015 and AutoCAD LT 2015 Essentials: Autodesk Official Press by Scott Onstott*
- 3. AutoCAD 2015 and AutoCAD LT 2015 Bible Paperback by Ellen Finkelstein*

Semester III-Bachelor in Arts (Animation & Interior Design)

SEC I: 3D Sculpting with ZBrush

(Credits: Practical-2)

PRACTICAL LECTURES: 40

Unit 1: Sculpting with Clay (5 Lectures)

Traditional Clay Modeling and Sculpting

Unit 2: Introduction to ZBrush (5 Lectures)

Tools & Interface, Clay Brush, Geometry Resolution, Establishing Structure, Masking, Using A Knife Tool, Dynamesh

Unit 3: Production Modeling (5 Lectures)

Essence of Design, Topology, Technical best practices, presenting work

Unit 4: Human Anatomy (5 Lectures)

Introduction to Human Anatomy, Skeletal masses, Proportions, Torso, Neck, Shoulder, Arms, Lower body, Leg, Foot, Tying and Finalizing the Full Figure

Unit 5: Animal Anatomy (5 Lectures)

Creature anatomy overview, Head, Neck, Torso, Legs, Combining anatomy

Unit 6: Texturing with ZBrush (5 Lectures)

Core themes and major groups of the upper body, the creation of additional maps for creating a realistic head, Hand painted fundamentals creature assets, Final Image and presentation

Unit 7: Character Creation (10 Lectures)

Body proportions, Blockout modeling, Primary form sculpting, Head, Detailing hair and face guts blockout, Clothing sculpting and detailing, Gear and hard surface modeling, Retopology, UV layout, Shaders setup, Base Textures and Material Breakup, Skin and Cloth detail, Hard Surface and detail, Hair texture, Finalizing textures, Character presentation, Posing, Turnaround renders sculpt and in-game, and Beauty Render

Suggested Readings

1. *ZBrush Digital Sculpting Human Anatomy Paperback by Scott Spencer*
2. *ZBrush Character Sculpting: v. 1: Projects, Tips & Techniques from the Masters Paperback by 3DTotal Team, Michael Jensen, Rafael Grassetti, Jesse Sandifer, Cedric Seaut*
3. *Anatomy for 3D Artists: The Essential Guide for CG Professionals Paperback by Chris Legaspi, 3DTotal Publishing*
4. *ZBrush Professional Tips and Techniques Paperback by Rick Baker, Paul Gaboury*

Semester III-Bachelor in Arts (Animation & Interior Design)

GE III: Video Editing With Adobe Premiere Pro

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(3 Lectures)

Introduction to Video Editing, Non-Linear Editing, Online and Offline Editing, PAL, NTSC, Frame Rate, Frame Size

Unit 2: Setting up a Project

(2 Lectures)

Compatible Formats, Importing Files from Camera, Importing Image Sequence, Importing Video, Sequence Settings, In Points, Out Points, Presets, Video Settings, Preview Settings, Project Path

Unit 3: Essentials of Basic Editing

(3 Lectures)

Audio Video File, Timeline Arrangements, Requisites for Editing, Keyboard hotkeys

Unit 4: Video Transitions

(3 Lectures)

Automate to Sequence Dialog, Effects Panel, Properties of Video Transitions, Controlling Parameters, Keyframe Animation of Effects

Unit 5: Audio

(2 Lectures)

Mono, Stereo, Compatible Audio Formats, Importing Audio to Sequence, Audio Settings, Audio Preview and Render, Audio Channels,

Unit 6: Audio Effects and Transitions

(2 Lectures)

Properties of Audio Effects and Transitions, Source Window Audio Controls, Keyframe Animation of Audio Effects

Unit 7: Title Design

(3 Lectures)

New Title Document, New Title Settings, Title Dialog, Safe Frames

Unit 8: Superimposing

(2 Lectures)

Superimposing Basics, Using Timeline Tracks as layers for combining footages from various source to produce desired effects, Controlling Color, Opacity, Size, Angle and animation of footages

PRACTICAL LECTURES: 100

Unit 1: Interface

(5 Lectures)

Menu Bar, Project Window, Source Window, Program Window, Timeline, Media Browser, Info Panel, Effects Panel, Keyframes

Unit 2: Basic Editing

(10 Lectures)

Creating a Sequence, Importing Files, Using In Point and Out Point in the Source Window, Adding and Deleting Tracks, Working with the Timeline, Exporting the Final Output

Unit 3: Working with Tools

(5 Lectures)

Using Selection tool, Track Select tool, Ripple Edit tool, Rolling Edit tool, Rate Stretch tool, Razor tool, Slip tool, Slide tool, Pen tool, Hand tool, Zoom tool

Unit 4: Video Effects and Transitions

(10 Lectures)

Applying Video Effects and Transitions on Footages, Dissolve, Fade, Wipe, Flip, Spin, Dip to Black, Dip to White, Stretch, Slide, Special Effects

Unit 5: Audio Effects and Transitions

(5 Lectures)

Importing only Audio from an AV file, working with Audio Effects and Audio Transitions, Applying it on the tracks in the Timeline

Unit 6: Advanced Editing

(10 Lectures)

Editing Sequence directly in the timeline using editing tools, , Trim, Gap, Ripple, Rate, Speed and Duration, Tint Color Correcting a Footage

Unit 7: Title Design

(10 Lectures)

Creating a Title Document, Title Design Tools, Templates, Animating Tiles, Roll, Crawl, Transform, Distort, Color, Transparency, Fonts

Unit 8: Chroma Removal

(10 Lectures)

Removal of Chroma using Ultra Keyer and Chroma Key

Unit 9: Key frame Controls

(5 Lectures)

Animating Effects, Transitions and Properties using Keyframe Controls and Effects Control Panel

Unit 10: Editing a Video

(30 Lectures)

Editing a video complete with Effects, Transitions, Titles, Keyframing and adding Audio, Rendering the Project, Supported Video Formats, Compressions

Suggested Readings

- 1. Adobe Premiere Pro CS6 Classroom in a Book by Sandee Adobe Creative Team*
- 2. Mastering Adobe Premiere Pro CS6 Hotshot Paperback by Paul Ekert*
- 3. Adobe Premiere Pro CC Classroom in a Book by Maxim Jago*

Semester IV-Bachelor in Arts (Animation & Interior Design)
Core Course VIII:-3D Modeling & Texturing with Autodesk 3DS MAX
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction to 3ds Max

(2 Lectures)

3D Studio Max Software Introduction, Controlling the Viewport Navigation through Keyboard and Mouse

Unit 2: Primitives

(2 Lectures)

Primitive Objects, Create Panel, Create Geometry, Standard Primitives, Object Parameters, Extended Primitives, Renaming Objects, Modifying Object Parameters, Transforming Objects, Translate, Rotate, Scale, Gizmo, Status Bar Type-in Fields, Vertex, Edge, Border, Polygon, Element

Unit 3: Splines

(2 Lectures)

Basic Spline Shape Objects, NURBS Curves, Extended Spline, Rendering Panel, Interpolation Panel, Creation Method, Vertex, Segment, Spline, Refine, Snap, Vertex Types, Fillet, Chamfer, Weld, Attach, Break, Mirror

Unit 4: Compound Objects

(1 Lecture)

Loft, Boolean, BlobMesh

Unit 5: Modifiers

(1 Lectures)

Method of working of Extrude, Lathe, Bend, Noise, FFD, Wave

Unit 6: Polygon Modeling

(2 Lectures)

Editable Poly, Vertex, Edge, Border, Polygon, Element, Editing Geometry, Tools for Poly Modeling, Graphite Modeling Ribbon

Unit 7: Texturing

(2 Lectures)

Introduction to 3D Texturing, Texture Coordinates, Unwrapping, Render UV Template, Exporting for Image Editing Software

Unit 8: Material Editor

(2 Lectures)

Compact Material Editor Interface, Slots, Tools, Material Parameters, Maps, Bitmaps, Procedural Maps, Slate Material Editor, Creating Materials, Using Maps

Unit 9: Unwrapping in 3DS Max

(2 Lectures)

Concept of Unwrapping, UVW Mapping, Unwrap UVW, UV Editor

Unit 10: Unwrap Editor and Tools

(2 Lectures)

UV Editor Interface and Tools, Working with Checker, Texture Placement, Seams, Projections, Peel, Pelt, Relax, Stitch

Unit 11: Ray tracing

(2 Lectures)

Essentials of Transparency, Reflectivity, Refractivity, Translucency, Fall off, Using Curves

PRACTICAL LECTURES: 100

Unit 1: Introduction to Max Workspace

(5 Lectures)

Interface, Application Button, Quick Access Toolbar, Caption Bar, Info Center, Window Controls, Menu Bar, Main Toolbar, Viewports, View Cube, Command Panel, Track Bar, Status Bar, Viewport Navigation Controls, Camera Navigation Controls,

Unit 2: Primitives, Splines, Compound Objects

(10 Lectures)

Working with Standard Primitives, Splines and Compound Objects, Using Transform Tools

Unit 3: Modifiers (5 Lectures)

Using Extrude, Lathe, Bend, Noise, FFD, Wave, Controlling their Attributes

Unit 4: Polygon Modeling

(15 Lectures)

Creating a 3D Model with Editable Poly, Using Vertex, Edge, Border, Polygon, Elements and their individual parameters to model

Unit 5: Unwrapping

(20 Lectures)

Using UVW Map, Unwrap UVW, Unwrapping a 3D Model, UV Editor, Texture Painting with Photoshop, Importing Unwrap in Photoshop for Texture Painting, Adding Textures, Working with Layers and Modes, Exporting Textures For Wrapping in 3DS Max

Unit 6: Texturing

(20 Lectures)

Using Material Editor, Texturing a Model, Using Map Bump, Displacement, Specular, Glossiness, Creating Glass, Metal, Matte Surfaces, Working with Raytrace, Creating Incandescence material

Unit 7: Product Modeling and Texturing

(10 Lectures)

Modeling, Unwrapping and Texturing a Product

Unit 8: Interior Prop Modeling and Texturing

(20 Lectures)

Modeling, Unwrapping and Texturing Interior Props

Suggested Readings

- 1. Autodesk 3ds Max 2016 Essentials Paperback by Dariush Derakhshani and Randi L. Derakhshani*
- 2. Autodesk 3ds Max 2015 Essentials: Autodesk Official Press Paperback by Randi L. Derakhshani and Dariush Derakhshani*
- 3. Architectural Rendering with 3ds Max and V-Ray: Photorealistic Visualization Paperback by Markus Kuhlo, Enrico Eggert*
- 4. V-Ray My Way: A Practical Designer's Guide to Creating Realistic Imagery Using V-Ray & 3ds Max Paperback by Lee Wylde*
- 5. Exploring Standard Materials in 3ds Max 2016 Paperback – Import, 21 Jul 2015 by Raavi O'connor*

Semester IV-Bachelor in Arts (Animation & Interior Design)

Core Course IX: Motion Graphics with After Effects

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(2 Lectures)

Introduction to Motion Graphics, Multilayer Video Compositing, Films and Video Post Production Process

Unit 2: Composition

(1 Lecture)

Composition Properties, Pixel Aspect Ratio, Frame, Motion Graphics

Unit 3: Tools

(3 Lectures)

Selection Tool, Hand Tool, Zoom Tool, Rotation Tool, Unified Camera Tool, Pan Behind Tool, Rectangle Tool, Pen Tool, Type Tool, Brush Tool, Stamp Clone Tool, Eraser Tool, Roto Brush Tool, Puppet Pin Tool

Unit 4: Text

(1 Lecture)

Text Layer Options, Animate, Based on, Amount, Shape, Smoothness, Ease High/Ease Low, Randomize Order, Fill Color, Stroke Color, Stroke Width, Character Offset

Unit 5: Mask

(3 Lectures)

Vertices, Segments, Mask Path, Mask Feather, Mask Opacity, Mask Expansion

Unit 6: Import

(1 Lecture)

Acceptable Formats, Footage Aspect Ratio, Frame Rate, Setting up the Fields

Unit 7: Keying

(3 Lectures)

Process and Advantages of Keying, Chroma Setup, Reasons to Choose Green or Blue Color, Chroma Lighting

Unit 8: Color Correction

(2 Lectures)

Process of Color Changes, Levels, Color Balance, Hue/Saturation, Brightness/Contrast, Curves

Unit 9: Tracking & Stabilizing

(2 Lectures)

Concept and Process of Tracking and Stabilizing, Track Points, Tracker Controls, Motion Stabilizer Channels, 4 Point Tracking

Unit 10: 3D Layers in AE

(2 Lectures)

3D Layers, Parallax, Converting Images into 3D Layers, Particles

PRACTICAL LECTURES: 100

Unit 1: AE Interface

(5 Lectures)

Toolbar, Project Window, Composition Window, Timeline, Effects Panel, Playback Panel

Unit 2: Creating a Composition

(5 Lectures)

Composition Settings, Name, Preset, Width, Height, Pixel Aspect Ratio, Frame, Start Time Code, Duration, Creating Layers, Solid, Animating a Layer

Unit 3: Text

(10 Lectures)

Text Layer, Animating Source Text, Animating Text on an Path, Animating Text, Applying Wiggle

Unit 4: Mask Animation

(5 Lectures)

Using Mask, Advanced Timeline Option, Uniform Scaling, Nesting, Key frame Interpolation, Spatial Interpolation, Temporal Interpolation, Modes, Controlling Motion Blur, Quality, RAM Preview

Unit 5: Motion Graphics

(10 Lectures)

Creating Motion Graphics using Solids, Masks and Animating Transform Nodes

Unit 6: Chroma Removal

(10 Lectures)

Working with Key Light, Color Key, Color Range, Linear Color Key, Color Difference key, Luma Keyer, Spill Suppression, Choker

Unit 7: Color Correcting Footages

(5 Lectures)

Using Effects for Correcting Color of a Footage, Levels, Color Balance, Hue/Saturation, Brightness/Contrast, Curves

Unit 8: Extracting/Creating Contact Shadows for Chroma Footages

(5 Lectures)

Using Extract Effect for Contact Shadows

Unit 9: Wire Removal and Rotoscopy

(10 Lectures)

Using Paint to remove wires, Paint Panel, Removing Wire in Still Cam Footage, Removing Wire in Moving Cam Footage

Unit 10: Rotoscopy

(10 Lecture)

Working with Rotoscopy

Unit 11: Tracking & Stabilizing

(5 Lectures)

Tracking and Stabilizing a Footages, Track Points, Tracker Controls, Motion Stabilization

Unit 12: Camera Projection

(9 Lectures)

Camera Projection, Creating Parallax, Orbit Camera Tool, Track Tool, Collapse Transform, Using Particles

Unit 13: Exporting

(1 Lecture)

Render Queue, Supported Formats, Render Setting, Module, Compression

Unit 14: Creating a Promo

(10 Lectures)

Creating a Promo with Motion Graphics, Texts, Videos, Images, Transitions

Suggested Readings

- 1. Adobe After Effects CC Classroom in a Book by Adobe Creative Team*
- 2. After Effects Apprentice: Real-World Skills for the Aspiring Motion Graphics Artist (Apprentice Series)*
- 3. The After Effects Illusionist: All the Effects in One Complete Guide by Chad Perkins*

Semester IV-Bachelor in Arts (Animation & Interior Design)

Core Course X: Advanced 2D & 3D Computer Aided Architectural Drafting with AUTOCAD

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Reusing Content

(2 Lectures)

Introduction to Groups, Blocks, Using By Layer and By Block object properties, Redefining blocks, Exploding objects, Dynamic block, External block content

Unit 2: Defining Attributes and Configuring Tables

(2 Lectures)

Designing a symbol with text placeholders, Designing attribute definitions, Defining a block with attributes, Creating a table, Styling a table's title text, Adding fields to tables

Unit 3: Making External References

(1 Lecture)

Exporting objects to a file, Attaching and overlaying xrefs, Altering xrefs, Clipping xrefs, Editing xrefs in place, Removing xrefs

Unit 4: Basics of Annotation

(2 Lectures)

Introduction to Annotations, Text in a Drawing, Multiline Text, Coordinate Entry, DWF Printing and Publishing, DWF Plotting and Viewing

Unit 5: The Command Line

(2 Lecture)

The AutoCAD command line, Customizing the Command Line Settings, Input settings, Lines of prompt history, Input search options, Transparency Options, Typing commands, Keyboard shortcuts, Suggestion menu, Sub-menus

Unit 6: Introduction to 3D with AutoCAD

(1 Lecture)

3D Workspace in AutoCAD, Cleaning Up 2D Drawings, Bringing all project data together

Unit 7: 3D Modeling in AutoCAD

(2 Lectures)

Navigating in 3D, Rotating objects in 3D, Realigning elevations and sections in 3D, Building sills and headers, Curved headers, Point Filter, Building the first-floor slab

Unit 8: Advanced Modeling

(2 Lectures)

Tools for Advanced 3D Modeling Extrude, Trim, Extract, Conversion, Loft, Sculpt, Sweep, Revolve, Weld, Offset, Rebuild, Boolean

Unit 9: Basic Texturing in AutoCAD

(2 Lectures)

Basic Texturing, Texture Controls, Material Mapping, Procedural Maps and Bitmaps, Supported Formats for Texturing from Bitmaps

Unit 10: Basic Light Setup in AutoCAD

(2 Lectures)

Lighting Properties, Light Properties Palette, Standard Lights, Photometric Lights, Spot Light, Point Light, Web Light

Unit 11: Rendering

(1 Lecture)

Rendering a scene, Cloud Rendering, Managing renderings with the Render Gallery, Exporting renderings

Unit 12: 3D to 2D Conversion

(1 Lecture)

Creating 2D Editable Drawings from 3D Objects, 2D Projections in Model Space

PRACTICAL LECTURES: 100

Unit 1: Reusing Content

(5 Lectures)

Working with groups, Creating and inserting blocks, Using By Layer and By Block object properties, Redefining blocks, Exploding objects with Explode and Xplode, Designing a dynamic block, Accessing external block content, Redefining local blocks with global blocks

Unit 2: Defining Attributes and Configuring Tables

(10 Lectures)

Designing a symbol with text placeholders, Designing attribute definitions, Defining a block with attributes, Creating a table, Styling a table's title text

Unit 3: Basics of Annotation

(10 Lectures)

Working with Annotations, Adding Text in a Drawing, Modifying Multiline Text, Formatting Multiline Text , Coordinate Entry, DWF Printing and Publishing, DWF Plotting and Viewing, Publishing Drawing Sets

Unit 4: Using the Command Line

(10 Lectures)

The AutoCAD command line, Positioning the command line, Closing the command line, Input settings, Lines of prompt history, Input search options, Transparency Options

Unit 5: Introduction to 3D with AutoCAD

(5 Lectures)

3D Interface, Arranging elevations and sections around the plan, Deleting, purging, and cleaning up

Unit 6: 3D Modeling in AutoCAD

(10 Lectures)

Navigating in AutoCAD 3D, Extruding closed Polylines walls, Building sills and headers, Extruding interior partitions, Modeling curved headers, Moving the ceiling using a point filter, Building the first-floor slab

Unit 7: Advanced Modeling

(10 Lectures)

Using Tools For Advanced 3D Modeling, Modeling doors with glazing, Building windows and their frames, Joining and extruding stair profiles, Sub object manipulation, Modeling stairs from plans, Building a railing that follows a 3D path, Modeling Terrain Surfaces, Shaping the courtyard as a NURBS surface, Sculpting a sloping terrain, Slicing topographic contour lines

Unit 8: Creating a 3D Conceptual Design

(10 Lectures)

Introducing freeform mesh models, Creating primitive mesh shapes, Smoothing the appearance of a mesh model, Selecting mesh sub objects, Using gizmos to mold and shape a mesh, Applying creases to a mesh, Converting a mesh into a solid

Unit 9: Basic Texturing in AutoCAD

(10 Lectures)

Working with Textures, Texture Controls, Material Mapping, Using Procedural Maps and Bitmaps

Unit 10: Basic Light Setup in AutoCAD

(10 Lectures)

Light Properties Palette, Using Standard Lights, Photometric Lights, Spot Light, Point Light and Web Light

Unit 11: Rendering

(5 Lectures)

Setting the Geo location, Rendering a scene, Rendering in the cloud, Managing renderings with the Render Gallery, Exporting renderings

Unit 12: 3D to 2D Conversion

(5 Lectures)

Creating 2D Editable Drawings from 3D Objects, Making 2D Projections in Model Space

Suggested Readings

1. AutoCAD 2016 and AutoCAD Lt 2016 No Experience Required: Autodesk Official Press Paperback by Donnie Gladfelter
2. Mastering Autocad 2015 and AutoCAD LT 2015 Paperback by George Omura
3. Architectural Model making Paperback by Nick Dunn

Semester IV-Bachelor in Arts (Animation & Interior Design)

SEC II: Stop Motion Animation

(Credits: Practical-2)

PRACTICAL LECTURES: 40

Unit 1: Introduction

(2 Lectures)

Outline of Stop Motion, Requisites, Procedure, Uses, Types

Unit 2: Pre Production

(8 Lectures)

Story line up, Creating a Setup, Scripting, Storyboarding, Camera setup, Camera Angles

Unit 3: Props

(10 Lectures)

Creating various Characters and props from Paper and Clay, Coloring the props, Setting up Environment

Unit 4: Production

(10 Lectures)

Building Set, Shooting and Animating frame by frame

Unit 5: Post Production

(5 Lectures)

Importing the frames in a Editing Software, Aligning the shots, Color Correction, Transitions

Unit 6: Final Video

(5 Lectures)

Adding Titles and credits in the video, Rendering the developed Stop Motion Video

Suggested Readings

- 1. The Art of Stop-motion Animation Paperback by Ken Priebe*
- 2. The Advanced Art of Stop-Motion Animation by Ken A. Priebe*
- 3. Stop Motion Animation: How to Make & Share Creative Videos Paperback by Melvyn Ternan*

Semester IV-Bachelor in Arts (Animation & Interior Design)

GE IV: Photography

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction to Photography (1 Lecture)

Photography as an art and science, Uses and applications of Photography

Unit 2: History of Photography (1 Lecture)

The birth of the camera, Modernization of photography, Introduction of digital photography

Unit 3: Photography equipments (1 Lecture)

Cameras, Lenses, Filters, Tripods, Monopods, Camera Bags, Digital storage

Unit 4: Understanding a Camera (2 Lecture)

Parts of the camera, Exposure triangle, Setting aperture, Shutter speed, Understanding ISO, Other manual controls

Unit 5: Techniques for taking Professional Photographs (1 Lecture)

Tripod and its importance, Types of lenses, Understanding Background & Lighting, Rule of thirds, Resolutions

Unit 6: Different Shots Terminology (2 Lectures)

Long shot, Mid shot, Close-up shot, Two shot, Over the shoulder shot

Unit 7: Understanding Lights for photography (2 Lectures)

Different types of light equipment, Different types of lighting, Indoor lighting, Outdoor lighting, Universal lighting, Categorical lighting, Special or Mood lightin

Unit 8: Types of Photography (2 Lectures)

Portraits, Landscape, Fashion, Film Photography, Product Photography, Wildlife, Child Photography, Stage Programme, Press photography, Sports Photography, Table top, Macro

Unit 9: Indoor and Outdoor Photography (2 Lectures)

Taking Portraits, Taking group photos, Taking function photos, Wedding Photography, Nature Photography, Landscape Photography

Unit 10: Photo Editing with Photoshop (2 Lectures)

Basics of Importing digital image to PC, Photo Correction, Cropping, Levels, Altering brightness & contrast, Hue & Saturation, Red eye, Cloning, Printing

Unit 11: Photo Manipulation with Photoshop (2 Lectures)

Fundamentals of Layers, Mask, Brush tools, Adjustment layers, Layer merging, Dodging and burning

Unit 12: Photo Marketing (1 Lecture)

Work sampling, Portfolio making, Business card, Referrals, Networking, Social Media, Print Ads, Photo Exhibitions

Unit 13: Employment Opportunities (1 Lecture)

Opportunities in Government Sectors, Business Sectors, Private Sectors and Film Industry

PRACTICAL LECTURES: 100

Unit 1: Getting started

(5 Lectures)

Selection of cameras, Introduction to DSLR, Handling Camera

Unit 2: Using Photography equipments

(10 Lectures)

Using Cameras, Lenses, Filters, Tripods, Monopods, Camera Bags, Digital storage

Unit 3: Understanding a Camera

(15 Lectures)

Working with a Camera, Exposure triangle, Setting aperture, Shutter speed, Understanding ISO, Other manual controls

Unit 4: Techniques for taking Professional Photographs

(10 Lectures)

Using Tripod, Using Different Types of lenses, Effective Background & Lighting, Applications of Rule of thirds, Output Resolutions

Unit 5: Types of Shots

(10 Lectures)

Capturing Long shot, Mid shot, Close-up shot, Two shot, Over the shoulder shot

Unit 6: Understanding Lights for photography

(10 Lectures)

Handling light equipment, working with different types of lighting, Indoor lighting, Outdoor lighting, Universal lighting, Categorical lighting, Special or Mood lighting

Unit 7: Working with Different Types of Photography

(10 Lectures)

Capturing Portraits, Landscape, Fashion, Film Photography, Product Photography, Wildlife, Child Photography, Stage Programme, Press photography, Sports Photography, Table top, Macro

Unit 8: Indoor and Outdoor Photography

(10 Lectures)

Portraits, Group photos, Function photos, Wedding Photography, Nature Photography, Landscape

Unit 9: Photo Editing with Photoshop

(10 Lectures)

Importing digital image to your PC, Photo Correction, Cropping, Levels, Altering brightness & contrast, Hue & Saturation, Red eye reduction, Cloning, Printing

Unit 10: Photo Enhancement with Photoshop

(10 Lectures)

Using Layers, Applying a layer mask, Brush tools, Adjustment layers, Layer merging, Dodging and burning, Adding Vignette

Suggested Readings

- 1. Photography: Canon DSLRs For Beginners - The Ultimate Guide to Taking Stunning, Beautiful Digital Pictures With Your Canon Camera (Digital Photography, Photography Books, DSLR Photography) by Jessica Collins*
- 2. DSLR Photography for Beginners: Take 10 Times Better Pictures in 48 Hours or Less! Best Way to Learn Digital Photography, Master Your DSLR Camera & Improve Your Digital SLR Photography Skills by Brian Black*
- 3. Digital Photography for Beginners: The Fastest Way to Learn the Essentials and Start Taking Great Shots by Kush Sharma*

Semester V-Bachelor in Arts (Animation & Interior Design)
Core Course XI: 3D Lighting & Rendering with AUTODESK 3DS MAX
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: CG Lighting

(2 Lectures)

Introduction to 3D Lighting, Spectrum of Light, Reproducing Realistic Lighting in Computer Graphics

Unit 2: Physical Properties of Light

(2 Lectures)

Direct and Indirect Illumination, Color Temperature, Decay, Attenuation, Shadow, Ambience, Radiosity, Caustics

Unit 3: Three Point Light Setup

(2 Lectures)

Key Light, Fill Light, Back Light, Rim Light, Shadow Areas, Intensity and Angle of Each

Unit 4: Standard Lights

(2 Lectures)

Types and Properties of Max Lights, Target Spot, Free Spot, Target Direct, Free Direct, Omni, Skylight

Unit 5: Light Attributes

(2 Lectures)

Intensity, Color, Decay, Attenuation, Light Parameters, Hotspot, Falloff, Overshoot

Unit 6: Shadow Types

(2 Lectures)

Shadow Map, Ray Traced Shadows, Area Shadows, Advanced Ray Traced Shadows, Mental Ray Shadow Map

Unit 7: Shadow Attributes

(2 Lectures)

Color, Density, Bias, Samples, 2 Sided Shadows, Integrity, Quality, Jitter

Unit 8: Mental Ray

(2 Lectures)

Photon Mapping, Final Gather, Global Illumination, Radiosity, Caustics, Self Illumination

Unit 9: Photometric Lights

(2 Lectures)

Free Light, Target Light, Sky Portal, Color Temperature, Filter Color, Shape, Photometric Parameters

Unit 10: Rendering

(2 Lectures)

Essentials of Render Layers, Render Properties, Render Passes

PRACTICAL LECTURES: 100

Unit 1: Lighting Interface

(5 Lectures)

Working with Maya Lights, Properties of Ambient, Point, Spot, Directional, Area and Volume Light

Unit 2: Working with Max Shadows

(10 Lectures)

Using Shadow Map, Ray Traced Shadows, Area Shadows, Advanced Ray Traced Shadows, Mental Ray Shadow Map

Unit 3: Interior Lighting

(10 Lectures)

Working with Window Light, Bulb Light, Bounces, Shadows, Occlusion

Unit 4: Exterior Lighting

(10 Lectures)

Working with Sunlight, Skylight, Dome Setup, Exterior Shadows, Environment Properties

Unit 5: Day Lighting

(10 Lectures)

Working with Light Recreating Sunlight and Sky Lighting

Unit 6: Night Lighting

(10 Lectures)

Recreating Moonlight and night Ambience

Unit 7: Photometric Lights

(10 Lectures)

Lighting an architectural scene using Photometric Lights

Unit 8: Lighting with Mental Ray

(15 Lectures)

Working with Photon Emission, Light Emission, Introduction to Global Illumination, Final Gather, Caustics, Radiosity, Environment

Unit 9: SkyLight and Environment Lighting

(10 Lectures)

Using Photon Mapping, High Dynamic Range Images, Environment Lighting, Image Based Lighting, Sun and Sky Lights

Unit 10: Rendering

(5 Lectures)

Creating Render Layers, Managing and Rendering various Passes

Unit 11: Working with V-Ray

(5 Lectures)

Realistic Lighting with V-Ray plug-in

Suggested Readings

- 1. Autodesk 3ds Max 2016 Essentials Paperback by Dariush Derakhshani and Randi L. Derakhshani*
- 2. Autodesk 3ds Max 2015 Essentials: Autodesk Official Press Paperback by Randi L. Derakhshani and Dariush Derakhshani*
- 3. Architectural Rendering with 3ds Max and V-Ray: Photorealistic Visualization Paperback by Markus Kuhlo, Enrico Eggert*
- 4. V-Ray My Way: A Practical Designer's Guide to Creating Realistic Imagery Using V-Ray & 3ds Max Paperback by Lee Wylde*
- 5. 3ds Max Projects: A Detailed Guide to Modeling, Texturing, Rigging, Animation and Lighting Paperback by Matt Chandler, Pawel Podwojewski, Jahirul Amin, Fernando Herrera*

Semester V-Bachelor in Arts (Animation & Interior Design)

Core Course XII: Visual Effects with AUTODESK MAYA

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction to Maya Dynamics

(2 Lectures)

Introduction to Dynamics, Particle System, Simulation and Cache files

Unit 2: Particle Dynamics

(3 Lectures)

Maya Particles, Mass, Position, Velocity, Types of Particle Displays, Particle Animation Techniques, Particle-Force Interaction

Unit 3: Deformers

(2 Lectures)

Properties of Deformers, Linear Deformer, Non-Linear Deformers, Properties of Lattice, Blend Shape, Cluster, Bend, Twist, Wave

Unit 4: Soft Body and Rigid Body

(4 Lectures)

Fundamentals and Application of Soft Body and Rigid Body Dynamics, Shape Node, Soft Body Creation, Spring, Collision, Active Rigid Body and Passive Rigid Body

Unit 5: Constraints, Force and Damping

(3 Lectures)

Fundamentals of Forces, Elasticity, Friction, Constraints

Unit 6: Hair Dynamics

(2 Lectures)

Introduction to Hair System, Hair Follicle, NURBS Curve, Paint Stroke Effects, Hair Constraints

Unit 7: Fluid Effects

(2 Lectures)

Fundamentals of Fluid Effects, Volume Emissions, Voxels, Texturing and Lighting Fluid Effects

Unit 8: Cloth

(2 Lectures)

Maya Cloth, Cloth Shelf, Cloth Simulation, State, Cloth Constraints

PRACTICAL LECTURES: 100

Unit 1: Particle Workspace

(5 Lectures)

Workspace, Dynamic Tools

Unit 2: Using Particles

(10 Lectures)

Creating Basic Particle Simulation, Using Emitter, Rate, Distance, Speed, Intensity, Turbulence, Surface Emission, Creating Multicolored Fireworks using Particle System

Unit 3: Tools

(10 Lectures)

Working with Goal, Travel on Surface, Particle Instancing, Sprite Crowd Creation

Unit 4: Working with Deformers

(10 Lectures)

Using Lattice, Blend Shape, Cluster, Bend, Twist, Wave, Gravity

Unit 5: Creating Soft and Rigid Bodies

(10 Lectures)

Soft Body Creation, Working with Spring, Collision, Using Dynamic Relationship Editor, Creating Shatter Effects, Rigid Body Interaction with Soft Body.

Unit 6: Using Constraints, Force and Damping

(10 Lectures)

Working with Air, Drag, Gravity, Newton, Radial, Turbulence, Uniform, Vortex, Elasticity, Friction, Nail Constraint, Pin Constraint, Hinge Constraint, Spring Constraint and Barrier Constraint

Unit 7: Creating Hair

(10 Lectures)

Working with Hair System, Controlling Follicles, Using Hair Constraints, Using Paint Stroke Effects

Unit 8: Fluid Effects

(15 Lectures)

Using Volume Emission, Heat, Density, Fuel, Shading and Lighting Effects for Fluids

Unit 9: Fur

(5 Lectures)

Fur Description, Texturing Fur, Creating Fur, Adding and Removing Fur from Areas using Baldness Attribute

Unit 10: Creating Realistic Clothing for Characters

(15 Lectures)

Using Maya Cloth and Cloth Constraints to Create Character Clothing

Suggested Readings

- 1. Learning Maya Dynamics Paperback by Alias Wavefront*
- 2. Maya Studio Projects: Dynamics Paperback by Todd Palamar*

Semester V-Bachelor in Arts (Animation & Interior Design)
DSE I: Computer Generated Imagery and Live Shoot Integration
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(4 Lectures)

Basics of CG and Live Integration, Planning, Picking info from location, Lighting Conditions, Chrome Ball HDRIs

Unit 2: Back Plate

(2 Lectures)

Importing the Reference into the 3D workspace, Shooting the live part, Importing into the computer, Applying Post-shoot treatments like wire removal, chroma removal, Paint Effects

Unit 3: CG Generation

(4 Lectures)

Creating 3D model of required Elements, Texturing, Lighting, Animation, Rendering

Unit 4: Integration

(2 Lectures)

Integrating CG and Live Part in a Compositing software

Unit 5: Integration in Varying Camera Angle Shots

(5 Lectures)

PF Track Software Introduction, Principles of Tracking, Track Points during Shoot, Software Interface, Tools, Import, Point Cloud Data, 3D Camera Generation, Export, Integrating 3D cam and cloud data with 3D Software

Unit 6: Final Output

(3 Lectures)

Applying Effects, Color Correction, Rendering the Final CG and Live Integrated Shot

PRACTICAL LECTURES: 100

Unit 1: Shooting For Integration

(10 Lectures)

Planning, Shooting, Picking info from location, Location Lighting Conditions, Chrome Ball HDRI

Unit 2: Back Plate Creation

(10 Lectures)

Importing the Reference into the 3D workspace, Importing into the computer, Applying Post-shoot treatments like wire removal, chroma removal

Unit 3: CG Generation

(20 Lectures)

Creating 3D model of required Elements, Texturing, Lighting, Animation, Rendering

Unit 4: Integration

(10 Lectures)

Integrating CG and Live Part in a Compositing software

Unit 5: Tracking Mobile Camera Footages in PF Track

(40 Lectures)

PF Track Tools, Importing Footages for Tracking, Tracking the Footage, Exporting Point Cloud Data and Generated Camera for 3D Softwares, Integrating Point Data with 3D space and rendering 3D Elements

Unit 6: Final Output

(10 Lectures)

Applying Effects, Color Correction, Rendering the Final CG and Live Integrated Shot

Suggested Readings

- 1. Thinking Animation: Bridging the Gap between 2D and CG by Angie Jones, Jamie Oliff*
- 2. Digital Lighting and Rendering Book by Jeremy Birn*

Semester V-Bachelor in Arts (Animation & Interior Design)

DSE II: Interior and Exterior Design Visualization

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction

(2 Lectures)

Introduction to Interior and Exterior Design Visualization, Uses in Architecture, Industry Standards and Requirements

Unit 2: Basic Design and Aesthetics

(4 Lectures)

Studying line work, sketching, Orthographic drawing, Axonometric drawing, Perspective drawing, Understanding Structures

Unit 3: Understanding Symbols

(2 Lectures)

Understanding the meanings of various design symbols, Standard Length Width and Height of Interior and Exterior Elements

Unit 4: Fundamentals of Floor Plans and Elevations

(3 Lectures)

Fundamentals of Developing Floor Plans and Front-Side Elevations in AutoCAD from the Visualization Designs

Unit 5: Developing 3D Architecture with 3DS Max

(3 Lectures)

Integration 3DS Max in Architectural Design Graphics for 3d Generation of Designs, Using Floor Plans and Elevations in 3DS Max, Understanding Unit Setup of 3DS Max for accurate measurements

Unit 6: 3D Generation of Designs

(4 Lectures)

Basics of Generating 3D models using Modeling, Texturing, Lighting and Camera Animation Techniques

Unit 7: Compositing

(2 Lectures)

Importing Rendered Outputs into Fusion for Compositing, Back Plate, Color Enhancements and Developing Look and Feel

PRACTICAL LECTURES: 100

Unit 1: Getting Started

(5 Lectures)

Introduction to Interior and Exterior Design Visualization, Studying various Design Visualizations for Reference

Unit 2: Drawing Design Visualizations for Interiors

(10 Lectures)

Sketching for Interior Design Visualization, Distributing various Interior Elements in the given area, Calculating area for designing, Orthographic drawing, Axonometric drawing, Perspective drawing, Using Various Symbols in the design

Unit 3: Drawing Design Visualizations for Exteriors

(10 Lectures)

Sketching for Exterior Design Visualization, Distributing various Exterior Elements in the given area, Calculating area for designing, Orthographic drawing, Axonometric drawing, Perspective drawing, Using Various Symbols in the design

Unit 4: Creating Floor Plans and Elevations

(20 Lectures)

Developing Floor Plans and Front-Side Elevations in AutoCAD from the Visualization Designs

Unit 5: Developing 3D Architecture with 3DS Max

(5 Lectures)

Importing Floor Plans and Elevations into 3ds Max and developing a 3D model, Using Unit Setup of 3DS Max for accurate measurements

Unit 6: 3D Generation of Designs

(40 Lectures)

Using various tools of 3DS Max for generating 3D models from Interior and Exterior Designs, Modeling, Texturing, Lighting the model, Animating Camera According to the Visualization of Interior and Exterior Designs, Introduction to V-Ray, Rendering the Final Output

Unit 7: Compositing

(10 Lectures)

Importing Rendered Outputs into Fusion for Compositing, Addition of Back Plate, Color Correction, Level Adjustments, Light Intensity Adjustments, Adding Glow, Developing the Overall Look and Feel, Rendering the final image or video in the desired format

Suggested Readings

1. *Architectural Drawing Paperback by David Dernie*
2. *Complexity and Contradiction in Architecture (Museum of Modern Art Papers on Architecture) Paperback by Robert Venturi, Vincent Scully*
3. *Building Construction Illustrated Paperback by Francis D. K. Ching*
4. *Sketch Workshop Spiral-bound by 3DTotal Publishing*
5. *V-Ray My Way: A Practical Designer's Guide to Creating Realistic Imagery Using V-Ray & 3ds Max Paperback by Lee Wylde*
6. *3ds Max Design Architectural Visualization: For Intermediate Users Hardcover by Brian L. Smith*
7. *Architectural Rendering with 3ds Max and V-Ray: Photorealistic Visualization Paperback by Markus Kuhlo, Enrico Eggert*
8. *Structural Engineering for Architects: A Handbook Paperback by William McLean, Peter Silver, Peter Evans*

Semester-VI-Bachelor in Arts (Animation & Interior Design)
Core Course XIII: Advanced Visual Effects with AUTODESK 3DS MAX
(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Introduction to Dynamics (2 lectures)

Visual Effects Pipeline, Particle Systems, Workflow of Non Event Driven Particle System and Event Driven System

Unit 2: PArray and Particle instancing (4 lectures)

Basics of Complex Effects connected with geometry based distribution of Particles, Spreading Particles over a surface

Unit 3: Space Warps (4 lectures)

Essentials for Controlling Particles, Uses of various Forces on a Particle System, Uses of different Deflectors on a Particle System

Unit 4: Flow (4 lectures)

Node Based Particle System, Event Driven, PF Source, Particle Flow Dialog, Operators, Operator Attributes, Connecting Flow, Particle Shading, Interaction with Forces and Deflectors

Unit 5: Reactor (3 lectures)

Introduction to Reactor Dynamics, Uses in recreating Physical Environments, collision and gravity, the five different set of tools, Collections set, Physics set, Constraint Set, Scene Setup

Unit 6: Cloth (3 lectures)

Cloth System, Usage, Character Clothing, Effects Shots, Cloth Simulation Workflow

PRACTICAL LECTURES: 100

Unit 1: Non Event Based Particle System

(10 lectures)

Working with PArray, Snow, Spray, SuperSpray, Blizzard, PCloud, Basic Parameters, Motion, Particle Generation, Particle Type, Rotation, Collision, Spawn, Shading the Particles, Rendering the Particles

Unit 2: PArray and Particle instancing

(10 lectures)

Attributes, Using PArray and Particle Instancing for exploding a 3d model

Unit 3: Space Warps

(20 lectures)

Working with Push, Motor, Vortex, Drag, PBomb, Path Follow, Gravity, Wind, Displace, Planar Deflector, Spherical Deflector, Universal Deflector

Unit 4: pFlow

(40 Lectures)

Using pFlow, PF Source, Birth, Position, Speed, Rotation, Shape, Find Target, Spawn, Display, Force, Scale, Shape Facing, Material Dynamic, Delete, Display, Render Operators, Operator Attributes, Texturing Particles, Interaction with Forces and Deflectors,

Unit 5: Working with Reactor System

(10 lectures)

Rigid Body Collection, Cloth Collection, Soft Body Collection, Rope, Deformable Mesh Collection, Plane, Spring, Motor, Wind, Rag Doll, Hinge, Constraint Solver, Point-Point, Car Wheel, Configuring the Hit Box and Receiving Box, Spring Helper, Finalizing Reactor Animation

Unit 6: Cloth

(10 lectures)

Using Cloth System, Converting geometry into a deformable mesh, Collisions and Constraints, Using Space Warps, Garment Creation, Using Cloth to Create certain 3D Poly Meshes

Suggested Readings

1. *Autodesk 3DS Max 2016 Essentials Paperback by Dariush Derakhshani and Randi L. Derakhshani*
2. *Autodesk 3DS Max 2015 Essentials: Autodesk Official Press Paperback by Randi L. Derakhshani and Dariush Derakhshani*
3. *3DS MAX 6 Killer Tips Paperback by Jon A. Bell*
4. *3DS MAX 2010 Bible by Kelly L. Murdock*
5. *3DS MAX 6 Fundamentals By Ted Boardman*

Semester VI-Bachelor in Arts (Animation & Interior Design)

Core Course XIV: Compositing with Fusion

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Essentials of Compositing (2 Lectures)

Digital Compositing, Keying Process, Color Depth, Floating Point Workflow, Fields, Pixel Aspect Ratio

Unit 2: Node Based Composite (2 Lectures)

Bins, Adding Assets, Properties and Setting of Composition, Supported File Formats for Import and Export, Handling Workspace

Unit 3: Tools (2 Lectures)

Background, Foreground, Merge, Mask, Graph timeline editor, Corner and Bezier handles, Transform Concatenation, Transform, Warp, Blur, Glow, Deep Pixels, DVE

Unit 4: Mask (2 Lectures)

Basics of Alpha, Matte, Effect Mask Basics, Concepts of Rotoscopy

Unit 5: Color Correction (2 Lectures)

Properties of Color Correction in Fusion, Shadow, Midtones, Highlight, Exposure, Equalize

Unit 6: Tracking and Stabilization (2 Lectures)

Track Basics, Uses, Process, Methods and Requisites during Production stage

Unit 7: Render Passes (2 Lectures)

Basics of various Light Passes, Reflection Pass, Refraction Pass, Diffuse Pass, Normal Pass, Shadow Pass, Z-Depth

Unit 8: 3D Environment (2 Lectures)

3D Geometry, Motion Graphics, Animated Matte, 3D Logos, Shape3D, Bender3D, Transform3D, Duplicate 3D, Merge3D, 3D Displacement, Renderer3D

Unit 9: Camera Projection (2 Lectures)

Concept and Uses of Projection, Conversion 2D Image into 3D shot, Image Plane, Clean Plate

Unit 10: Point Cloud (2 Lectures)

Track Markers of a Live Action Sequence, Data usage to Pin and Align objects in Fusion

PRACTICAL LECTURES: 100

Unit 1: Fusion Interface

(5 Lectures)

Viewer, Flow, Console, Timeline, Spline Region, Controls Area, Time Ruler, S1-S6 Buttons

Unit 2: Creating a Composite

(5 Lectures)

Working with a Node Based Composition, Using Loader, Saver, Importing Files and Footages, Exporting

Unit 3: Basic Animation in Fusion

(5 Lectures)

Foreground, Background, Merge, Mask, Graph timeline editor, Corner and Bezier handles, Transform Concatenation

Unit 4: Mask

(10 Lectures)

Working with Polyline Mask, B-Spline, Bitmap Mask, Ellipse, Garbage Matte, Using Mask for Rotoscopy

Unit 5: Text+

(5 Lectures)

Generate Characters, Provide Advanced transformation and shading options, Write-on animation, Loop, Stylized Texts

Unit 6: Color Corrector

(5 Lectures)

Working with Levels, Hue, Saturation, Gain, Brightness, Contrast, Curves, Histogram, Suppress, Equalize, Match color

Unit 7: Chroma Removal

(10 Lectures)

Ultrakeyer, Luma Keyer, Matte Control, Chroma Keyer, Difference Keyer, Lightwrap Process, Extracting Contact Shadows, Faking Reflections, Primatte4

Unit 8: Tracking and Stabilizing

(10 Lectures)

Working with Trackers, Stabilization, Wire Removal, Dirt and Scratch removal, Roto Cleanup

Unit 9: Creating a Custom Keyer

(5 Lectures)

Using Channel Boolean, Color Space tool, BC Tool, Spill Control

Unit 10: Compositing Render Passes

(10 Lectures)

Compositing Render Passes using Merge, Handling Various Light Passes, Reflection Pass, Refraction Pass, Diffuse Pass, Normal Pass, Shadow Pass, Z-Depth

Unit 11: Set Extension

(5 Lectures)

Working with Paint Tool, Copy Polyline Tool, Flip, Transform, Multi Stroke Brush

Unit 12: Camera Projection

(5 Lectures)

Camera Setup, Turning 2D Image into 3D shot, Image Plane, Clean Plate Generation

Unit 13: Day to Night Conversion

(10 Lectures)

Using Color Corrector for Conversion, Levels, Hue, Saturation, Creating Night Lights, Changing Sky

Unit 14: Working with Point Cloud Data

(5 Lectures)

Importing Track Markers of a Live Action Sequence, Using this Data to Pin and Align objects in a Footage

Unit 15: Particles

(5 Lectures)

Emitter, Velocity, Variance, pTurbulence, pBlur, pVortex, pKill, Integrating Particles in a Footage

Suggested Readings

- 1. The eyeon Fusion 6.3: A Tutorial Approach Paperback by Prof. Sham Tickoo Purdue Univ., CADCIM Technologies*
- 2. Blackmagic Design Fusion 7 Studio: A Tutorial Approach by Prof. Sham Tickoo Purdue Univ. (Author), CADCIM Technologies (Author)*

Semester-VI-Bachelor in Arts (Animation & Interior Design)

DSE III: Architectural Walkthrough and On-Job Training

(Credits: Theory-1; Practical-5)

ARCHITECTURAL WALKTHROUGH THEORY LECTURES: 20

Unit 1: Reference

(2 Lectures)

Attributes of a proper Reference, Finding Proper References

Unit 2: Case Study

(6 Lectures)

Studying various Architectural Walkthroughs for visualization and understanding workflow

Unit 3: Modeling

(2 Lectures)

Overview of Architectural Walkthrough Modeling, Doubts Solving regarding Modeling

Unit 4: Shading

(2 Lectures)

Overview of Architectural Walkthrough Shading, Doubts Solving regarding Texturing

Unit 5: Lighting

(2 Lectures)

Overview of Architectural Walkthrough Lighting, Doubts Solving regarding Lighting

Unit 6: Camera

(2 Lectures)

Overview of Architectural Walkthrough Animation, Doubts Solving regarding Camera Animation

Unit 7: Rendering

(2 Lectures)

Overview of Rendering Passes

Unit 8: Compositing

(2 Lectures)

Overview of Compositing, Troubleshooting regarding Compositing

ON-JOB TRAINING:

Mandatory 60 days On-Job Training with a firm in Ranchi

ARCHITECTURAL WALKTHROUGH PRACTICAL LECTURES: 100

Unit 1: Reference <i>Creating Floor Plans and Elevations in AutoCAD</i>	(10 Lectures)
Unit 2: Modeling <i>Importing References in Max/Maya, 3D Modeling</i>	(20 Lectures)
Unit 3: Shading <i>Applying Textures on the 3D Model</i>	(10 Lectures)
Unit 4: Lighting <i>Creating CG Lights, Working on Shadows, Developing Look and Feel</i>	(20 Lectures)
Unit 5: Camera <i>Creating a Camera Animation to create a Walkthrough</i>	(10 Lectures)
Unit 6: Rendering <i>Manage Layers, Passes Creation, Rendering various passes</i>	(10 Lectures)
Unit 7: Compositing <i>Multilayer Compositing of Various Render Passes, Applying Effects, Final Touch ups</i>	(15 Lectures)
Unit 8: Output <i>Rendering the Final Output in a Video Format</i>	(5 Lectures)

Suggested Readings

1. *Autodesk 3ds Max 2014 Bible Paperback* by Kelly L. Murdock
2. *Mastering Autodesk 3Ds Max 2013 Paperback* by Jeffrey M. Harper
3. *Realistic Architectural Rendering with 3ds Max and V-Ray (Autodesk Media and Entertainment Techniques)* by Jamie Cardoso and Roger Cusson
4. *Rendering with mental ray and 3ds Max (Autodesk Media and Entertainment Techniques)* by Joep van der Steen and Ted Boardman

Semester VI-Bachelor in Arts (Animation & Interior Design)

DSE IV: 3D Portfolio

(Credits: Theory-1; Practical-5)

THEORY LECTURES: 20

Unit 1: Reference (2 Lectures)

References, Finding Proper References

Unit 2: Case Study (6 Lectures)

Studying various Portfolios for visualization and understanding workflow

Unit 3: Modeling (2 Lectures)

Overview of 3D Modeling, Doubts Solving regarding Modeling

Unit 4: Shading (2 Lectures)

Overview of 3D Shading, Doubts Solving regarding Texturing

Unit 5: Lighting (2 Lectures)

Overview of 3D Lighting, Doubts Solving regarding Lighting

Unit 6: Camera (2 Lectures)

Overview of 3D Animation, Doubts Solving regarding Camera Animation

Unit 7: Rendering (2 Lectures)

Overview of Rendering Passes

Unit 8: Compositing (2 Lectures)

Overview of Compositing, Troubleshooting regarding Compositing

PRACTICAL LECTURES: 100

Unit 1: Reference <i>Creating Model Sheets and Collecting References</i>	(10 Lectures)
Unit 2: Modeling <i>Importing References in Max/Maya, 3D Modeling</i>	(20 Lectures)
Unit 3: Shading <i>Applying Textures on the 3D Model</i>	(10 Lectures)
Unit 4: Lighting <i>Creating CG Lights, Working on Shadows, Developing Look and Feel</i>	(20 Lectures)
Unit 5: Camera <i>Creating a Camera Animation to create a Portfolio</i>	(10 Lectures)
Unit 6: Rendering <i>Manage Layers, Passes Creation, Rendering various passes</i>	(10 Lectures)
Unit 7: Compositing <i>Multilayer Compositing of Various Render Passes, Applying Effects, Final Touch ups</i>	(15 Lectures)
Unit 8: Output <i>Rendering the Final Output in a Video Format</i>	(5 Lectures)

Suggested Readings

1. *Mental Ray for Maya, 3ds Max, and XSI: A 3D Artist's Guide to Rendering : Introducing Autodesk Maya*
2. *2014* by Boaz Livny
3. *Mastering Autodesk Maya 2014: Autodesk Official Press (Sybex Press Edition)* by Todd Palamar
4. *Introducing Autodesk Maya 2014*
5. *The Art of Maya: An Introduction to 3D Computer Graphics* by T. Hawken
6. *Maya Studio Projects: Game Environments and Props* by Michael McKinley