

VIVEKANAND COLLEGE, KOLHAPUR.  
(AUTONOMOUS)



# Syllabus

*For*

*2021-22*

**B. Voc. Part - III**

**Bachelor of Vocation in  
Animation & Film Making**



## **STRUCTURE OF SYLLABUS:**

**To be implemented from the academic year 2021-2022**

### **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.

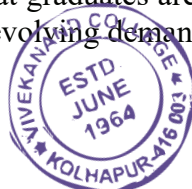
Overall, the B Voc Animation & Film-Making program serves as a comprehensive platform for students to acquire the necessary skills, knowledge, and practical experience needed to excel in the dynamic and ever-evolving field of animation. It empowers individuals to unleash their creativity, express their 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:

Year	Awards	Normal Calendar Duration	Skill Component Credits	General Education Credits
1	<b>Diploma in Animation &amp; Film Making</b>	Two Semesters	36	24
2	<b>Advanced Diploma in Animation &amp; Film Making</b>	Four Semesters	36	24
3	<b>B.Voc in Animation &amp; Film Making</b>	Six Semesters	36	24
			<b>TOTAL</b>	<b>108</b>

General Education Component should not exceed 40% of the total curriculum.

Credits can be defined as the workload of a student in

1. Lectures
2. Practical's
3. Seminars
4. Private work in the library/home
5. Examination
6. Other assessment activities.

The following formula should be used for conversion of time into credit hours.

- a) One Credit would mean equivalent of 15 periods of 60 minutes each, for theory, workshops /labs and tutorials;
- b) For internship/field work, the credit weightage for equivalent hours shall be 50% of that for lectures/workshops;
- c) For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study should be 50% or less of that for lectures/workshops.

## 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 200 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.

For each semester there will be four theory papers. Practical Examination will be conducted at the end of every semester.

Paper Number	Title of Paper (For Semester V)	Total Marks
I	Advanced VFX	40+10 = 50
II	3D Rigging Advanced	40+10 = 50
III	3D Dynamics	40+10 = 50
IV	Motion Graphics	40+10 = 50
	<b>TOTAL</b>	<b>200</b>

The practical examination will be of 200 marks.

Sr. No.	Practical examination	Marks	Internal Assessment	Marks
1	Practical	180	Projects/ Industry Visit	50
2	Portfolio	20		
	<b>Total</b>	<b>200</b>		<b>50</b>

The total weightage of first term is of 450 marks, the details of which are-

Sr. No.	Title	Marks
1	Theory Examination 50 X 4	200
2	Practical Examination.	200
3	Internal Assessment	50
	<b>TOTAL</b>	<b>450</b>



**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	8 marks	No internal options.
Q.2	Short notes	16 marks	Any four out of six
Q.3	Long answer	16 marks	Any two out of three

**C. Standard of Passing:**

To pass the examination a candidate must obtain at least 35% i.e 14 marks out of 40 for theory examination and 4 marks out of 10 in internal assessment of each paper. Total minimum 14 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. CCTV Camera for Animation Laboratory is must.

**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. Workload:**

Each skill-based paper (i.e. Paper no. II, III and IV) will have **four theory** periods per week. There are **four practical** per week. Each practical will be of four periods. The practical batch will have maximum 20 students.



The total workload for one batch will be:

1. <b>One Paper</b> on General Education:	=	06 Theory Periods.
2. <b>Three Papers</b> on skill-based Education: 3 X 4	=	12 Theory Periods.
3. <b>Four Practical</b> work per week: 4 X 4	=	16 Practical periods.
4. <b>Project Work</b> per batch per week:	=	02 Periods

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**TOTAL            36 Periods.**

Working hours will be 5 hours (300 minutes) per day i.e. six periods each of 50 minutes.

### **13. MEMORANDUM OF UNDERSTANDING (MOU):**

The purpose of this MOU 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.

### **B.Voc. Part - III (Bachelor of Vocation in Animation & Film Making) Course structure**

#### **General Structure:**

The diploma course has two semesters, each of 450 marks. There will be **four theory** papers for each semester of 50 marks each.

- 1) Paper-I: Advanced VFX - Theory 40 Marks + Internal 10 Marks.
- 2) Paper-II: 3D Rigging Advanced - Theory 40 Marks + Internal 10 Marks.
- 3) Paper-III: 3D Dynamics - Theory 40 Marks + Internal 10 Marks.
- 3) Paper-IV: Motion Graphics - Theory 40 Marks + Internal 10 Marks.

There will be practical examination for each semester. The duration of practical examination will be of six hours and it will be of 100 marks of which 20 marks are reserved for Portfolio. The internal assessment includes industry training via internships, handling live projects, visits to Advertising Agency and Graphic Design Studios etc.

### **SYLLABUS**

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- (i) Figures shown in bracket indicate the total lectures required for the respective units.
- (ii) The question paper should cover the entire syllabus. Marks allotted to questions should be in proportion to the lectures allotted to respective to units.
- (iii) All units should be dealt with S.I. units.
- (iv) Project / Industrial visit per semester is compulsory.
- (v) Use of recent editions of reference books is essential.
- (vi) Use of Output Devise allowed.





## SEMESTER – V

### Paper-I- Advanced VFX

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		Mapping with PO's
CO1	Design visual effects sequences using storyboarding and pre-visualization that meet production requirements.	3,5,6
CO2	Manage the production of visual effects projects to meet production schedules.	7,8
CO3	Action elements using compositing techniques	4
CO4	Identify hardware and software protocols specific to the field of visual effects.	1,2

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	PO7	PO8	PSO1	PSO2
CO1	-	-	2	-	2	3	-	-	3	3
CO2	-	-	-	-	-	-	3	3	2	-
CO3	-	-	-	3	-	-	-	-	3	1
CO4	1	-	-	-	-	-	-	2	-	2

#### Course contents:

##### Unit-1

VFX Integration and Pipeline Management: This topic covers the integration of visual effects into the overall production pipeline and the management of complex VFX projects.

##### Unit-2

Seamlessly integrate visual effects elements into live-action footage. Students learn advanced green screen keying, rotoscoping, tracking, match moving, and the use of 3D cameras in compositing.

Extension, Dual Column Dialogue, Act numbers, Scene Numbers, short lines, dialogue paragraphs,

Character Arc.12 Hours



**Unit-3**

Reconcile 3D, Matte painting assets, painting/rendering clouds, color grading, perspective, parallax, 3D projection, foreground, mid ground, background compositing, adding depth, atmospheric effects (Rain, fog etc...), Grain management.

**Unit-4**

VFX: Digital video processing and stabilization, Chroma keying, understanding setup and shoot for green screens, Key light, Roto isolate subject for keying, Matte controls, Matte levels, Garbage mask using primate, Spill control, Light wrap, Chroma subsampling.

**Unit-5**

2D and 3D Camera tracking, Track Point quality, Rendering point cloud, setting size and axis, 3D object to location in 3D Space, Tracker settings, Mask, DOF, depth generator.

**References:**

1. Loney sl, Elements of statics & dynamics part 2 dynamics, 2005
2. Zerouni, Craig. Houdini On the Spot. Focal Press, 2007
3. Eric Keller, Maya Visual Effects The Innovator's Guide: Autodesk Official Press, 2015
4. Susan Zwerman, Jeffrey A, The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures, 2016.



**Paper –II: 3D Rigging Advanced****50 Hours**

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

**Course Outcomes (COs):**

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO1	Acquire in-depth knowledge of advanced rigging techniques, including skeletal structures, constraints, and deformations	4, 8
CO2	Create complex character rigs that enable realistic movement and expressive performances in 3D animation.	4, 8
CO3	Implement advanced rigging solutions for props, vehicles, and other objects, ensuring functionality and ease of animation control.	4, 8
CO4	Troubleshoot rigging issues and optimize rigs for efficient animation workflows, considering performance and production requirements.	4, 8

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	PO7	PO8	PSO1	PSO2
CO1	-	-	-	3	-	-	-	2	2	-
CO2	-	-	-	3	-	-	-	2	3	-
CO3	-	-	-	3	-	-	-	1	2	-
CO4	-	-	-	3	-	-	-	2	3	-

**Course contents:****Unit-1**

Advanced Character Rigging: character rigging techniques in Maya. Modular rig skeletons for flexibility and speed. create and utilize custom tools. create IK FK systems, create non flipping twist rigs. Create Own Character and Apply Rigging: Rigging in 3D Animation, rigging techniques on characters.

**Unit-2**

Set Driven Key, Establish Relationships, Character Animation – Skeletons, Clusters, Lattices, Forward and Inverse Kinematics: IKRP Solver, IKSC Solver, IK Spine handle Solver, IK Spring Solver, Human IK Solver.



### **Unit-3**

Introduction to Character setup, Riggers role, Criteria for a good rig, Joints and skeletons, Creating skeleton hierarchy, Constraints, Forward(FK) and Inverse kinematics(IK), FK, IK joint structures, Animation controllers, Blend shapes, Clusters.

### **Unit 4**

Biped Rig- Analysing reference, Anatomy of human body, Bone placements, Setting up Torso, Biped Arms, Fingers, Legs/Foot controls, Skinning, Facial Rig-Anatomy of a face, The Facial Action Coding System(FACS), Mouth shapes, Phonemes, Animation controllers for Face, Character GUI.

### **Unit-5**

Introduction to Character setup, Riggers role, Criteria for a good rig, Joints and skeletons, Creating skeleton hierarchy, Constraints, Forward(FK) and Inverse kinematics(IK), FK, IK joint structures, Animation controllers, Blend shapes, Clusters, Biped Rig- Analysing reference, Anatomy of human body, Bone placements, Setting up Torso, Biped Arms, Fingers, Legs/Foot controls, Skinning, Facial Rig- Anatomy of a face, The Facial Action Coding System(FACS), Mouth shapes, Phonemes, Animation controllers for Face, Character GUI.

### **References:**

1. Kyle Clark. *Inspired 3D character animation*. Premier Press, 2003
2. Chris Neuhahn, *Character Animation and Film Production Projects using 3ds Max w/cd*, Wiley India Pvt. Ltd, 2006
3. Chris Maraffi, *Maya Character Creation: Modeling and Animation Controls*, 2014. 4. Michel Ford and Chris Maraffi, *Inspired 3D Character Setup*, 2016.
5. Kyle Clark, *Inspired 3D Character Animation*, Premier Press, 2003



**Paper –III: 3D Dynamics****50 Hours**

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

**Course Outcomes (COs):**

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO1	Understand the principles and tools used in simulating realistic physical behaviour, such as gravity, collisions, and simulations.	4,8
CO2	Create dynamic and interactive 3D simulations, such as cloth, fluids, rigid bodies, and particle systems.	4, 8
CO3	Apply advanced dynamics techniques to enhance the realism and believability of 3D animations and visual effects.	4, 8
CO4	Optimize and control simulations to achieve desired visual results, balancing realism, artistic intent, and technical constraints.	4, 8

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	PO7	PO8	PSO1	PSO2
CO1	-	-	-	2	-	-	-	2	3	-
CO2	-	-	-	2	-	-	-	1	3	-
CO3	-	-	-	2	-	-	-	1	3	-
CO4	-	-	-	2	-	-	-	2	2	-

**Course contents:****Unit-1**

Dynamics: Introduction to Dynamics and Dyna motive solver, Particles, Emitters, Fields: Air, Drag, Gravity, Newton, Turbulence, Vortex, Volume, Particle collisions, Particle cache, Goals, Soft bodies, Springs, Rigid bodies, Constraints, Effect: Fire, Smoke, Fireworks, Lightening, Shatter, Curve flow, Surface flow, Rendering particles and effects, Maya Paint Effects, Baking simulations, Render types.

**Unit-2**

Fluid Effects: Introduction to Fluids, Fluid field interaction, Fluid attributes, , Creating a non dynamic 3d fluid effects, Creating dynamic 3D effect, Creating fire and smoke using Fluid dynamics, creating a ocean.



**Unit-3** nDynamics: Introduction to nParticles and Nucleus solver, Nucleus node, Nucleus forces, Nucleus plane, Nucleus attributes, nParticles interaction, nConstraints, nCloth: simulations, nCloth dynamics properties, Working with nConstraints, Tearing cloth, Dynamic Property maps, Simulating cloth on moving character, nParticle caching, nConstraints, Creating Smoke simulations in nParticles, Creating liquid simulations in nParticles, Introduction to nHair, Creating Basic hair style, Creating a dynamic curve simulations.

**Unit 4:**

Cloth Simulation: Cloth folds, pipe folds, zig zag folds, spiral folds, half-lock folds, diaper folds, drop folds, Introduction to nCloth, create pivot, wrap deformer, colliders, collision and cloth thickness, applying cloth simulation to rig, point and hinged constraints within nCloth, Set driven keys to help move the cloth, cloth stretching and joint pulling, cloth interaction with environment, real time cloth interaction.

**Unit 5:**

Hair Simulation: Maya Dynamics- nHair, Xgen, basic functions and workflows for Hair simulations, nHair toolset, Hair systems and nucleus nodes, Paint hair follicles tool, Hair clumps, collisions, Hair dynamics settings, caching simulations, groom able splines for short hair, Interactive Grooming, hair splines for longer hair, Hair interaction with different elements of nature. 8 Hours

**References:**

1. Loney sl, Elements of statics & dynamics part 2 dynamics, 2005
2. Zerouni, Craig. Houdini On the Spot. Focal Press, 2007
3. Eric Keller, Maya Visual Effects The Innovator's Guide: Autodesk Official Press, 2015
4. Autodesk Getting Started with Maya 2015
5. Susan Zwerman, Jeffrey A, The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures, 2016.



## Paper –IV: Motion Graphics

50 Hours

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

### Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO1	Explore principles of motion design to create visually engaging and dynamic animated graphics for various media platforms.	3,4,6
CO2	Utilize industry-standard software and tools to design and animate typography, logos, and visual elements.	7,8
CO3	Integrate motion graphics seamlessly into video productions, enhancing storytelling and visual communication.	4,6
CO4	Apply motion design techniques, such as timing, pacing, and transitions, to create effective and impactful visual narratives.	1,2,3

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	PO7	PO8	PSO1	PSO2
CO1	-	-	2	1	-	3	-	-	3	3
CO2	-	-	-	-	-	-	3	3	2	-
CO3	-	-	-	2	-	3	-	-	2	1
CO4	1	2	3	-	-	-	-	2	1	2

### Course contents:

#### Unit-1

Introduction to Motion Graphics

- Definition and purpose of motion graphics
- Historical overview and examples of motion graphics
- Principles and elements of motion design



## **Unit-2**

### Motion Graphics Software

- Introduction to popular motion graphics software (e.g., Adobe After Effects)
- Interface and tools overview
- Keyframing and animation techniques

## **Unit-3**

### Typography in Motion Graphics

- Typography principles and hierarchy
- Kinetic typography techniques
- Using type as a design element in motion graphics

## **Unit-4**

### Graphics and Visual Effects

- Incorporating graphics and images in motion graphics
- Creating and animating shape layers
- Using masks and mattes for visual effects

## **Unit-5**

### Timing and Pacing

- Understanding timing and rhythm in motion graphics
- Creating smooth and dynamic animations
- Applying easing and motion curves

## **References:**

1. "Design for Motion: Fundamentals and Techniques of Motion Design" by Austin Shaw
2. "The After Effects Illusionist: All the Effects in One Complete Guide" by Chad Perkins
3. "Thinking with Type: A Critical Guide for Designers, Writers, Editors, & Students" by Ellen Lupton
4. "Audio for Animation: The Art of Sound Design" by Joseph P. Owens





# Semester- VI

Paper Number	Title of Paper (For Semester IV)	Total Marks
I	Advanced Compositing	40+10 = 50
II	2D Animation	40+10 = 50
III	3D Animation	40+10 = 50
IV	Production Pipeline	40+10 = 50
	<b>TOTAL</b>	<b>200</b>

The practical examination will be of 200 marks.

Sr. No.	Practical examination	Marks	Internal Assessment	Marks
1	Practical	180	Projects/ Industry Visit	50
2	Portfolio	20		
	<b>Total</b>	<b>200</b>		<b>50</b>

The total weightage of first term is of 450 marks, the details of which are-

Sr. No.	Title	Marks
1	Theory Examination 50 X 4	200
2	Practical Examination.	200
3	Internal Assessment	50
	<b>TOTAL</b>	<b>450</b>

## General Structure:

The diploma course has two semesters, each of 450 marks. There will be **four theory** papers for each semester of 50 marks each.

- 1) Paper-I: Advanced Compositing - Theory 40 Marks + Internal 10 Marks.
- 2) Paper-II: 2D Animation - Theory 40 Marks + Internal 10 Marks.
- 3) Paper-III: 3D Animation - Theory 40 Marks + Internal 10 Marks.
- 3) Paper-IV: Production Pipeline II - Theory 40 Marks + Internal 10 Marks.

There will be practical examination for each semester. The duration of practical examination will be of six hours and it will be of 100 marks of which 20 marks are reserved for Portfolio. The internal assessment includes industry training via internships, handling live projects, visits to Advertising Agency and Graphic Design Studios etc.



## Paper –I- Advanced Compositing

50 Hours

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

### Course Outcomes (COs):

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO1	Master advanced compositing techniques, including green screen keying, tracking, rotoscoping, and color grading	3,4,6
CO2	Seamlessly integrate multiple visual elements, such as live-action footage, CG renders, and visual effects, into cohesive final composites	4,6
CO3	Apply advanced color correction and grading techniques to achieve desired visual aesthetics and enhance storytelling	7,8
CO4	Demonstrate proficiency in utilizing industry-standard compositing software to deliver high-quality and visually compelling composites	1,2,3

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	PO7	PO8	PSO1	PSO2
CO1	-	-	2	1	-	3	-	-	3	3
CO2	-	-	-	2	-	3	3	3	-	1
CO3	-	-	-	-	-	-	3	3	2	-
CO4	1	2	3	-	-	-	-	2	1	2

### Course contents:

#### Unit-1

Compositing Techniques: advanced 2D animation compositing and Ink paint techniques. Rotoscopy, Creating color models, Creating color pallets, Understand the dope sheets / X sheets, Arranging and adjusting the layers X- sheet. Match moving, Advanced panning of camera and background, multiple cameras, over lay and character layers.

#### Unit-2

Compositing special effects: 3D graphics, special effects in 2D layers, Broadcast animation logos, channel IDs and Montages. Multi-Layer Compositing, Special Effects, Superimposition and Titling. Exporting various file format outputs. Deep Compositing, Deep Image Data,



Lighting rendering and breaking our 3d work into deliverables for comp, Compositing CG assets, Colour matching, optical enhancements and integration using CG data from 3d for complex interaction, Creating IBL asset.

### **Unit-3**

Video Editing: Introduction- Editing, Film Editing, Types of editing, Digital Editing Devices, Process of Editing, Control Panel, Audio and Video- Effects, Transitions, Syncing, Image Mask, Creating Titles, Templates, Preparations, Shot list, Organizing Rushes, Video file formats, Fine tuning, Cropping, Correction-Color, Gamma. Types of cuts, Cutting on action, Rythem, Timing, Pacing, Phrasing, Physical, Emotional and Event Rhythm.

### **Unit-4**

VFX: Digital video processing and stabilization, Chroma keying, understanding setup and shoot for green screens, Key light, Roto isolate subject for keying, Matte controls, Matte levels, Garbage mask using primate, Spill control, Light wrap, Chroma subsampling.

### **Unit-5**

2D and 3D Camera tracking, Track Point quality, Rendering point cloud, setting size and axis, 3D object to location in 3D Space, Tracker settings, Mask, DOF, depth generator, Reconcile 3D, Matte painting assets, painting/rendering clouds, color grading, perspective, parallax, 3D projection, fore ground, mid ground, background compositing, adding depth, atmospheric effects(Rain, fog etc...), Grain management.

### **References:**

1. Steven E. Browne, *Video Editing- A post production primer*, Focal Press, 2002.
2. Ken Dancyger, *Film and Video Editing*, Focal Press, 2013.
3. Gary Anderson, *Video Editing and Post Production- a Professional guide*, Focal Press, 1997.
4. Thomas A Ohanian, *Digital Nonlinear Editing*, Focal Press, 1998.
5. Arthur Schneider, *Electronic Post production and video tape editing*, Focal Press, 1998. 7. Gerald Millerson, *Techniques of television Production*, Focal Press, 2009.



## Paper –II: 2D 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		Mapping with PO's
CO1	Develop foundational skills in traditional and digital 2D animation techniques, including hand-drawn and digital frame-by-frame animation.	1,5
CO2	Create fluid and expressive character movements, conveying weight, personality, and emotions in 2D animations.	8
CO3	Apply timing, spacing, and anticipation principles to enhance the impact and appeal of 2D animated sequences.	3,4
CO4	Utilize industry-standard software and tools to digitize, refine, and enhance traditional 2D animations for professional output.	8,6

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	PO7	PO8	PSO1	PSO2
CO1	1	-	-	-	3	-	3	-	2	-
CO2	-	-	-	-	-	-	-	3	3	2
CO3	-	-	3	1	-	-	-	-	-	3
CO4	-	-	-	-	-	2	-	3	2	1

### Course contents:

#### Unit-1

Timeline construction and management, Keyframe animation, Motion and shape tweening, working with symbols, Importing from Illustrator and Photoshop, Basic scripting in Action script 3.0, Delivery and file formats, Flash Video examples.

#### Unit-2

Types of graphics, animation types, overview of the animation (flash), 2D animation and its features, drawing tools, types of panels, transformation, property panel, working with objects, group, bitmap, Controlling Movie Clips with code, Working with Dynamic Text fields and Input Text Fields, Loading external content and other flash movies, Dynamic pre loaders, Interactivity with code.



### **Unit-3**

Text box Font, style, hyperlink, property panel, Working with symbols, Planning the development process, Working with XML and dynamically generated content, Advanced animation and interaction concepts, Advanced sound applications,,Integrating video with Flash, Working with Components using Actionscript 3.0.

### **Unit-4**

Grid and guidelines, Onion-skinning, Difference between 2D and 3D animation, Animation in flash, Tweening and motion along a path, Controlling movie playback, Text and hyperlink, adding sound and movie, File format in flash, test movie, Testing the movies, Shock wave movies Action Script overview, Actions panel, Script window, Action Script editor environment, Syntax, script- button, movie clip, frames, basic programming language and action script.

### **Unit-5**

Adding interactivity to web page using Action Script-basics of action script overview, Writing and debugging scripts overview About the Actions panel, Script window, Action Script editor environment, Syntax highlighting Interactivity Creating interaction with Action Script overview, listing a SWF file's variables, About events and interaction, SWF file playback, The Output panel.

### **References**

Suzanne Weixel, *Learning Flash 5*, Prentice Hall, 2001

Joey Lott, *Learning Action Script 2.0 Flash Mx*, Lynda.com, 2004

Crumlish Christian, *Web Design With Html/Flash/Java Script & E-Commerce*, 2015 4.

David. W. Mount, *Macromedia Flash Mx 3D Graphics Bible*, 2008.

Leigh Ronald.W, *Flash 5 For Dummies*, 2016.

Sahni Sartaj, *Flash Mx Actionscript For Designers*, 2014



**Paper –III: 3D Animation****50 Hours**

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

**Course Outcomes (COs):**

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO1	Demonstrate proficiency in creating realistic and dynamic 3D character animations, utilizing keyframe and motion capture techniques.	1,7
CO2	Apply principles of timing, posing, and acting to bring 3D characters to life and convey believable performances.	3,2
CO3	Develop an understanding of animation workflows, pipelines, and collaboration processes in 3D animation production.	6
CO4	Demonstrate proficiency in creating realistic and dynamic 3D character animations, utilizing keyframe and motion capture techniques.	8

**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	PO7	PO8	PSO1	PSO2
CO1	2	-	-	-	-	-	3	-	-	2
CO2	-	-	3	-	-	-	-	-	3	-
CO3	-	-	-	-	-	3	-	-	-	3
CO4	-	-	-	-	-	-	-	3	2	1

**Course contents:****Unit-1**

Biped and Motion Flow (Introduction, Creating and Editing Biped, Motion Panel). Behaviour & Body language Analysis & Implementation (Mechanical, Bird, Animal, Human, Environment).

**Unit-2**

Introduction to Walks with Personality, Locomotion, Body mechanic- Weight and balance, Techniques behind Planning and blocking methods, Understanding Hip.

**Unit-3**

In-depth look of principles of animation, Splining and Polishing methods, Phrasing or bets in shot, Force and forms, Animating Physicality workflow.



#### **Unit-4**

Animation Essentials (Advanced) – Introduction, Import / Export & References,  
Animation Passes, Sound. Exposure Sheet.

#### **Unit-5**

Character Sets and Trax Editor (Introduction, Character sets, Trax Editor, Character Mapping).  
Behavior & Body language Analysis & Implementation (Mechanical, Bird, Animal, Human,  
Environment).

#### **References:**

1. Adam Watkins, *Introduction to 3d graphics & animation using mayaw/cd*,  
international thomson computer pres, 2007.

2. Chris Patmore, *Complete animation course*, barrons educational series inc, 2003.

3. Adam Watkins, *Maya A Professional Guide*, dreamtech, 2003.

4. Danish Derakhshevi, *Introducing Maya8 3D for Beginners*, Wiley Publishing Inc, 2006. 5.

Tom Meade and Shinsaka Anima, *The Complete Reference Maya 6*, Tata MC.Graw–Hill 2004.

7. Frank Thomas, *Illusion of Life* by 9 old men of Disney, 1995.

8. *Autodesk Getting Start with Maya* URL:  
[docs.autodesk.com/mayaul/ 2015/enu/gettingstarted](http://docs.autodesk.com/mayaul/2015/enu/gettingstarted), 2015



**Paper –IV: Production Pipeline****50 Hours**

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

**Course Outcomes (COs):**

Course Outcomes(COs): Upon completion of this course, students will be able to		Mapping with PO's
CO1	Understand the workflow and stages involved in the production of animated projects, from pre-production to post-production.	1,8
CO2	Collaborate effectively with team members in different roles to ensure smooth project progression and efficient asset management.	1,8
CO3	Apply project management techniques to plan, schedule, and monitor the progress of animated projects within time and resource constraints.	1,8
CO4	Demonstrate proficiency in delivering high-quality and finalized animated projects that meet industry standards and client requirements.	1,8

**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	PO7	PO8	PSO1	PSO2
CO1	1	-	-	-	-	-	-	2	2	-
CO2	1	-	-	-	-	-	-	2	2	-
CO3	1	-	-	-	-	-	-	2	2	-
CO4	1	-	-	-	-	-	-	2	2	-

**Course contents:****Unit-1**

Pre-production: This stage focuses on planning and preparation before the actual production begins. It includes activities such as concept development, scriptwriting, storyboarding, character design, and asset creation. Students learn how to effectively plan and organize the project, creating a strong foundation for the production pipeline.

**Unit-2**

Asset Creation: This topic covers the creation of various assets required for the project, including 2D models, textures, animations, visual effects, and audio elements. Students learn about different software





tools and techniques used for asset creation and how to ensure consistency and quality throughout the pipeline.

### **Unit-3**

**Rigging and Animation:** Rigging involves setting up the controls and skeleton structures for characters or objects, allowing them to be animated. Animation focuses on bringing these assets to life by creating convincing movement and performances. Students learn about rigging techniques, character setup, keyframing, motion capture, and other animation methods.

### **Unit-4**

**Rendering and Visual Effects:** Rendering is the process of generating the final images or frames from the 3D scene, while visual effects (VFX) involve enhancing or creating elements that are difficult or impossible to capture in real life. This topic covers rendering techniques, lighting, shading, compositing, and the integration of visual effects into the production pipeline.

### **Unit-5**

**Post-production and Delivery:** This stage involves finalizing the project, editing the footage, adding sound effects and music, and preparing it for distribution or presentation. Students learn about post-production workflows, editing software, sound design, color grading, and final delivery formats.

### **References:**

1. "The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures" edited by Susan Zwerman and Jeffrey A. Okun -
2. "The Filmmaker's Handbook: A Comprehensive Guide for the Digital Age" by Steven Ascher and Edward Pincus -
3. "Managing Projects in the Film and Television Industry" by Fred R. Berger and John S. Caruso -

