Maulana Abul Kalam Azad University of Technology, WB
(Formerly known as West Bengal University of Technology)
Syllabus of B.Sc. in Multimedia Animation & Graphics
Effective from academic session 2025-26

Semester-V
Subject Code : BMAGD 501, 591
Subject Name: Introduction to Post Production and VFX (3L + 2P)

Course Objective:

To introduce students to the foundational concepts, techniques, and workflows of post-production and visual effects using Adobe After Effects. This course aims to develop a fundamental understanding of video compositing, visual enhancement, and motion graphics design, equipping learners with the essential skills required for entry-level roles in the media and entertainment industry.

Sl	Course Outcome
1	Understand the structure of the post-production pipeline and its stages.
2	Identify key roles, responsibilities, and tools used in VFX and compositing.
3	Apply basic animation principles in After Effects for motion design.
4	Perform chroma keying, masking, and blending techniques for scene compositing.
5	Demonstrate use of tracking, stabilization, and rotoscoping tools in visual effects.
6	Create motion graphics sequences with text animation, infographics, and titles.

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BMAGD 501 (3L)

CO	Bloom's Level	Modules	%age of Questions
CO1	2, 3, 4	M2	15%
CO2	1, 3, 5	M2	15%
CO3	1, 3, 4	M3	15%
CO4	2, 3, 5	M3	15%
CO5	1, 2, 4	M5	15%
CO6	1, 2, 6	M6	25%
			100%

Module 1: Overview of Post Production & VFX Industry

- Post-production pipeline in film, TV, and OTT platforms
- Key departments: Editing, VFX, Color Grading, Sound
- Roles and responsibilities in a post-production team
- Career paths and industry trends

Module 2: History and Evolution of VFX

- Milestones in visual effects from classic to modern cinema
- Practical effects vs. digital VFX
- Case studies: *Star Wars*, *Jurassic Park*, *Avatar*, *Avengers*
- Impact of VFX on storytelling and cinematic language

Module 3: Fundamentals of Compositing

- What is compositing? Why is it important?
- Layering, blending, alpha channels, mattes
- Types of compositing: node-based vs. layer-based
- Color space and resolution fundamentals

Module 4: VFX Techniques and Workflow

- Chroma keying, rotoscoping, matte painting
- Motion tracking and camera tracking basics
- Pre-production planning for VFX shots
- Set supervision and on-set data collection

Module 5: Introduction to Motion Graphics

- Difference between VFX and Motion Graphics
- Principles of motion design (timing, spacing, typography)
- Role of motion graphics in advertisements, title sequences, and explainer videos
- Industry examples and breakdowns

Module 6: Ethical and Practical Considerations in VFX

- Ethical implications: deepfakes, digital resurrection, misleading content
- Legal aspects: copyrights, usage rights, licensing
- Time, cost, and software constraints in post-production
- Future of VFX with AI and real-time rendering

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BMAGD 591 (2P)

CO	Bloom's Level	Modules	%age of Questions
CO1	2, 3, 4	M2	15%
CO2	1, 3, 5	M2	15%
CO3	3, 5, 6	M3	15%
CO4	1, 2, 4	M3	15%
CO5	2, 3, 5	M5	15%
CO6	2, 3, 6	M6	25%
			100%

Module 1: Introduction to Compositing in After Effects

- Interface walkthrough and workspace management
- Layer stacking, blend modes, pre-compositions
- Working with alpha channels and transparency
- Importing and organizing media assets

Module 2: Green Screen Removal & Chroma Keying

- Shooting overview for chroma
- Using Keylight plugin for chroma removal
- Spill suppression, edge refinement
- Compositing actors into new digital backgrounds

Module 3: Rotoscoping Techniques

- Using Roto Brush and manual masking tools
- Creating animated mattes and refining edges
- Isolating objects from live-action footage
- Combining roto elements with other footage

Module 4: Motion Tracking

- 2D motion tracking using After Effects built-in tools
- Stabilization and attaching graphics to moving elements
- Corner pin tracking for screen replacement
- Creating track-based text and VFX overlays

Module 5: Motion Graphics Design

- **Text Animation Techniques** (animate-in/out, presets, custom builds)
- **Kinetic Typography** (syncing text with voice, music, dialogue)
- **Movie Title Animation** (typographic sequences, cinematic transitions)
- **Infographics Animation** (charts, UI graphics, visual storytelling)
- **2D Character Animation** (basic puppet animation, walk cycles, facial movement)
- **3D Product Compositing with Real Footage** (matchmoving, layering, lighting match, integration)

Module 6: Final Project – VFX & Motion Graphics Shot

- Plan a final 15–20 second composite shot
- Combine 2–3 techniques: chroma, roto, tracking, motion graphics
- Add final polish: color grading, camera moves, transitions
- Render and present with a breakdown of process steps

Suggested Books & References

1. **"The Visual Effects Arsenal"** by Bill Byrne – A great intro to VFX with After Effects.
2. **"Adobe After Effects Classroom in a Book"** by Adobe Press – Hands-on learning for compositing and motion graphics.
3. **"Compositing Visual Effects"** by Steve Wright – Theoretical foundation for digital compositing.
4. **"Motion Graphics: Principles and Practice"** by Ian Crook & Peter Beare – A deeper dive into motion graphics design.
5. **"The Art and Science of Digital Compositing"** by Ron Brinkmann – For students serious about mastering VFX.

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Subject Code : BMAGD 502, 592
Subject Name: Advance 3D Animation Production (3L + 2P)

Course Objective:

To develop students into proficient 3D animation artists by deepening their understanding of professional production pipelines, advanced character animation, rigging, dynamics, and rendering techniques. This course aims to equip learners with practical experience and creative problem-solving skills necessary to work in film, television, game development, or OTT content creation.

Sl	Course Outcome
1	Explain the professional 3D animation production pipeline and the roles within it.
2	Apply body mechanics principles to produce natural, believable character animations.
3	Create expressive facial animation synced with audio and emotional intent.
4	Build advanced character rigs with facial controls and custom attributes.
5	Implement simulation and particle systems for cloth, fluids, and physical interactions.
6	Produce a final short animated sequence demonstrating animation, lighting, rendering, and storytelling skills.

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BMAGD 502 (3L)

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CO1	2, 3, 4	M2	15%
CO2	1, 3, 5	M2	15%
CO3	1, 3, 4	M3	15%
CO4	2, 3, 5	M3	15%
CO5	1, 2, 4	M5	15%
CO6	1, 2, 6	M6	25%
			100%

Module 1: 3D Animation Production Pipeline

- Overview of the complete 3D pipeline: Pre-production, Production, Post
- Department breakdown: Modeling, Rigging, Animation, Lighting, FX, Rendering
- Asset tracking and pipeline management tools (ShotGrid, FTrack)

Module 2: Advanced Character Animation Theory

- Principles of animation revisited at advanced level (Timing, Spacing, Arcs, etc.)
- Body mechanics and weight distribution
- Acting for animation: emotion, gesture, subtlety
- Dialogue-driven performance

Module 3: Cinematography and Visual Storytelling

- Staging, framing, composition in 3D environments
- Virtual camera movement and lens choices
- Visual continuity and shot planning
- Storyboarding for 3D scenes

Module 4: Facial Animation & Lip Sync

- Anatomy of facial expressions
- Phonemes and visemes
- Blendshape theory and facial rigging types (joint-based vs morph-based)
- Syncing dialogue with emotional performance

Module 5: Theory of Simulations in 3D Animation

- Introduction to physics-based animation and simulation principles
- Overview of dynamic systems: rigid bodies, soft bodies, particles, fluids, and cloth
- Understanding Maya’s simulation architecture: nDynamics and Bifrost

- Concepts of forces, collisions, constraints, and caching in simulation pipelines
- Case studies of simulation use in animation and VFX production

Module 6: Rendering & Optimization

- Rendering concepts (Ray tracing, Rasterization, Sampling, AOVs)
- Render farm usage and batch rendering
- Optimization for faster render times
- Compositing passes in post-production

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BMAGD 592 (2P)

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CO1	2, 3, 4	M2	15%
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CO3	3, 5, 6	M3	15%
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CO5	2, 3, 5	M5	15%
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Module 1: Advanced Character Rigging

- IK/FK switch setup
- Stretchy limbs, spline IK spine
- Facial rigging with blendshapes and controllers
- Custom UI for animators

Module 2: Body Mechanics Animation

- Weight shift, push/pull, jumps, parkour motion
- Quadruped animation
- Interaction with props and environment
- Real-world reference analysis

Module 3: Acting & Performance Animation

- Dialogue-based character acting
- Planning and blocking techniques (pose-to-pose and straight ahead)
- Polish phase and overlap/secondary motion refinement

Module 4: Facial Animation & Lip Sync (Hands-on)

- Importing audio for dialogue
- Keyframing lip-sync manually
- Animating emotion, eyebrow, and eye movement
- Sync tests and review

Module 5: Introduction to Simulations

- Understand the basics of dynamics and simulation in 3D workflows
- Explore nDynamics tools: nCloth, nParticles, and nHair
- Create simple cloth, particle, and soft body simulations
- Learn to control simulations using fields, constraints, and colliders

- Refine and bake simulations for integration into animation scenes

Module 6: Final Animated Scene Production

- Students complete a 10–20 second animated short
- Includes: rigged character, lip sync, lighting, camera movement
- Render final output with breakdowns (Playblast + Rendered)

Suggested Books & References

1. **"The Animator's Survival Kit"** – Richard Williams
   (The foundational book for character animation and motion)
2. **"Stop Staring: Facial Modeling and Animation Done Right"** – Jason Osipa
   (Detailed insight into facial rigging and animation)
3. **"Acting for Animators"** – Ed Hooks
   (Teaches how to incorporate acting theory into animated performance)
4. **"Character Animation Crash Course!"** – Eric Goldberg
   (Great for planning and executing expressive animation)
5. ***Learning Autodesk Maya: Dynamics*** **by Alias Learning Tools -** Focuses on Maya's dynamics engine: particle systems, soft and rigid body simulations, and fluid dynamics.
6. **Official Software Documentation**:
   - *Autodesk Maya Help & Docs*
   - *Blender Manual*
   - *Adobe Substance 3D Painter User Guide*