सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
DEVELOPMENT COMMISSIONER
MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES
MSME TECHNOLOGY CENTRE

MODEL CURRICULUM

Qualification Name: 3D Animator Assistant

Qualification Code:

Version: 2.0

NSQF Level: 3.0

Model Curriculum Version: 2.0

Submitted By:

MSME TECHNOLOGY CENTRE

O/o DC MSME, Ministry of Micro, Small and Medium Enterprises

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NOS / MODULE TEMPLATE

NOS/Module Name: Understand concepts to create Computer Graphics

NOS/Module Code: MSME/3DANI/01

NOS/Module Outcome:

- Understand the fundamentals of computer graphics.
- Install and navigate software for computer graphics.
- Create and manage documents, panels, and workspaces.
- Differentiate between file types, resolution, and colour modes.
- Make selections and perform basic compositing techniques.
- Use layers and masks effectively for editing.
- Apply cropping, transformations, and perspective warping.
- Adjust images using histograms and adjustment layers.
- Perform localized retouching and photo enhancements.
- Utilize typography, guides, and grids for design layouts.
- Manage libraries, save files, and export projects efficiently.

Theory Hours: 30 Practical Hours: 60 Theory Marks: 50 Practical Marks: 50

Unit No	Unit Name	Unit Outcome	Content (Chapter/Topics)	PR Hours	TH Hours	PR Marks	TH Marks
1	Introduction to Computer Graphics	• Gain knowledge about Computer Graphics, Design Styles • Gain Knowledge to install software's	• Basics of Computer Graphics • Software's Installation	1	1	5	5
2	Quick-Start Exercise	• Understand workspace, document creation, and customization • Explore Mac and Windows differences and interface options	• The Start Workspace • Creating New Documents • Mac and Windows Differences • Art boards • Working with Panels • Customize Panels • Customize the Toolbar • Keyboard Shortcuts and Menu Commands • Using Workspaces • Interface Shading Options • Screen Modes • Working with Multiple Documents • Tab Preferences • Document Navigation • Preferences Dialog Box	9	9	5	5
3	Digital Imaging Concepts	• Gain knowledge about file types, resolution, and colour modes • Understand resizing, resampling, and print size considerations	• Understanding File Types • Reviewing RAW Formats • Bitmaps vs. Vectors • Understanding Resolution	5	4	5	5

			• Resize vs. Resample Images • Print Size • Colour Modes				
4	Making Selections and Basic Compositing	• Master selection tools, feathering, copying, and scaling • Explore quick selection, magic wand, and Select Subject • Learn about Select and Mask, quick mask mode, and saving selections	• Selection Tool Overview • Practical Marquee Selection • Feather a Selection • Copy and Paste • Scaling the Image • Modifying Selections • Quick Selection and Magic Wand Tools • Select Subject • Select and Mask Workspace • Quick Mask Mode • Colour Range Command • Saving Selections	5	4	5	5
5	Layers and Masks	• Understand layer basics, selection, and panel options • Explore layer groups, opacity, blend modes, and masks	• Undo and Redo • Background Layer • Opening Images to Layers • Layer Basics • Selecting Layers • Layer Panel Options • Locking Layers • Distribute and Align Layers • Layer Groups • Layer Opacity Options • Understanding Blend Modes • Layer Mask Basics • Gradient Layer Masks • Layer Styles • Flatten Layers	5	2	5	5
6	Crops, Transformations, and Warps	• Master crop tool, non-destructive crops, and canvas adjustments • Learn about perspective crop, straightening, and transformations	• Using the Crop Tool • Non-destructive Crops • Crop to Add Canvas • Canvas Size Dialog Box • Perspective Crop Tool • Straighten an Image • Transform • Content-aware Scale • Puppet Warp • Perspective Warp	5	2	5	5
7	Adjustments	• Understand adjustment layers, levels, curves, and colour adjustments	• Reviewing the Histogram • Adjustment Layers • Levels Adjustment • Adjustment Layer Mask	5	2	5	5

			• Clipping to the Adjustment Layer • Curves Adjustment • Hue/Saturation Adjustment • Vibrance Adjustment • Photo Filter Adjustment • Remove a Colour Cast • Black and White Adjustment				
8	Localized Adjustments and Photo Retouching	• Explore toning tools, healing brushes, patching, and content-aware techniques	• Toning Tools • Spot Healing Brush • Healing Brush • Patch Tool • Content-aware Fill • Content-aware Move • Eraser Tools • Sharpening an Image	5	2	5	5
9	Type, Guides, and Grids	• Learn about type tools, guides, and grid systems for layout	• Type Tool • Area Type Tool • Displaying Rulers • Using Guides • Add a Guide Layout • Smart Guides • Showing the Grid • Grid Preferences	10	2	5	5
10	Libraries, Output, and Updates	• Understand creative libraries, file saving, and quick export • Learn about software updates and their significance	• Creative Libraries • Shared Libraries • Saving Files • Quick Export	10	2	5	5

NOS / MODULE TEMPLATE

NOS/Module Name: Gain in-depth knowledge to create 3D Models

NOS/Module Code: MSME/3DANI/02

NOS/Module Outcome:

- Understand the basics of 3D modelling and differentiate between 2D and 3D.
- Navigate and customize the 3D user interface, including viewports and navigation controls.
- Select, manipulate, and transform objects in a 3D scene.
- Organize and manage the elements of a 3D scene using hierarchies, groups, and layers.
- Create polygonal models using primitives, selection techniques, and modelling tools.
- Model polygonal meshes with references, extrusion, edge loops, symmetry, and other techniques.
- Refine polygon meshes using subdivision surfaces, creasing, smoothing, and deformations.
- Sculpt meshes using brush-based sculpting tools.

- Employ NURBS modelling techniques, including primitives, curves, revolve, loft, and extrude.
- Refine NURBS meshes using Isopar's, curves, trimming, and conversion to polygons.
- Explore advanced modelling tools and alternative plug-ins for specialized modelling tasks.
- Learn hard surface modelling techniques for creating cars and trucks.
- Master organic modelling for characters, bipeds, and quadrupeds.
- Unwrap UVs using the UV editor and apply UV mapping to complex geometry.
- Practice unwrapping UVs for organic models of bipeds and quadrupeds.

Theory Hours: 30 Practical Hours: 60 Theory Marks: NA Practical Marks: 100

Unit No	Unit Name	Unit Outcome	Content (Chapter/Topics)	PR Hours	TH Hours	PR Marks	TH Marks
1	Introduction to 3D	• Learn the basics of 3D and understand the differences between 2D and 3D.	• Introduction to 3D • 2D vs 3D	1	1	5	-
2	3D User Interface	• Explore the 3D interface, projects, viewports, and navigation. • Discover the hotbox, customization options, and workspaces.	• Interface • Projects • Viewports • Navigation • Hot Box • Customize • Workspaces	4	9	10	-
3	Select and Manipulate Objects	• Learn how to select and manipulate objects in 3D space. • Master moving, rotating, scaling, duplicating, and copying objects. • Understand the channel box, attribute editor, and object manipulation techniques.	• Select • Move • Rotate • Scale • Pivot • Duplicate Cut Copy Paste • Channel Box • Attribute Editor • Reset Freeze • Snapping	3	4	10	-
4	Organize 3D Scene	• Discover tools for organizing a 3D scene, such as the outliner, hierarchies, and groups. • Understand group pivots, the hypergraph hierarchy, hiding/showing objects, layers, and selection masks.	• Outliner • Hierarchies • Groups • Group Pivots • Hypergraph Hierarchy • Hide Show • Layers • Selection Mask	5	4	10	-
5	Create Polygonal Models	• Learn polygonal modelling techniques, including using NURBS, polygons, and Boolean operations.	• NURBS Polygon Difference • Polygon Primitives • Selecting Polygons	5	2	10	-

		• Explore polygon primitives, selecting polygons, soft selection, and creating polygonal models like a pine tree.	• Soft Selection • Modelling Pine Tree • Combine • Separate • Booleans				
6	Model Polygonal Meshes	• Understand the use of references and modelling against them. • Explore extrusion, edge loops, bevelling, symmetry, merging, and mirror geometry techniques.	• References • Model Against References • Extrude • Edge Loops & Bevel • Symmetry • Merge Weld • Mirror Geometry • Extrude Path • Polygonal Bridge	5	2	10	-
7	Refine Polygon Mesh	• Learn how to refine polygon meshes using tools such as the modelling toolkit, subdivision surfaces, and non-linear deformations. • Understand techniques like creasing, smoothing, edge flow, and using lattices.	• Modelling Tool Kit • Subdivision Surface • Crease Tool • Smooth • Edge Flow • Non-Linear Deform • Lattice • Object History	5	1	10	-
8	Sculpt Meshes	• Explore the brush interface and sculpting tools for creating detailed meshes.	• Brush Interface & Sculpting	5	1	5	-
9	NURBS Modelling Techniques	• Understand the fundamentals of NURBS modelling, including NURBS primitives, curves, and operations like revolve, loft, open, close, planar, and extrude.	• Understanding NURBS • NURBS Primitives • NURBS Curves • Revolve • Loft • Open Close • Planar • Extrude	5	1	5	-
10	Refine NURBS Meshes	• Learn techniques for refining NURBS meshes, such as using iso parms, NURBS curves, curve surfaces, project curves, trimming, and converting NURBS to polygons.	• Iso Parms • NURBS Curve • Curve Surface • Project Curve • Trim Tool • Convert NURBS to Polygons	5	1	5	-
11	Advanced Modelling	• Discover effective modelling tools and alternative plug-ins for advanced modelling tasks.	• Effective Modelling Tools • Alternatives / Plug-ins	5	1	5	-
12	Hard Surface Modelling	• Explore techniques for modelling hard surface objects like cars, gun, props and trucks.	• Modelling a Car • Modelling a Truck	5	1	5	-

13	Organic Modelling	• Learn techniques for modelling organic shapes, such as characters and animals.	• Modelling a Character / Biped • Modelling an Animal / Quadruped	5	1	5	-
14	Unwrapping UV	• Understand UV mapping and utilize the UV editor. • Approach UV mapping for more complex geometry and unwrap biped and quadruped models.	• UV Editor • Approaching UVs for More Complex Geometry • Unwrapping Organic Modelling Biped and Quadruped Models	2	1	5	-

NOS / MODULE TEMPLATE

NOS/Module Name: Gain Knowledge to Texture, add Lights and Render 3D file

NOS/Module Code: MSME/3DANI/03

NOS/Module Outcome:

- Understand the concepts of rendering and shaders in 3D graphics.
- Explore different types of materials, textures, and shaders.
- Learn to create and manipulate materials using shading networks and hyper shade.
- Apply bump mapping and displacement to enhance surface details.
- Gain proficiency in rendering using Mental Ray and Arnold rendering engines.
- Develop skills in laying out UVs and applying materials and textures to 3D objects.
- Master texturing techniques for organic models, including facial and clothing textures.
- Apply textures to inorganic models for realistic surface effects.
- Understand lighting principles and control light colour, intensity, and shadows.
- Adjust render settings and optimize the quality of the final rendered images.
- Learn basic rendering techniques such as depth of field and motion blur.
- Explore advanced rendering techniques like ray tracing, global illumination, and image-based lighting.
- Gain proficiency in using third-party renderers, specifically Arnold.
- Understand different 3D light types and their real-world counterparts.
- Create and place lights in 3D scenes to achieve desired lighting effects.
- Manipulate light attributes and optimize lighting using Arnold render view.

Theory Hours: 30 Practical Hours: 60 Theory Marks: NA Practical Marks: 100

Unit No	Unit Name	Unit Outcome	Content (Chapter/Topics)	PR Hours	TH Hours	PR Marks	TH Marks
1	3D Materials	• Understand renders, shaders, and textures	• Renders • Shaders • Textures	1	1	5	-

		• Learn about bitmap textures and using the Hyper Shade editor • Creating materials in Hyper Shade and using ramp shaders • Utilize bump displacement for adding texture details • Introduction to Mental Ray and Arnold render engines • Learn about Mental Ray and Arnold materials	• Bitmap • Hyper shade • Creating Material in Hyper shade • Ramp Shader • Bump Displace • Mental Ray • Mental Ray Materials • Arnold • Arnold Materials				
2	Laying out UVs	• Introduction to UVs and their importance • Understand planar and cylindrical UV projections • Learn about spherical and automatic UV projections • Utilize planar and automatic projections for different parts of the model • Approach UVs for more complex geometry	• Introduction to UVs • Understanding Planar and Cylindrical UV Projections • Understanding Spherical and Automatic UV Projections • Using Planar Projections for the Wings • Using Automatic Projections for Small Body Pieces • Approaching UVs for More Complex Geometry	4	9	10	-
3	Apply Materials and Textures	• Learn texturing techniques for polygons and NURBS surfaces • Understand UV mapping and projection methods • Utilize the UV editor and mapping tools • Explore texturing with the 3D Paint Tool	• Texturing Polygons • Basic UV • UV Project • UV Editor • Mapping and UV • NURBS Texturing • 3D Paint Tool	4	4	10	-
4	Texturing Organic Models	• Export UV snapshots and understand seamed vs. un-seamed textures • Create facial and clothing textures • Retouch and clean up textures • Import and assign textures to 3D models • Fine-tune materials and shaders	• Exporting UV Snapshot • Seamed vs. Un-seamed Textures • Creating Facial Textures • Creating Clothing Textures • Retouching and Clean Up • Importing Textures to 3D Software • Assigning Textures • Tweaking Materials / Shaders	5	4	10	-
5	Texturing Inorganic Models	• Learn techniques for texturing inorganic models with roughness and grunge effects	• Roughness / Grunge	5	2	10	-
6	Lighting and Rendering	• Understand different light types and their properties • Control light color, intensity, and shadows • Adjust render settings and ray visibility	• Understanding Basic Light Types • Controlling Light Colour and Intensity • Adjusting the Look and Quality of Shadows	5	2	10	-

		• Create materials for catching shadows • Match lighting to the environment • Configure output settings and render the final sequence	• Adjusting the Render Stats of 3D Objects • Creating a Material to Catch Shadows from the Particles • Creating Lighting to Match the Environment • Adjusting Render Stats and ray Visibility for the Scene • Configuring Output Settings and Rendering the Final Sequence				
7	Basic Rendering	• Explore render settings, lights, shadows, and cameras • Understand depth of field and motion blur effects • Utilize the light editor, render view, and batch render	• Render Settings • Lights & Shadows • Light Fall Off • Cameras • DOF (Depth of Field) • Motion Blur • Light Editor • Render, Render View • Batch Render	5	1	10	-
8	Rendering Techniques	• Learn advanced rendering techniques such as lighting, motion blur, ray tracing, and indirect lighting • Understand final gathering, global illumination, and image-based lighting	• Lighting • Motion Blur • Ray Tracing • Indirect Lighting - Final Gathering, GI • Image Based Lighting	5	1	10	-
9	3rd Party Renderers	• Explore the features of third-party renderers, specifically Arnold • Learn about Arnold lights, mesh lights, render settings, image lighting, depth of field, and motion blur	• Arnold Lights • Arnold Mesh Lights • Render Settings • Image Lighting • DOF Arnold • Motion Blur	5	1	10	-
10	3D Light Types and Their Real-world Counterparts	• Understand how different types of lights in 3D software correspond to real-world lighting scenarios • Learn how to create and place lights in 3D scenes	• Lighting in Context • Light Types • Creating Lights & Placing Lights	5	1	5	-
11	Creating and Placing Lights in 3D	• Master the basics of rendering, common light attributes, shading, and light placement • Explore spot light attributes and their effects on the scene	• Rendering Basics • Common Light Attributes • Shading Basics • Lights and Attributes • Spot Light Attributes	9	2	5	-
12	Light Attributes	• Introduction to the Arnold Render view and its attributes • Learn about unique attributes in Arnold renderer	• Introduction to Arnold Render view • Attributes in Arnold • Unique Arnold Attributes	7	2	5	-

NOS / MODULE TEMPLATE

NOS/Module Name: Gain In-depth knowledge to Animate a 3D Character

NOS/Module Code: MSME/3DANI/04

NOS/Module Outcome:

- Familiarize with the animation interface and its key components, including the graph editor, dope sheet, and motion path.
- Set and manipulate keys to create keyframe animations.
- Utilize animation tools such as animation controls and motion paths to create dynamic animations.
- Add secondary motion and effects to enhance the realism of animations.
- Understand principles of animation, including timing, weight, and secondary motion.
- Explore advanced animation tools like the Trax editor, graph editor, and camera sequencer.
- Master techniques for animating bouncing balls, walk cycles, run cycles, jumps, and flight sequences.
- Blend multiple animations using the Trax editor for seamless transitions.
- Create complex animation scenes, such as acrobatic fight scenes and dialogue interactions.
- Animate facial expressions, including eyes, eyebrows, and lip syncing.
- Apply animation techniques for special effects, like paper folding and time warps.
- Animate swinging characters and create dynamic and expressive movements.
- Gain insights and tips for effective animation practices and workflows.

Theory Hours: 30 Practical Hours: 120 OJT: 60 Practical Marks: 100

Unit No	Unit Name	Unit Outcome	Content (Chapter/Topics)	PR Hours	TH Hours	PR Marks
1	Animation Basics	• Introduction to the animation interface • Setting keyframes and manipulating animation curves • Understanding the graph editor and dope sheet • Using motion paths for animation • Exploring ghosting and grease pencil tools • Play blasting animations and creating cycles • Incorporating sound into animations	• Animation Interface • Set Keys • Graph Editor • Dope Sheet • Break Down Key • Motion Path • Ghost - Ghost Selected • Grease - Panel Menu Pencil • Play Blast • Cycle • Sound	20	10	15
2	Animation Tools	• Working with animation controls and keyframes • Utilizing the graph editor for precise animation control • Creating motion paths and animating cameras • Adding secondary motion to enhance animations	• Working with Animation Controls • Setting Keyframes • The Graph Editor • Creating Motion Paths • Adding the Background Geometry	40	10	15

		• Play blasting animation sequences	• Creating a New Camera for Animation • Setting the Clipping Planes of the Camera • Animating the Camera • Adding Secondary Motion • Play blasting the Animation Sequence			
3	3D Animation	• Understanding the principles of animation • Exploring animation editors like the graph editor, Trax editor, and camera sequencer • Using tools like ATOM and animation layers • Animating various scenarios including bouncing ball, walk cycles, jumps, flight, acrobatic fight scenes, and dialogue interactions • Creating facial expressions and animated effects like paper folding and time warps • Animating swinging characters and incorporating animation tips	• Principles of Animation • Graph Editor • Trax Editor • Camera Sequencer • ATOM • Animation Layers • Animating a Bouncing Ball • Animating a Bouncing Ball with Tail • Animating a Biped Walk Cycle • Animating a Quadruped Walk Cycle • Animating a Biped Run Cycle • Animating a Quadruped Run Cycle • Animating a Biped Jump • Animating a Quadruped Jump • Blending Multiple animations using Trax Editor • Animating a Bird Flight • Animating a Bird Take Off and Landing • Animating an Acrobatic Fight Scene • Planning and Executing a Complete Animation • Animating a Dialogue Interaction Scene • Animating Eyes, Eyebrows and Facial Expressions • Creating an Animated Paper Folding Effect • Animating Time Warps • Animating Swinging Character • Animation Tips	60	10	70

NOS / MODULE TEMPLATE

NOS/Module Name: Understand the Fundamentals of Video Editing

NOS/Module Code: MSME/3DANI/05

NOS/Module Outcome:

- Understand the basics of video editing, colour theory, and editing software.
- Import and organize files, use important tools and shortcuts.
- Apply effects, transitions, and create split-screen and vertical-to-horizontal conversions.
- Master green screen techniques, add titles, and manipulate audio.
- Learn colour correction, grading, and advanced effects like chroma keying and parallax.
- Apply timecode stamps, manage cache data, and prevent software crashes.
- Access free stock videos and templates for editing projects.

Theory Hours: 30 Practical Hours: 60 Theory Marks: NA Practical Marks: 100

Unit No	Unit Name	Unit Outcome	Content (Chapter/Topics)	PR Hours	TH Hours	TH Marks	PR Marks
1	Introduction to Video Editing	• Overview of video editing • Basics of colour theory • Introduction to editing software and its user interface	• Overview • Colour Theory Basics • Basics of Editing Software • Editing software User Interface	10	5	-	10
2	Import and File Organize	• Importing and organizing files in editing software • Creating a new sequence and adding clips to the timeline • Essential tools and shortcuts in editing software • Adjusting and animating clip dimensions • Using blend modes for creative effects • Exporting screenshots and creating split-screen videos • Converting vertical video to horizontal • Applying common blur effects, fading to black, and flipping videos • Introduction to basic 3D effects	• Import and File Organize • New Sequence and Add Clips to Timeline • IMPORTANT Tools & Shortcuts in Editing Software • Tool Bar • Adjust/Animate Clip Dimensions • How To Use Blend Modes • Export SCREENSHOTS • How to create Split Screen Side by Side Video Effect • Convert Vertical video to Horizontal • 3 Ways to Use a Common Blur Effect • How to Fade to Black • Flip Your Videos • Basic 3D	10	5	-	20
3	Compositing & Video Editing	• Chroma keying (green screen) technique • Creating basic titles and templates • Installing fonts into editing software • Saving and using custom text animation presets • Creating simple animated titles and interacting with video • Creating inverted text effects	• HOW TO Green Screen (Chromakey) • Basic Titles and Templates • How To Install Fonts into Editing Software • How to Save and Use CUSTOM TEXT Animation Pre-sets • Create Simple Animated Titles • Wipe or Reveal Title Text with Video Interaction • Inverted Text Effect • separate audio from video • Remove Background Noise	40	20	-	70

		• Separating audio from video and removing background noise • Syncing video clips and music • Using auto ducking and audio pitch changer • Applying phone call voice effects and manipulating audio • Exporting HD videos and optimal settings for YouTube • Keyframes animation and improving videos with keyframes • Adjusting volume using keyframes and applying crop opening transition • Utilizing default, custom, and plugin transitions • Creating before and after wipe slide transitions, flicker transitions, and Luma fade transitions • Understanding the difference between colour correction and colour grading • Performing colour correction and colour grading techniques • Colour grading multiple clips simultaneously using adjustment layers • Inverting colours and creating special effects like Harry Potter's invisibility cloak and parallax universe effect • Automatic mask tracking for easy object tracking • Creating a VHS VCR camcorder video look and cloning yourself in videos • Freezing frames and applying fast forward effects • Reversing clip speed and creating vinyl scratch effects • Applying echo effects, morph cut glitch transitions, and fish eye effects • Preventing editing software crashes and deleting cache data • Adding timecode stamps or timers to footage • Creating L-cuts and J-cuts for seamless transitions • Highlighting elements in videos • Utilizing free stock videos and templates	• INSTANTLY SYNC Video Clips and Music • How To Use the Auto Ducking • Audio Pitch Changer • How to do Phone Call Voice Effect • Make Audio Sound Distant and Muffled • How to Export HD Video • Best EXPORT Settings for YOUTUBE • Key Frames Animation • Use Key Frames to IMPROVE Your Videos • Adjust Volume using Key frames • Crop Opening Transition Effect • Default Transitions • Create Custom Transitions • Use Plugin Transitions • Before and After Wipe Slide Transition • Flicker Transition Effect • EASIEST Luma Fade Transition • The Difference Between Colour Correction and Colour Grading • How To Colour Correct • How to Colour Grade • Colour Grade MULTIPLE Clips AT ONCE Using Adjustment Layers • How to Invert Colours • Harry Potter's Invisibility Cloak • Parallax Universe Effect • Automatic Mask Tracking • How to create a VHS VCR Camcorder Video Look • How to Clone Yourself • A Simple Way to FREEZE FRAME Your Video • Fast Forward Effect (How to Speed Up Footage in Bursts) • How to Reverse Clip Speed + Vinyl Scratch Effect • ECHO EFFECTS • Morph Cut Glitch Transition Effect • FISH EYE EFFECT • Stop Editing Software from Crashing • How To Delete Cache Data in Editing Software • How to add a Timecode Stamp or Timer to your footage				

			• How to make L-cuts and J-cuts • Highlight Things in Your Video • Free Stock Videos and Free Templates				

NOS / MODULE TEMPLATE

NOS /Module: Employability Skills

NOS /Module Code: MSME/ES/01

THEORY HOURS: 30 PRACTICAL HOURS: - THEORY MARKS:100 PRACTICAL MARKS: -

Refer Standard Curriculum developed by NCVET. (30-hours-MC-Employability-Skills_v4-DGT (1).pdf)