VIVEKANAND COLLEGE, KOLHAPUR.
(An Empowered Autonomous Institute)

NEP
Syllabus
For

2025-26

B. Voc. Part - III

Bachelor of Vocation in Animation & Film Making

STRUCTURE OF SYLLABUS:

To be implemented from the academic year 2025-2026

1. Title of the course: BACHELOR OF VOCATION (Animation & Film Making)

A. INTRODUCTION

B Voc Animation & Film-Making, also known as Bachelor of Vocation in Animation & Film-Making, is an undergraduate degree program designed to provide students with specialized skills and knowledge in the field of animation. The program combines theoretical learning with practical training to equip students with the necessary tools and techniques to create engaging and visually appealing animated content.

The B Voc Animation & Film-Making program aims to bridge the gap between academia and industry by providing students with industry-relevant skills. It focuses on developing a comprehensive understanding of animation principles, digital media production, 2D and 3D animation, character design, storytelling, motion graphics, and visual effects. Students also learn about industry-standard software and tools used in animation production.

The program incorporates practical training through hands-on projects, workshops, and internships, enabling students to apply their theoretical knowledge in real-world scenarios. This practical exposure helps them develop technical expertise, problem-solving skills, teamwork abilities, and a creative mindset required in the animation industry.

By pursuing a B Voc Animation & Film-Making degree, students gain a solid foundation in animation principles, along with specialized skills in specific areas such as character animation, visual effects, or game development. This prepares them for diverse career opportunities as 2D or 3D animators, character designers, storyboard artists, motion graphics artists, visual effects artists, game artists, or animation directors.

Overall, the B Voc Animation & Film-Making program serves as a comprehensive platform for students to acquire the necessary skills, knowledge, and practical experience needed to excel in the dynamic and ever-evolving field of animation. It empowers individuals to unleash their creativity, express their ideas through animation, and contribute to the growing demand for visually captivating content across various industries.

B. RATIONALE

This rationale highlights the importance and relevance of the B Voc Animation & Film-Making program, focusing on its industry demand, creative potential, and career opportunities.

1. Industry Demand:
The animation industry has witnessed tremendous growth due to the increasing demand for animated content in various sectors. Animation is no longer limited to entertainment alone but has expanded into fields like advertising, gaming, education, simulation, and virtual reality. The B Voc Animation & Film-Making program caters to this demand by preparing students for diverse roles such as 2D/3D animators, character designers, storyboard artists, visual effects specialists, and motion graphics artists. The program ensures that graduates are equipped with the necessary technical skills and industry knowledge to meet the evolving demands of the animation industry.

2. Creative Potential:
Animation is a powerful medium that offers limitless creative possibilities. The B Voc Animation & Film-Making program encourages students to explore their artistic abilities and develop their unique creative vision. Through courses in drawing, design principles, storytelling, and digital art, students learn to bring their imagination to life. The program also focuses on developing skills in visual aesthetics, color theory, and composition, enabling students to create visually stunning and impactful animations. By nurturing their creativity, the B Voc Animation & Film-Making program prepares students to become skilled animators who can push boundaries and contribute innovative ideas to the industry.

3. Technical Skills:
Animation is a blend of artistic expression and technical expertise. The B Voc Animation & Film-Making program provides students with a solid foundation in various technical aspects of animation. Students gain proficiency in industry-standard software and tools used for animation, such as Adobe Creative Suite, Autodesk Maya, and Unity. They learn the principles of 2D and 3D animation, rigging, modeling, texturing, lighting, and rendering. The program also incorporates training in motion capture, virtual reality, and augmented reality, keeping students updated with the latest advancements in the field. The acquisition of these technical skills equips students to handle complex projects and deliver high-quality animation work.

4. Industry Collaborations:
To ensure the program's relevance and to bridge the gap between academia and industry, collaborations with animation studios and professionals are crucial. The B Voc Animation & Film-Making program establishes partnerships with industry leaders to provide students with real-world exposure and opportunities. These collaborations offer internships, workshops, guest lectures, and live projects, enabling students to work alongside professionals and gain valuable industry experience. Such interactions not only enhance students' skills but also provide insights into industry practices, workflows, and emerging trends, preparing them for the challenges and expectations of the professional world.

5. Career Opportunities:
The animation industry offers a wide range of career opportunities, both nationally and internationally. Graduates of the B Voc Animation & Film-Making program have the potential to pursue careers in animation studios, production houses, advertising agencies, game development companies, film and television industry, e-learning companies, and architectural visualization firms. Additionally, the skills acquired during the program also enable entrepreneurship opportunities, such as starting an animation studio or freelancing as a professional animator. The B Voc Animation & Film-Making program equips students with a versatile skill set, opening doors to various job roles and ensuring long-term career prospects.

Conclusion:
The Bachelor of Vocation (B Voc) Animation program is a well-rounded and relevant program that addresses the growing demand for skilled animators. By combining artistic creativity with technical proficiency, the program empowers students to become industry-ready professionals. The B Voc Animation & Film-Making program fosters innovation, nurtures talent, and prepares graduates to thrive in the dynamic and exciting field of animation. With its focus on industry

C. PROGRAM OUTCOMES (POs)

By studying animation & film making students will have a wider horizon in the field of art and will

PO1. Creative Proficiency: Graduates will demonstrate a strong foundation in art and animation principles, and possess the skills necessary to create visually appealing and engaging digital compositions across various mediums and platforms.

PO2. Communication Skills: Graduates will be proficient in written and verbal communication, particularly in the context of business and professional environments, enabling them to effectively communicate ideas, concepts, and narratives to a diverse audience.

PO3. Animation Knowledge: Graduates will have a comprehensive understanding of the history and evolution of animation as an art form, and will be able to apply this knowledge to create compelling and technically proficient animated sequences.

PO4. Technical Expertise: Graduates will be proficient in the use of digital tools and software commonly used in the animation industry, including 3D modeling, texturing, lighting, rigging, dynamics, and compositing. They will possess the skills necessary to create high-quality, professional-grade animations.

PO5. Storytelling and Scriptwriting: Graduates will have the ability to craft engaging stories and develop compelling scripts for animation projects. They will demonstrate proficiency in storyboarding techniques to effectively visualize and plan their narratives.

PO6. E-Learning and Social Media Competence: Graduates will possess the skills to create interactive and engaging e-learning materials, utilizing multimedia and animation techniques to enhance the learning experience. They will also be well-versed in leveraging social media platforms to promote and distribute their work effectively.

PO7. Financial and Project Management Skills: Graduates will have a fundamental understanding of financial accounting principles and project management methodologies applicable to the animation industry. They will be able to effectively manage budgets, timelines, and resources to ensure successful project completion.

PO8. Professionalism and Ethical Awareness: Graduates will demonstrate a strong work ethic, professionalism, and ethical awareness in their practice as animators and artists. They will understand the importance of respecting intellectual property rights and adhering to industry standards and best practices.

D. PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1. Graduates will demonstrate proficiency in using industry-standard animation software and tools to create high-quality 2D and 3D animations.

PSO2. Graduates will be able to apply principles of character design, storytelling, and animation techniques to effectively communicate narratives and emotions through their animated creations.

2. Duration: The duration of the B.Voc. Degree Course will be of **Three years.**

- **B.Voc. Part I - Diploma in Animation & Film Making**
- **B.Voc. Part II - Advanced Diploma in Animation & Film Making**
- **B.Voc. Part III - Bachelor of Vocation in Animation & Film Making**

The final B.Voc degree will be awarded only after completion of three year course. The suggested credits for each of the years are as follows:

Department/Subject Specific Core or Major (DSC)

1. **TITLE: Three Years UG degree in B. Voc. Animation & Film-Making**
2. **YEAR OF IMPLEMENTATION:** Academic year 2023-24 onwards
3. **EXAMINATION PATTERN:** Semester wise for Theory and Practical
4. **STRUCTURE OF COURSE:**

B. Voc. Animation & Film-Making-II-Semester-III & IV

Sr. No.	Course Abbr.	Course code	Course Name	Teaching Scheme Hours/week		Examination Scheme and Marks				Course Credits
				TH	PR	ESE	CIE	PR	Marks	
Semester-V										
1	DSC-VII	DSC24AFM51	3D Dynamics	2	-	40	10	-	50	2
2	DSC-VIII	DSC24AFM52	3D Rigging	2	-	40	10	-	50	2
3	DSE-I	DSC24AFM51	Advanced VFX-I	2	-	40	10	-	50	2
4	MIN-V	MIN24AFM51	2D Animation - II	2	-	40	10	-	50	2
5	FP-I	FPR24AFM51	AF Project 51	2	-	-	-	50	50	2
6	DSC-PR-IX	DSC24PRA59	DSC AFM PR-51	-	4	-	-	50	50	4
7	DSC-PR-X	DSC24PRB59	DSC AFM PR-52	-	4	-	-	50	50	4
8	DSC-PR-XI	DSC24PRC59	DSC AFM PR-53	-	4	-	-	50	50	4
9	DSE-PR-I	DSE24PRA59	DSE AFM PR-51	-	4	-	-	50	50	4
10	MIN-PR-V	MIN24PRA59	MIN AFM PR-51	-	4	-	-	50	50	4
	Total (Semester-V)			**10**	**20**	**160**	**40**	**300**	**500**	**30**
Semester-VI										
1	DSC-IX	DSC24AFM61	Compositing	2	-	40	10	-	50	2
2	DSC-X	DSC24AFM62	3D Animation	2	-	40	10	-	50	2
3	MIN-VI	MIN24AFM61	2D Animation - III	2	-	40	10	-	50	2
4	DSE-II	DSE24AFM61	Advanced VFX-II	2	-	40	10	-	50	2
5	FP-II	FPR24AFM61	Internship	2	-	-	-	50	50	2
6	DSC-PR-XII	DSC24PRA69	DSC AFM PR-61	-	4	-	-	50	50	4
7	DSC-PR-XIII	DSC24PRB69	DSC AFM PR-62	-	4	-	-	50	50	4
8	DSC-PR-XIV	DSC24PRC69	DSC AFM PR-63	-	4	-	-	50	50	4
9	DSE-PR-II	DSC24PRA69	DSE AFM PR-61	-	4	-	-	50	50	4
10	MIN-PR-VI	MIN24PRA69	MIN AFM PR-61	-	4	-	-	50	50	4
	Total (Semester-VI)			**10**	**20**	**160**	**40**	**300**	**500**	**30**
	Cumulative Total (3rd Year)			**20**	**40**	**320**	**80**	**600**	**1000**	**60**
	Three Years UG degree in B. Voc. Animation & Film-Making								**3000**	**180**

Abrr. TH-Theory, PR-Practical, ESE- End Semester Examination, CIE-Continuous Internal Examination

Note: Minimum passing for 40 marks Theory paper = 16 marks
Minimum passing for 10 marks Internal evaluation = 04 marks
Minimum passing for 50 marks Practical = 18 marks
Separate passing for every head- ESE, CIE and Practical

3. Eligibility:

The eligibility condition for admission to B.Voc. programme shall be 10+2 or equivalent, in any stream from any recognized board or university.

4. Medium of Instruction:

The medium of instruction of the course will be **Marathi / English**

5. Pattern: Choice based Credit System (CBCS) Semester Pattern.

6. Examination:

A. Scheme of examination:

- The semester examination will be conducted at the end of each term (both theory and practical examination)
- Theory paper will be of 50 marks each. The practical examination will be of 50 marks and industrial practical training/project work is of 50 marks.
- Question papers will be set in the view of the entire syllabus and preferably covering each unit of the syllabus.

B. Nature of question paper:
There will be in all **Three** questions in each paper of which all should be solved.

General nature of the question paper will be:

Question Number	**Type**		**Marks**
Q.1	Multiple Choice Questions	No internal options.	8 marks
Q.2	Short notes	Any four out of six	16 marks
Q.3	Long answer	Any two out of three	16 marks

C. Standard of Passing:
To pass the examination a candidate must obtain at least 35% i.e 16 marks out of 40 for theory examination and 4 marks out of 10 in internal assessment of each paper. Total minimum 18 marks out of 50 for each paper should be obtained.

For practical examination minimum 50% marks should be obtained.
The result will be declared on the basis of theory and practical examination for each semester during the course.

D. External Students: Not applicable as this is a practical oriented course.

7. University Term: As per academic calendar of the university.

For the first year i.e. Diploma in Animation & Film Making practical examination and theory paper assessment will be done at college level.

8. List of equipment and instruments:

1. Computer Machines
2. Projector
3. Internet Connectivity
4. Smart Board
5. CCTV Camera for Animation Laboratory.

9. Laboratory Safety Equipment:

Part I: Personal Precautions:

1. Except in emergency, **over-hurried activities** are forbidden.
2. **Eating, Drinking and Smoking** in the laboratories is strictly forbidden.
3. **Mobile phones, external hard drives, pen drives are not allowed.**

Part II: Use of Safety and Emergency Equipment:

1. First aid Kits
2. Fire extinguishers (dry chemical and carbon dioxide extinguishers)
3. Management of Local exhaust systems.
4. Sign in register if using instruments.

10. MEMORANDUM OF UNDERSTANDING (MOU):

The purpose of MOUs is to clearly identify the roles and responsibilities of each party (i.e. college and industry partner) as they relate to the implementation of the **B.Voc. Program in Animation & Film Making** at the college.

It is recommended to sign at least **FIVE MOUs** with the industry partners in the related field.

SEMESTER – V

Paper-VII- DSC24AFM51 - 3D Dynamics — 50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Explain the principles of dynamics in 3D animation.	
CO2	Apply particle systems, fluids, and soft body simulations.	
CO3	Analyze dynamic effects to enhance realism in animation projects.	
CO4	Demonstrate dynamic simulations integrated with 3D scenes.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	-	-	2
CO2	3	-	-	3	-	-	3	2	-	2
CO3	2	-	-	2	-	-	2	2	-	2

Course contents:

Unit 1: Introduction to 3D Dynamics
Basics of 3D Simulation & Dynamics
Overview of Physics in Computer Graphics
Introduction to Dynamics tools in Maya, Blender, Houdini, 3ds Max
Working with Timeline & Keyframes

Unit 2: Particle Dynamics
Particle Systems: Concepts & Applications
Emitters & Forces (Gravity, Wind, Vortex, Turbulence)
Particle Instancing
Rendering Particles (Sprites, Blobbies, Streaks)
Practical: Creating Rain, Snow, Sparks

Unit 3: Rigid Body Dynamics
Rigid Body Physics: Active vs Passive Objects
Constraints & Collisions
Dynamics Solvers (Bullet, PhysX, etc.)
Breaking & Shattering Objects
Practical: Falling Objects, Destruction Simulations

Unit 4: Soft Body & Cloth Dynamics
Introduction to Soft Body Dynamics
Cloth Simulation: NCloth, Marvelous Designer Basics
Hair & Fur Dynamics
Muscle & Skin Deformations
Practical: Flag, Curtains, Character Cloth Simulation

Unit 5: Fluid & Natural Effects
Fluid Dynamics: Fire, Smoke, Water, Explosions
Introduction to Bifrost, Phoenix FD, Houdini PyroFX
Ocean & Liquid Simulation
Integrating Dynamics with Lighting & Rendering
Final Project: Full FX Shot with Multiple Dynamics

References Books:

1. The Art of 3D Computer Animation and Effects – Isaac V. Kerlow
2. Digital Visual Effects and Compositing – Jon Gress
3. Introducing Autodesk Maya 2020 – Dariush Derakhshani
4. The Animator's Guide to 3D Dynamics – Jeff Wilson
5. Houdini Foundations – Robert Magee

Paper –VIII-DSC24AFM52 - 3D Rigging

50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Describe the fundamentals of rigging in 3D animation.	
CO2	Apply rigging tools to create skeletons and controls for characters.	
CO3	Analyze rigging workflows for animation efficiency.	
CO4	Demonstrate functional character rigs for 3D projects.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	-	-	2
CO2	3	-	-	3	-	-	3	2	-	2
CO3	2	-	-	2	-	-	2	2	-	2
CO4	3	-	-	3	-	-	3	3	-	2

Course contents:

Unit 1: Introduction to 3D Rigging
Basics of Rigging in 3D Animation
Anatomy & Movement Study (Human/Creature/Mechanical)
Skeleton Setup: Joints, Bones, and Hierarchies
Forward Kinematics (FK) & Inverse Kinematics (IK)

Unit 2: Character Rigging Fundamentals
Creating Skeletons for Characters
IK Handles, Constraints, and Controllers
Custom Attributes & Channel Controls
Setting up Control Curves
Unit 3: Skinning & Deformation
Binding Geometry to Skeleton (Smooth Bind, Rigid Bind)

Weight Painting & Vertex Influence
Correcting Deformation Issues
Blend Shapes (Facial Rigging Basics)

Unit 4: Advanced Rigging Techniques
Facial Rigging (Joints vs Blend Shapes)
Advanced Constraints (Parent, Point, Orient, Aim)
Rigging Props & Mechanical Rigs
Dynamic Rigging (Hair, Cloth, Muscles)

Unit 5: Production & Project
Optimizing Rigs for Animation
Testing Rigs & Troubleshooting
Best Practices for Naming Conventions & File Management
Final Rigging Project: Character / Prop Rig Submission

References Books:

1. Learning Autodesk Maya: The Special Effects Handbook – **Autodesk Maya Press**
2. Stop Staring: Facial Modeling and Animation Done Right – **Jason Osipa**
3. Maya Character Creation: Modeling and Animation Controls – **Chris Maraffi**
4. Body Language: Advanced 3D Character Rigging – **Eric Allen, Kelly L. Murdock**
5. Inspired 3D Character Setup – **Michael Ford, Alan Lehman**

Paper –I: DSC24AFM51-Advanced VFX-I 50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Explain advanced VFX techniques and workflows.	
CO2	Apply compositing and VFX tools for professional-quality effects.	
CO3	Analyze the integration of live-action footage with digital elements.	
CO4	Demonstrate creative VFX sequences in short projects.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	-	-	2
CO2	3	-	-	3	-	-	3	2	-	2
CO3	2	-	2	2	-	-	2	2	-	2
CO4	3	-	-	3	-	-	3	3	-	2

Course contents:

Unit 1: Introduction to Advanced VFX
Overview of VFX industry and pipeline
Pre-production planning for VFX shots
Understanding compositing workflow
Overview of VFX software (Nuke, After Effects, Fusion, Houdini)

Unit 2: Rotoscoping and Keying
Rotoscoping techniques (Bezier, B-spline, Motion blur handling)
Chroma keying & Luma keying
Advanced matte creation and edge refinement
Combining multiple passes for clean plates

Unit 3: Tracking and Matchmoving
2D & 3D tracking principles
Planar tracking (Mocha)

Camera tracking and solving
Object tracking & stabilization
Integrating 3D elements into live-action

Unit 4: Compositing and Matte Painting
Layer-based & Node-based compositing
Color correction & grading for VFX
Depth of field, motion blur & lens effects
Matte painting techniques (digital set extensions, sky replacement)
Environment creation for VFX

References Books:

1. Rendering passes (diffuse, specular, shadow, Z-depth, ambient occlusion)
2. Compositing CG with live-action
3. Particle effects & dynamics integration
4. Final project assembly & shot breakdown
5. Exporting for film, OTT, and broadcast standards

Paper –V-MIN24AFM51- 2D Animation - II 50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Explain intermediate principles of 2D animation such as arcs, anticipation, and staging.	
CO2	Apply digital tools for lip-sync and dialogue-based 2D animation.	
CO3	Analyze timing and spacing in advanced 2D sequences.	
CO4	Demonstrate short 2D animations combining multiple principles.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	2	-	2
CO2	3	-	-	3	-	-	3	3	-	2
CO3	2	-	2	-	-	-	-	3	-	2
CO4	3	-	-	3	-	-	3	3	-	2

Course contents:

Unit 1: Advanced Animation Principles
Recap of 12 Principles of Animation
Secondary Action, Overlapping Action & Appeal
Exaggeration, Timing & Spacing for Realism
Squash and Stretch in Complex Movements

Unit 2: Character Animation
Character Turnaround & Model Sheets
Facial Expressions & Emotions
Lip-Sync Techniques
Acting & Performance Animation

Unit 3: Scene & Background Design
Layout & Staging for Animation
Background Painting Techniques
Perspective in 2D Animation
Camera Movements in 2D (Panning, Zooming, Tracking)

Unit 4: Special Effects in 2D Animation
Animating Natural Elements (Fire, Water, Smoke, Rain)
Shadows & Lighting Effects
FX for Magic, Explosions & Energy Effects
Compositing in 2D

Unit 5: Project Development & Post-Production
Storyboarding & Animatic Creation
Scene Planning & Shot Division
Sound Integration (BGM, Foley, Dialogues)
Final Project: Short 2D Animated Film
Rendering & Output for Multiple Platforms

References Books:

1. Richard Williams – *The Animator's Survival Kit*
2. Preston Blair – *Cartoon Animation*
3. Tony White – *Animation from Pencils to Pixels*
4. Frank Thomas & Ollie Johnston – *The Illusion of Life: Disney Animation*
5. Harold Whitaker & John Halas – *Timing for Animation*

Paper –I-FPR24AFM51- AF Project 51

50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Demonstrate knowledge of animation principles and production pipeline.	
CO2	Apply creative and technical skills to design and develop animation projects.	
CO3	Use industry-standard tools/software for modeling, texturing, rigging, animation, and rendering.	
CO4	Execute a complete animated short project with proper documentation and presentation.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	2	-	-	2	2	2	3
CO2	3	-	-	3	-	-	3	3	3	3
CO3	2	2	-	3	-	-	-	-	3	3
CO4	2	2	-	2	-	-	-	-	3	3

Course contents:

Unit 1: Fundamentals of Animation
History & evolution of animation
Principles of animation (12 principles)
Types of animation: 2D, 3D, Stop-motion, Motion Graphics
Animation project pipeline (Pre-production, Production, Post-production)

Unit 2: Pre-production Design
Concept development & idea generation
Script writing & storyboard creation
Character design & environment design
Animatics & project planning

Unit 3: Production Techniques
2D/3D modeling basics
Rigging & character setup
Keyframe animation techniques
Camera movements & scene composition

Unit 4: Post-production & Effects
Rendering techniques
Visual effects & compositing basics
Editing & sound design integration
Color correction & grading

Unit 5: Project Development & Presentation
Project execution (individual/group)
Final short animation film/project
Documentation & portfolio preparation
Presentation & review (internal/external)

References Books:

1. Richard Williams – *The Animator's Survival Kit*
2. Preston Blair – *Cartoon Animation*
3. Tony White – *Animation from Pencils to Pixels: Classical Techniques for Digital Animators*
4. Norman McLaren – *The Art of Motion: Animation Aesthetics*
5. Ken Priebe – *The Art of Stop-Motion Animation*

Semester- VI

Paper –IX-DSC24AFM61- Compositing 50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Explain the fundamentals of digital compositing and workflow.	
CO2	Apply keying, masking, and tracking techniques in compositing.	
CO3	Analyze multi-layered compositions for visual consistency.	
CO4	Demonstrate professional-level compositing projects integrating VFX and animation.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	-	-	2
CO2	3	-	-	3	-	-	3	2	-	2
CO3	2	-	2	2	-	-	2	2	-	2
CO4	3	-	-	3	-	-	3	3	-	2

Course contents:

Unit 1: Introduction to VFX & Compositing
Fundamentals of Visual Effects (VFX)
Difference between VFX, SFX, CGI
Role of compositing in Post-production
Workflow and Pipeline in VFX Production
Overview of Compositing Software (After Effects, Nuke, Fusion)

Unit 2: Rotoscoping & Masking
Rotoscoping concepts and tools
Masking techniques and layer management
Creating mattes for compositing
Tracking masks to moving objects
Case studies in films & advertisements

Unit 3: Keying & Chroma Techniques
Green Screen & Blue Screen setup
Chroma Keying methods (Luma Key, Spill Suppression)
Edge refinement and light wrapping
Background replacement techniques
Practical applications in news, films, and commercials

Unit 4: Motion Tracking & Match Moving
2D & 3D Motion Tracking
Stabilization of shaky footage
Camera Tracking & Object Tracking
Match Moving – integrating 3D elements into live footage
Set Extensions & Matte Painting basics

Unit 5: Compositing & Rendering
Layer-based vs. Node-based Compositing
Color Correction & Color Grading in Compositing
Visual Effects Integration (Smoke, Fire, Explosions, Particle FX)
Rendering workflow & Output formats
Final Project – Short VFX Composite Sequence

References Books:

1. "The Art and Science of Digital Compositing" – Ron Brinkmann
2. "Digital Compositing for Film and Video" – Steve Wright
3. "The VES Handbook of Visual Effects" – Jeffrey A. Okun & Susan Zwerman
4. "Compositing Visual Effects: Essentials for the Aspiring Artist" – Steve Wright
5. "Adobe After Effects Classroom in a Book" – Adobe Creative Team

Paper –X-DSC24AFM62- 3D Animation

50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Describe the principles of 3D animation including keyframing, motion curves, and cycles.	
CO2	Apply animation techniques to characters, objects, and environments.	
CO3	Analyze timing, spacing, and performance in 3D animated sequences.	
CO4	Demonstrate polished 3D animations suitable for industry portfolios.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	2	-	2
CO2	3	-	-	3	-	-	3	3	-	2
CO3	2	-	2	2	-	-	-	3	-	2
CO4	3	-	-	3	-	-	3	3	-	2

Course contents:

Unit 1: Introduction to 3D Animation
Overview of 3D Animation Industry
Difference between 2D & 3D Animation
Introduction to 3D Software (Maya, Blender, 3ds Max)
Basics of Interface, Navigation & Tools
Understanding Polygons, NURBS & Meshes

Unit 2: Modeling
3D Object Creation (Polygonal, NURBS, Subdivision Modeling)
Character Modeling (Head, Body, Props)
Environment Modeling (Buildings, Nature, Sets)
Low-poly vs High-poly Modeling
UV Mapping & Texturing Basics

Unit 3: Materials, Textures & Lighting
Applying Materials & Shaders
Texture Mapping (Bump, Normal, Specular Maps)
Introduction to Lighting (Key, Fill, Back Light)
Advanced Lighting Techniques (HDRI, Global Illumination)
Rendering Basics

Unit 4: Rigging & Animation Principles
Skeletons & Joints Creation
Skinning & Weight Painting
Introduction to Controllers & Constraints
Principles of Animation in 3D (Timing, Squash & Stretch, Anticipation, Follow-through, etc.)
Character Animation (Walk Cycle, Run Cycle, Lip Sync)

Unit 5: Rendering & Post-Production
Rendering Engines (Arnold, Cycles, V-Ray, Eevee)
Render Settings (Resolution, Frame Rate, Output Formats)
Compositing Basics (After Effects, Nuke, Blender Compositor)
Adding Special Effects (Particles, Dynamics, Physics Simulations)
Final Project: Short Animated Clip

References Books :

"The Animator's Survival Kit" – Richard Williams
"3D Animation Essentials" – Andy Beane
"Introducing Autodesk Maya 2020" – Dariush Derakhshani
"Digital Lighting and Rendering" – Jeremy Birn
"Blender for Dummies" – Jason van Gumster

Paper –VI-MIN24AFM61- 2D Animation-III 50 Hours

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Explain advanced principles of 2D animation including acting and staging.	
CO2	Apply digital techniques for complex 2D character animation.	
CO3	Analyze performance-based 2D animation clips for quality improvement.	
CO4	Demonstrate industry-standard 2D projects integrating multiple principles.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	2	-	2
CO2	3	-	-	3	-	-	3	3	-	2
CO3	2	-	2	-	-	-	-	3	-	2
CO4	3	-	-	3	-	-	3	3	-	2

Course contents:

Unit 1: Advanced Principles of Animation
Review of 12 Principles of Animation (with focus on Acting, Appeal, Staging)
Advanced Timing & Spacing Techniques
Secondary Action, Exaggeration & Anticipation
Animated Performance (Character Expressions & Gestures)

Unit 2: Character Animation
Walk Cycles (personality-based)
Run Cycles (different styles)
Acting for Animation – Dialogue-based acting
Emotional Acting (happy, sad, angry, surprised, etc.)

Unit 3: Lip Sync & Dialogue Animation
Phonemes and Mouth Shapes for Animation
Dialogue Breakdown & Exposure Sheet (X-sheet)
Syncing Voice with Animation
Character Interaction with Dialogue

Unit 4: Scene Planning & Layout
Camera Angles & Composition
Background & Layout Design for Animation
Animating with Perspective
Storytelling through Scene Continuity

Unit 5: Final Project & Post Production
Short Scene Production (from Concept to Final Output)
Editing & Compositing Basics
Adding Sound Effects, Music & Titles
Exporting for Film, Television & Digital Media

References Books:

The Animator's Survival Kit – **Richard Williams**
The Illusion of Life: Disney Animation – **Frank Thomas & Ollie Johnston**
Animation: From Script to Screen – **Shamus Culhane**
Cartoon Animation – **Preston Blair**
Timing for Animation – **Harold Whitaker & John Halas**

Paper –II-DSE24AFM61- Advanced VFX - III **50 Hour**

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Apply advanced compositing techniques using industry-standard VFX software for professional-quality outputs.	
CO2	Design and integrate visual effects such as particle simulations, dynamics, and green screen keying into live-action footage..	
CO3	Demonstrate proficiency in 3D integration (camera tracking, match moving, set extension, CGI compositing).	
CO4	Produce a professional VFX project by following industry workflows, pipelines, and rendering techniques.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	-	3	2	-	2
CO2	3	-	-	3	-	-	3	3	-	2
CO3	2	-	2	-	-	-	-	3	-	2
CO4	3	-	-	3	-	-	3	3	-	2

Course contents:

Unit 1: Introduction to Advanced VFX
Overview of VFX industry pipeline
Advanced compositing workflow
Tools & software (Nuke, After Effects, Houdini, Fusion, Maya)
Understanding visual storytelling with VFX

Unit 2: Compositing Techniques
Multi-layer compositing
Rotoscoping and advanced masking
Chroma keying (green/blue screen removal)
Wire removal and clean-up

Matte painting integration

Unit 3: Motion Tracking and 3D Integration
2D and 3D Camera Tracking
Match moving for live-action integration
Set extension & environment creation
Integrating CGI elements into live footage
Lighting and shadow matching

Unit 4: Particle Systems and Dynamics
Particle effects (smoke, fire, rain, snow, explosions)
Rigid and soft body dynamics
Fluid simulations (water, dust, clouds)
Physics-based VFX
Introduction to Houdini simulations

Unit 5: Final Output and Project
Rendering techniques & optimization
File formats and pipelines for film/OTT/advertisement
VFX project planning & execution
Showreel preparation
Industry standards & professional practices

References Books:

1. The Art and Science of Digital Compositing – **Ron Brinkmann**
2. Digital Compositing for Film and Video – **Steve Wright**
3. The Visual Effects Arsenal: VFX Solutions for the Independent Filmmaker – **Bill Byrne**
4. Matchmoving: The Invisible Art of Camera Tracking – **Tim Dobbert**
5. The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures – **Jeffrey A. Okun & Susan Zwerman**

Paper – II- FPR24AFM61 - Internships **50 Hour**

Course Type: Theory / Practical	Theory
Required/Elective	Required
Prerequisite	-
Teaching Scheme (Lecture/Practical/Tutorial/Drawing)	02/02/00/00 Hours
Total contact Hours (Lecture/Practical/Tutorial/Drawing)	50/00/00/00 Hours
Evaluation Scheme: Theory Theory Paper /Term Work/Oral/Practical	--/--/--/--

Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		
CO1	Identify professional practices and workflows in the animation/VFX industry..	
CO2	Apply acquired knowledge and skills in real-world projects.	
CO3	Demonstrate teamwork, time management, and client handling during internship.	
CO4	Exhibit professionalism, ethics, and responsibility in workplace situations.	

Correlation matrix of Course outcomes with Programmed outcomes (CO-PO)
1=Low correlation, 2=Medium correlation, 3=High correlation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	2	-	-	2	2	2	3
CO2	3	-	-	3	-	-	3	3	3	3
CO3	2	2	-	3	-	-	-	-	3	3
CO4	2	2	-	2	-	-	-	-	3	3

Course contents:

Unit 1: Fundamentals of Animation & VFX
Principles of Animation (Squash & Stretch, Timing, Anticipation, etc.)
2D Animation Basics (Digital Drawing, Frame-by-Frame, Rotoscoping)
Introduction to 3D Animation (Modeling, Texturing, Lighting, Rigging)
VFX Pipeline Overview (Pre-visualization, Production, Post-production)

Unit 2: 2D Animation Production
Storyboarding & Animatics
2D Character Animation (Walk Cycles, Expressions)
Background Design & Layouts
Digital Ink & Paint Techniques
Exporting & Compositing 2D Scenes

Unit 3: 3D Animation & Visual Effects
3D Modeling (Props, Characters, Environment)
Rigging & Character Animation
Camera Animation & Cinematics
Dynamics & Particle Effects (Fire, Water, Smoke, Explosions)
Lighting & Rendering (Arnold, V-Ray, Blender Cycles)

Unit 4: VFX Techniques
Compositing Basics (Adobe After Effects, Nuke)
Rotoscoping & Green Screen (Chroma Keying)
Motion Tracking & Matchmoving
Matte Painting & Set Extensions
CGI Integration with Live Action

Unit 5: Professional Practice & Portfolio Development
Editing & Post-production Workflow
Sound Effects & Background Scoring
Project-based Assignments (Short 2D/3D Animation, VFX Shot)
Teamwork & Industry Best Practices
Show reel / Portfolio Creation & Internship Report