

Second – Year Curriculum Syllabus for  
B.Voc. Degree Programme in

# **Graphics and Multimedia**

(Dr Babasaheb Ambedkar Technological University, Lonere)



## IV Semester

Sr. No.	Code	Course title	Weekly Teaching hours			Evaluation Scheme			Credit	Total Marks
			L	T	P	ISE	MSE	ESE		
<b>General Education</b>										
<b>Semester I - Theory</b>										
1	<b>BVGMC401</b>	3 D Animation	3	0	-	25	0	25	3	50
2	<b>BVGMC402</b>	Introduction to 3 D Motion Graphics & VFX	3	0	-	25	0	25	3	50
3	<b>BVGMC403</b>	Introduction to Rendering	3	0	-	25	0	25	3	50
4	<b>BVGMC404</b>	Communication Skill-IV	3	0	-	25	0	25	3	50
<b>Total</b>									<b>12</b>	<b>200</b>
<b>Skill Components</b>										
<b>Lab/Practical's</b>										
5	<b>BVGML405</b>	3 D Animation Lab	0	0	2	25	0	25	1.5	50
6	<b>BVGML406</b>	Rendering-Lab	0	0	2	25	0	25	1.5	50
<b>On-Job-Training (OJT)/Qualification Packs (ANY 1)</b>										
7	Any one Elective from 3 <sup>rd</sup> Semester					50	150	15	200	
<b>Total</b>									<b>18</b>	<b>300</b>

**Syllabus**  
**Name of the Course: B. Voc**

**Semester III**

<b>Subject Name: Principles of Animation and Techniques of Animation</b>		
<b>Course Code : BVGMC301</b>	<b>Semester: III</b>	
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>	
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>	
<b>Credit:3</b>		
	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	DESIGN PRINCIPLE:- Drawings with the help of basic shapes, Animal study, Human anatomy, Shading techniques Live model study, Introduction- Importance of confidence, Difference between “looking at the drawing” and “seeing the drawing”, What is observation, Procedure- How to approach, Importance of Guideline- Line of action, Overcome the fear, Drawing for animation, Understanding Classical Animation & Principles of Animation, Staging, Anticipation, Secondary Action, Exaggeration, Solid drawing, Appeal.	<b>09</b>
<b>UNIT - II</b>	An Introduction on how to make drawings for animation, Shapes and forms, About 2d and 3d drawings, Caricaturing – fundamentals, Exaggeration, Attitude, Silhouettes, Boundary- breaking exercises and warm ups, gesture drawing, Line drawing and quick sketches, Drawing From observation, memory and imagination. Body mechanics and effects.	<b>09</b>
<b>UNIT - III</b>	Drawing for Animation, Exercises and warm ups on pegging sheet, Quick Studies from real life, Sequential movement drawing, Caricaturing the Action. Thumbnails, Drama and psychological effect, Motion Studies, Drawing for motion, MALE AND FEMALE ANATOMY- Structure of male and female body, comparative study of male and female body. Draw human body from 2d and 3d basic shapes. Body parts:- Head, Torso, hands, legs, foot and palm. Face:- Different elements of face and their distribution on face. Study of mouth, nose, eyes and ears.	<b>08</b>
<b>UNIT - IV</b>	The Body language, Re-defining the drawings, Introduction to animation production process, Basic Principles in animation, Squash and stretch, Anticipation, Staging, Straight ahead and pose to pose, Follow through and overlapping action, Slow in and slow out, Arcs, Secondary action, Timing, Exaggeration, Solid drawing, Appeal, Mass and weight, Character acting, Volume, Line of action, Path of action, Walk cycles-animal and human.	<b>08</b>

**Books**

<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
V.K. Jain Richard Williams	Multimedia and Animation Animation survival kit	Khanna Publishing House

<b>Subject Name: Basic of 3-D Modelling</b>	
<b>Course Code : BVGMC302</b>	<b>Semester: III</b>
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>
<b>Credit:3</b>	

	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	Interface of 3DS max, Understanding the concept of four view ports, Aligning object in the each view port in X, Y, Z axis, Hot keys, User Defined hot keys, Using the menus, Floating and docking. Command panel, customizing the interface, Using drag and drop feature, Introduction to different workspaces, "Geometry, Sub objects, Extruding, Welding, bridging etc, Recognizing the workspaces".	<b>09</b>
<b>UNIT - II</b>	Introduction to standard and extended primitives. "Introduction to creating complex objects with Standard and extended primitives", Understanding the spline tools. Introduction to poly tools. Using modifier stack, navigating the modifier stack, File navigation, Introduction to Connection (Hierarchy, Group, and Link).	<b>09</b>
<b>UNIT - III</b>	Introduction to the 3d elevators and walk through, "Introduction to modifiers and modifier gizmos, Familiarity with Modifiers like Bend, edit poly, X form, wave, lathe symmetry etc	<b>09</b>
<b>UNIT - IV</b>	Advanced 3DS Max, Modelling objects with lathe, loft, extrude etc, Creating 3D objects from 2D spline shapes, Organic and inorganic modelling Tool Vray for 3Ds Max	<b>09</b>

<b>Books</b>		
<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
Michael E. Mortenson	3D Modelling, Animation, and Rendering	Create space
Michael G	3D Modelling and Animation	Igi Publishing
Boris Kulagin	3ds Max 8 from Modelling to Animation	Bpb

<b>Subject Name: Texture and Lighting</b>		
<b>Course Code : BVGMC303</b>	<b>Semester: III</b>	
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>	
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>	
<b>Credit:3</b>		
	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	Introduction to texturing, Types of Texture mapping working with Diffuse, Opacity and Reflection, Basics of UV unwrapping	<b>09</b>
<b>Unit II</b>	Creating texture maps, Bump and Displacement Mapping, Introduction to Video post.	<b>09</b>
<b>Unit III</b>	Introduction to standard lights Fundamentals of lighting design, Computer generated lighting, Lighting for a character – Using and blending edges in painting – Creating textures and patterns – Painting an eye, face and hair – Painting real and fantasy characters.	<b>09</b>
<b>Unit IV</b>	Study of lighting in matte painting: direct and indirect lighting, creating bounce, creating mood through lighting– Preparing the background plate – Articulated mattes – Plate restoration – Plate extension – Plate clean up – Adding 3D elements – Creating sky mattes – Static matte and motion matte painting – Color grading – Final output New Tool : - 1.Photoshop 2. Substance painter	<b>09</b>

<b>Books</b>		
<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
-----	Mastering Photoshop	Khanna Publishing House
-----	WebTech Solutions	Khanna Publishing House

<b>Subject Name: Communication Skills III</b>	
<b>Course Code : BVGMC304</b>	<b>Semester: III</b>
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>
<b>Credit:3</b>	

	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	Recognizing and Understanding Communication Styles: What is Communication, Passive Communication, Aggressive Communication, Passive-Aggressive Communication, Assertive Communication, Verbal and Non Verbal Communication, Barriers and Gateways to Communication	<b>09</b>
<b>UNIT - II</b>	Listening Skills: Types of Listening (theory /definition), Tips for Effective Listening Academic Listening- (lecturing), Listening to Talks and Presentations, Basics of Telephone Communication Writing Skills: Standard Business letter, Report writing, Email drafting and Etiquettes, Preparing Agenda and writing minutes for meetings, Making notes on Business conversations, Effective use of SMS, Case writing and Documentation	<b>09</b>
<b>UNIT - III</b>	Soft Skills: Empathy (Understanding of someone else point of view), Intrapersonal skills, Interpersonal skills, Negotiation skills, Cultural Aspects of Communication.	<b>09</b>
<b>UNIT - IV</b>	Group Communication: The Basics of Group Dynamics, Group Interaction and Communication, how to Be Effective in Groups, Handling Miscommunication, Handling Disagreements and Conflicts, Constructive Criticism	<b>09</b>

<b>Books</b>		
<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
<a href="#">Kulbhushan Kumar</a>	<a href="#">Effective Communication Skills</a>	<a href="#">Khanna Publishing House</a>
<a href="#">Varinder Bhatia</a>	<a href="#">Business Communications</a>	<a href="#">Khanna Publishing House</a>

**Subject Name: Digital Animation with Flash – Lab / Animate cc**

Course Code: BVGML301	<b>Semester: III</b>
Weekly Practical: PR: <b>01</b>	
Tut: <b>00</b>	Scheme of Marking TH: --
TH Exam Duration: --	Scheme of Marking PR: <b>25</b> , IA: <b>25</b> , Total: <b>50</b>
Credit: <b>1.5</b>	
<ol style="list-style-type: none"><li>1. Data management in postproduction.</li><li>2. Setting up and preparing editing rooms and sound editing rooms</li><li>3. Logging of rushes</li><li>4. Assisting in rough cuts</li><li>5. Assist in editing line-up</li><li>6. Assist in synchronizing visuals and dialogue</li><li>7. Assist in recording and matching sound effects</li><li>8. Application of 12 principles of animation , Expression, Walking Cycle, Work with Interface</li></ol>	



**Subject Name: Maya Lab**

<b>Course Code: BVGML302</b>	<b>Semester: III</b>
Weekly Practical's: PR: <b>01</b> Tut: <b>00</b>	Scheme of Marking TH: --
TH Exam Duration: --	Scheme of Marking PR: <b>25</b> , IA: <b>25</b> , Total: <b>50</b>
Credit: <b>1.5</b>	

**Content**

1. Navigate the Maya interface
2. Access your objects in the Maya scene graph
3. Use the Maya polygon and NURBS modelling tools
4. Shade and apply texture maps to objects inside of Maya
5. Union: Region belonging to one or both polygons
6. Intersection: Region belonging to both polygons
7. Difference: Region belonging to first but not second
8. Polygon Texturing & create different textures (fabric, fur, wooden, scales, etc), Understanding texturing concept

## Group BVEGM of Qualifier Packs

<b>Subject Name: Modeller MES/Q2501</b>	
Course Code : <b>BVGME317</b>	Semester: <b>III</b>
Weekly Skilling Hours: PR: <b>24</b> Tut: <b>00</b>	Scheme of Marking TH: <b>00</b> , IA: <b>00</b> , Total: <b>00</b>
PR Exam Duration: <b>06 Hours</b>	Scheme of Marking PR: <b>150</b> , IA: <b>50</b> , Total: <b>200</b>
Credit: <b>15</b>	<b>Choose any one from specified Group GEM2 of Qualification Packs</b>
Follow the link for the Syllabus <a href="https://nsdcindia.org/sites/default/files/MESQ2501_Modeller_V1_15_11_2018.pdf">https://nsdcindia.org/sites/default/files/MESQ2501_Modeller_V1_15_11_2018.pdf</a>	

<b>Subject Name: Animator MES/Q0701</b>	
Course Code : <b>BVGME318</b>	Semester: <b>III</b>
Weekly Skilling Hours: PR: <b>24</b> Tut: <b>00</b>	Scheme of Marking TH: <b>00</b> , IA: <b>00</b> , Total: <b>00</b>
PR Exam Duration: <b>06 Hours</b>	Scheme of Marking PR: <b>150</b> , IA: <b>50</b> , Total: <b>200</b>
Credit: <b>15</b>	<b>Choose any one from specified Group GEM2 of Qualification Packs</b>
Follow the link for the Syllabus <a href="http://www.mescindia.org/images/pdf/curriculum/MC_Animator.pdf">http://www.mescindia.org/images/pdf/curriculum/MC_Animator.pdf</a>	

<b>Subject Name: Rendering Artist MES/Q3503</b>	
Course Code : <b>BVGME319</b>	Semester: <b>III</b>
Weekly Skilling Hours: PR: <b>24</b> Tut: <b>00</b>	Scheme of Marking TH: <b>00</b> , IA: <b>00</b> , Total: <b>00</b>
PR Exam Duration: <b>06 Hours</b>	Scheme of Marking PR: <b>150</b> , IA: <b>50</b> , Total: <b>200</b>
Credit: <b>15</b>	<b>Choose any one from specified Group GEM2 of Qualification Packs</b>
Follow the link for the Syllabus <a href="http://www.mescindia.org/qualification-packs.php">http://www.mescindia.org/qualification-packs.php</a>	

**Choose any one from specified Group BVEGM of Qualification Packs**

**\*Skill Practical assessment will be done rules/ procedure of respective Skill Sector Council of India.**

## Syllabus

*Name of the Course: B. Voc*

*IV Semester*

<b>Subject Name: 3D Animation</b>		
<b>Course Code : BVGMC406</b>	<b>Semester: IV</b>	
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>	
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>	
<b>Credit:3</b>		
	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	<p><b>Body Mechanics:-</b> Students learn to use principles of traditional animation within the context of 3D animation by effectively applying them onto the character. 3D character animation. Part of good acting for animation is planning. The students learn to create or collect authentic visual references (both still and video) for animating body mechanics and understanding acting.</p> <p>Good poses are not only essential to create believable physicality but also it helps to clearly convey the character emotion for storytelling. They learn the importance of balance and weight, checking the silhouette all the time to make clearer poses. They learn to act out body mechanics, learn the effect of physics (gravity/friction etc.) and artistic Presentation (composition, staging, silhouette etc.) Students learn to convey Emotion not only in the facial expression but also in the body language. , Curve Editor, time editor, trex editor, pose editor, Expression editor.</p>	<b>12</b>
<b>UNIT - II</b>	<p><b>Facial Expression and Lip Sync:-</b> Foundation of good facial expression depends upon the reference and pre-planning. Detailed expression chart and voice recording is used as a starting point for any facial animation. Students learn to internalize the dialogue and they rehearse the sounds to match the shapes. They also need to draw out key poses before starting to pose in 3D. A good animator needs more skill set than just to be able to animate how to create lip-synch. Students explore how to create the subtle facial expressions to suit the personality of the character and the accent style of the pre-recorded dialogue.</p>	<b>12</b>
<b>UNIT - III</b>	<p><b>Animation and the Body:-</b> Exploration of the diverse ways in which the human form takes shape in animated films, from highly photorealistic representations to stream-of-consciousness movement. Specific examples from 2D,3D, stop-motion and hybrid work will be examined in order to shed light on the construction and animation of the body in contemporary film.</p>	<b>12</b>
<b>Books</b>		
<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
V.K. Jain	Multimedia and Animation	Khanna Publishing House

<b>Subject Name: Introduction to 3 D Motion Graphics &amp; VFX</b>		
<b>Course Code : BVGMC407</b>	<b>Semester: IV</b>	
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>	
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>	
<b>Credit:3</b>		
	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	Concepts for Broadcast animation for logos, channel IDs and montages, Multi-layer compositing, Special effects, Super imposition and titling, Exporting various file formats outputs as per the end user requirements.	<b>07</b>
<b>UNIT - II</b>	Introduction to batch render & work group, Adding cameras & lights to a simple scene to make a complex compositing, Adding 2D back ground and elements into a 3D character layers, Creating object, material IDs for further adding special effects, Effects for digital video 2D layers and 3D layers for more effective outputs, adding particle effects into a scene	<b>07</b>
<b>UNIT - III</b>	Introduction to colour character and keying, "Editing the real time video with CG based scene and merging both of them to create a final output, Exporting various file format, output as per the end user Requirements.	<b>07</b>
<b>UNIT -IV</b>	Introduction to the batch rendering and work groups, Introduction to the concepts of editing in terms of compositing, Adding special effects in built in compositing software to make a simple shot into a Perfect output.	<b>08</b>
<b>UNIT -V</b>	Chroma keying, Luma key, Blue screen, Key frame text & layer Animation & 3D particles, Effects etc. Color correction, Introduction to 3D compositing concepts i.e. Layers and masking, Rot scoping, Rig removal, Morphing.	<b>08</b>
<b>Books</b>		
<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
Pradeep Jain & A.P. Gautam	Engineering AutoCAD	Khanna Publishing House

<b>Subject Name: Introduction to Rendering</b>		
<b>Course Code : BVGMC408</b>	<b>Semester: IV</b>	
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>	
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>	
<b>Credit:3</b>		
	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	This UNIT teaches students about rendering concepts; formats and resolution. Cast shadows, decay rate, Previewing lighting and shadows Creating depth map Shadow, creating ray traced shadows, Concept of lighting system and shadows, Creating area light shadows, setting area light visibility, Creating soft shadows with spot lights, Indirect lighting: Setting illumination for interiors, Tuning global illumination, Global illumination & photons settings.	<b>09</b>
<b>UNIT - II</b>	This UNIT teaches students the advantages of different render software such as mental ray, v-ray, render man etc. Render quality: anti-aliasing, setting color profiles, diagnosing ray tracing, adjust motion blur. Creating fogs rendering fogs, Maya paint effects, paint effect library, paint effect brush setup, animating paint effects, rendering paint effects.	<b>09</b>
<b>UNIT - III</b>	This UNIT teaches students the benefits of layer based rendering. This process enhances the image quality without need of re-Rendering the images again.	<b>09</b>
<b>UNIT -IV</b>	The rendered layers or passes need to be composited to get the final Output. New Tool : - 1.Arnold 2. Mental ray	<b>09</b>

#### Books

<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
	How to Render: The Fundamentals of Light, Shadow and Reflectivity	
	Scott Robertson and Thomas Bertling	

<b>Subject Name: Communication Skills -IV</b>		
<b>Course Code : BVGMC409</b>	<b>Semester: IV</b>	
<b>Weekly Teaching Hours: TH: 03 Tut: 00</b>	<b>Scheme of Marking TH: 25, IA: 25, Total: 50</b>	
<b>TH Exam Duration: 01 Hours</b>	<b>Scheme of Marking PR: --</b>	
<b>Credit:3</b>		
	<b>Content</b>	<b>Hours</b>
<b>UNIT - I</b>	Forms of non-verbal communication; interpreting body-language cues; Kinesics; Effective use of body language. The presentation and oral communication skill will be imparted through Group Discussion, Differences between group discussion and debate; Presentation Skills, Oral presentation and public speaking skills; The course also includes training and skill of Technology-based Communication, power-point presentation. Activities/tasks like role playing, group discussion, public speaking, extempore presentation and interviews will be conducted on regular basis.	<b>18</b>
<b>UNIT - II</b>	Writing Skills: The activities will include: Writing Task: identifying the focus, generating ideas, outlining, etc. Paragraph Structure and Linking Sub-points in a Paragraph Cohesion and UNITY in a paragraph, Minding Punctuation and Proofreading, Summarising, Reviewing and Aspects of Creative Writing. Activities / tasks to be conducted like paragraph writing, essay writing, writing a review of a literary text, writing a summary of a literary text, comprehension and analysis of a literary text, preparing an advertisement. a) Need of knowing language b) Importance of language in present scenario c) Importance of spoken language in professional life d) Simple Phonetics for general awareness	<b>18</b>
<b>Books</b>		
<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Publisher</b>
<a href="#">Kulbhushan Kumar</a>	<a href="#">Effective Communication</a>	<a href="#">Khanna Publishing House</a>
<a href="#">Varinder Bhatia</a>	<a href="#">Business Communications</a>	<a href="#">,Khanna Publishing House</a>

<b>Subject Name: 3D Animation Lab</b>	
<b>Course Code: BVGML406</b>	<b>Semester: IV</b>
<b>Weekly Practicals: PR: 01</b>	<b>Scheme of Marking TH: --</b>
<b>Tut: 00</b>	<b>Scheme of Marking PR: 25, IA: 25, Total: 50</b>
<b>TH Exam Duration: --</b>	
<b>Credit:1.5</b>	
<b>Content</b>	
<ol style="list-style-type: none"> <li>1. Assist in laying background music tracks</li> <li>2. Assist in mixing and mastering video</li> <li>3. Assist in creating titles and subtitles and basic animation sequences</li> <li>4. Understand and assist in the execution of modelling and rendering in 3D animation software.</li> <li>5. Animation basic blocking</li> <li>6. Body Mechanics and Advance Body Mechanics</li> <li>7. Acting, Facial expression and Emotions</li> <li>8. Animation from Storyboard</li> <li>9. Animation from live action video</li> <li>10. Walk through and Camera animation</li> <li>11. Direction for animation</li> </ol>	

<b>Subject Name: Rendering Lab</b>	
<b>Course Code: BVGML408</b>	<b>Semester: IV</b>
<b>Weekly Practicals: PR: 01</b>	<b>Scheme of Marking TH: --</b>
<b>Tut: 00</b>	<b>Scheme of Marking PR: 25, IA: 25, Total: 50</b>
<b>TH Exam Duration: --</b>	
<b>Credit:1.5</b>	
<b>Content</b>	
<p>Introduction to Scene, Preparing the Scene, Basic Settings for Texturing, Create &amp; Assign Textures, Light Setup, V-Ray Rendering Settings</p> <ol style="list-style-type: none"> <li>1. Rendering with V-Ray</li> <li>2. V-ray light setup</li> <li>3. V-ray rendering settings</li> <li>4. HDRI Illumination</li> <li>5. Fine-tuning shadows</li> <li>6. Final render setting</li> </ol>	

### Group BVEGM of Qualifier Packs

<b>Course Code : BVGME305/ BVGME306/ BVGME307</b>	<b>Semester: IV</b>
<b>Weekly Skilling Hours: PR: 24 Tut: 00</b>	<b>Scheme of Marking TH: 00, IA: 00, Total: 00</b>
<b>PR Exam Duration: 06 Hours</b>	<b>Scheme of Marking PR: 150, IA: 50, Total: 200</b>
<b>Credit:15</b>	<b>Choose any one from specified Group GEM2 of Qualification Packs</b>
<b>Choose any one from specified Group BVEGM of Qualification Packs From Sem-III</b>	