GURU KASHI UNIVERSITY

Bachelor of Vocation (Animation)

2025-26

Faculty of Computing

Department of Computer Applications

GRADUATE OUTCOME OF THE PROGRAMME

The Bachelor of Vocation in Animation program equips graduates with strong creative skills and technical abilities, enabling them to excel in diverse animation roles and drive innovation in digital media and entertainment.

PROGRAMME LEARNING OUTCOMES

After completing the program, the Learner will be able to:

- Apply critical thinking to study and analyze problems in various areas of animation and digital media.
- Analyze and evaluate animation techniques, processes, and technologies to identify areas for improvement and enhance their performance.
- Communicate effectively with diverse stakeholders using a variety of modes and techniques, including storyboards, written reports, oral presentations, and visual aids.
- Contribute to the progressive community and society by comprehending animation activities through effective report writing, designing documentation, delivering impactful presentations, and understanding instructions.
- Demonstrate proficiency in animation software, techniques, and tools, including 2D and 3D animation, visual effects, and digital sculpting.
- Conduct independent research and engage in lifelong learning to stay up-to-date with emerging trends and technologies in animation and digital media.

Semester I									
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credits**	**INT**	**EXT**	**Total Marks**
BAV101	Basics of Animation	Core	4	0	0	4	30	70	100
BAV102	Principles of Animation	Core	4	0	0	4	30	70	100
BAV103	Computer Fundamentals	Compulsory Foundation	2	0	0	2	15	35	50
BAV104	Communication Skills in English-I	Ability Enhancement Course	2	0	0	2	15	35	50
BAV105	Sketching	Technical Skill	0	0	6	3	25	50	75
BAV106	Motion graphics	Technical skill	0	0	6	3	25	50	75
BAV110	Entrepreneurship Setup & Launch	ESE	0	0	04	2	15	35	50
Disciplinary Elective- I (Any one of the following)									
BAV107	Corel draw	Disciplinary Elective-I	3	0	0	3	25	50	75
BAV108	Photoshop								
Total			**15**	**0**	**16**	**23**	**180**	**395**	**575**

Semester II									
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credits**	**INT**	**EXT**	**Total Marks**
BAV201	2D Digital Animation	Core	4	0	0	4	30	70	100
BAV202	Introduction to 3D Modeling	Core	4	0	0	4	30	70	100
BAV203	Communication Skills – II	Compulsory Foundation	2	0	0	2	15	35	50
BAV204	2D Animation Lab	Technical skill	0	0	6	3	25	50	75
BAV205	3D Modeling Lab	Technical skill	0	0	6	3	25	50	75
Disciplinary Elective- II (Any one of the following)									
BAV206	Introduction to Texturing and Shading in 3D	Disciplinary Elective-I	3	0	0	3	25	50	75
BAV207	Story Boarding								
Value Added Course									
BAV208	Gender Equality	VAC	2	0	0	2	15	35	50
Total			**15**	**0**	**12**	**21**	**165**	**360**	**525**

Semester III									
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credits**	**INT**	**EXT**	**Total Marks**
BAV301	Advanced Animation	Core	4	0	0	4	30	70	100
BAV302	Audio Editing	Core	4	0	0	4	30	70	100
BAV303	AI Tools for animations	Compulsory Foundation	2	0	0	2	15	35	50
BAV304	Multimedia and Its Applications	Compulsory Foundation	4	0	0	4	30	70	100
BAV305	Digital Compositing	Technical skill	0	0	4	2	15	35	50
BAV306	Roto Scopy	Technical skill	0	0	4	2	15	35	50
Disciplinary Elective- III (Any one of the following)									
BAV307	Digital Painting	Disciplinary Elective-I	3	0	0	3	25	50	75
BAV308	Color Grading								
Total			**17**	**0**	**8**	**21**	**160**	**365**	**525**

Semester IV									
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credits**	**INT**	**EXT**	**Total Marks**
BAV401	Lighting and Rendering	Core	4	0	0	4	30	70	100
BAV402	Rigging and Animation (Maya)	Core	4	0	0	4	30	70	100
BAV403	Minor Project	Compulsory Foundation	2	0	0	2	15	35	50
BAV404	Advanced Compositing-Lab	Technical skill	0	0	6	3	25	50	75
BAV405	Rigging and Animation - Lab	Technical skill	0	0	6	3	25	50	75
Disciplinary Elective- IV (Any one of the following)									
BAV406	Matte painting	Disciplinary Elective-I	3	0	0	3	25	50	75
BAV407	Match move								
Value Added Course									
BAV408	Yoga for Human Excellence	VAC	2	0	0	2	15	35	50
Total			**15**	**0**	**12**	**21**	**165**	**360**	**525**

Semester V									
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credits**	**INT**	**EXT**	**Total Marks**
BAV501	Electronic Media	Core	4	0	0	4	30	70	100
BAV502	Career management for Animation	Core	4	0	0	4	30	70	100
BAV503	Film Direction and Documentary	Core	4	0	0	4	30	70	100
BAV504	Multimedia Systems	Compulsory Foundation	2	0	0	2	15	35	50
BAV505	Digital Sculpting	Technical skill	0	0	4	2	15	35	50
BAV506	Acting for Animation	Technical skill	0	0	4	2	15	35	50
Disciplinary Elective- V (Any one of the following)									
BAV507	3D simulations	Disciplinary Elective-I	3	0	0	3	25	50	75
BAV508	3D effects								
Total			**17**	**0**	**8**	**21**	**160**	**365**	**525**

Semester VI									
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Credits**	**INT**	**EXT**	**Total Marks**
BAV601	Media Laws and Ethics	Core	4	0	0	4	30	70	100
BAV602	Multimedia Security	Core	4	0	0	4	30	70	100
BAV603	Entrepreneurship Development	Compulsory Foundation	2	0	0	2	15	35	50
BAV604	Muscle System	Technical skill	0	0	6	3	25	50	75
BAV605	3D Animation Project	Technical skill	0	0	6	3	25	50	75
Disciplinary Elective- VI (Any one of the following)									
BAV606	Text and image compression	Disciplinary Elective-I	3	0	0	3	25	50	75
BAV607	Audio and video compression								
Value Added Course									
BAV608	Multimedia Communications	VAC	2	0	0	2	15	35	50
Total			**15**	**0**	**12**	**21**	**165**	**360**	**525**
Grand Total			**94**	**0**	**68**	**128**	**995**	**2205**	**3200**

SEMESTER I

Course Title: Basics of Animation	L	T	P	Credits
Course Code: BAV101	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Design, create and animate objects and characters with naturalistic and expressive movements and poses.

CO2. Design and create hand-drawn and/or computer-generated drawings using principles of art, design and composition.

CO3. Select and use appropriate tools and technologies for the development of animation projects.

CO4. Contribute to the planning, implementation and evaluation of animation projects.

Course Content

Unit I **15 hours**

Attempts of creating animation in Paleolithic period: Early approaches to motion in art, Study of Paleolithic cave paintings, sequence paintings & Egyptian series of images.

Unit II **15 hours**

Shadow play The Magic lantern: History of shadow play from 900CE to current period & magic lantern from 16th century and their working mechanism

Unit III **15 hours**

Animation before film: study and working mechanism of Prelude, Thaumatrope, Phénakisticope, Zoetrope, Flip book, Praxino scope & Zoopraxiscope

Unit IV **15 hours**

1888-1929: Earliest animations on film: Developed his projection praxino scope into the Théâtre Optique, Standard picture film, Printed animation film, Development of cinematography, Absolute film, transition to synchronized sound and the rise of Disney.

Transactional Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning**.**

Suggested Reading:

- The Animator's Survival Kit by Richard Williams
- The Illusion of Life: Disney Animation by Frank Thomas and Ollie Johnston
- Timing for Animation by Harold Whitaker and John Halas
- Animation: From Pencils to Pixels - Classical Techniques for the Digital Animator by Tony White.

Web Sources

- https://www.geeksforgeeks.org/basics-of-animation/
- https://www.oneupweb.com/blog/basics-of-web-animation-design-development/

Course Title: Principles of Animation	L	T	P	Credits
Course Code: BAV102	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Create and enhance the production of animation sequences and projects using a variety of principles and techniques related to cinematography and art direction.

CO2. Use storytelling skills to create and enhance the development and execution of animation sequences.

CO3. Use performance theory and skills to create and enhance animation.

CO4. Design and produce layouts using perspective, composition and color theory to enhance visual presentation and mood.

Course Content

UNIT- I **15 hours**

Animation: Definition, Early examples of Animation, History of Animation: Stop Motion Photo Animation, Zoetrope, Thaumat rope, Cell and Paper Animation, early Disney's Cell Animation Processes Types of Animation: Cell Animation, Stop Motion Animation, Computer Animation, 2-D Animation, 3-D Animation

UNIT- II **15 hours**

Skills for an Animation Artist: Visual and creative development of an Artist, importance of observation with minute details, efficiency to draw gestures, facial expressions, good listener, hard work and patience, creative and innovative. Introduction to animation production process

UNIT- III **15 hours**

Basic principles in animation: Key framing and in-betweens, Timing and spacing, Squash and Stretch, Anticipation, Straight-ahead and pose to pose, Follow-through and overlapping action

UNIT- IV **15 hours**

Basic principles in animation: Slow in and slow out, Arcs, Secondary action, Exaggeration, Solid drawing, Staging, Appeal

Transactional Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning**.**

Suggested Reading:

Williams E. Richards, "The Animator's Survival Kit", Faber 3rdEdition

Web Sources

- https://cssanimation.rocks/principles/
- https://www.geeksforgeeks.org/principles-of-animation/

Course Title: Computer Fundamentals	L	T	P	Credits
Course Code: BAV103	2	0	0	2

Total Hours: 30

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Classify binary, hexadecimal and octal number systems and their arithmetic operations.

CO2. Analyze the concept of computer devices and the recognition of the basic terms used in computer programming.

CO3. Identify and learn the details of the components of a personal computer system.

CO4. Demonstrate the functions of computer programming languages.

Course Content

UNIT I **6 hours**

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers.

Number System: Bit, byte, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other, representation of characters, integers and fractions.

UNIT II **6 hours**

Input Devices: Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Speech Recognition Devices, Optical Recognition devices – OMR, OBR, OCR

Output Devices: Monitors, Printer and its Types.

Memories: Units of Memory, Main Memories - RAM, ROM and Secondary Storage Devices - Hard Disk, Compact Disk, DVD.

UNIT III **10 hours**

Computer languages: Machine language, assembly language, higher level language, 4GL. Introduction to Compiler, Interpreter, Assembler, Assembling, System Software, Application Software.

MS Word: Introduction, Creating & Editing Word Document. Saving Document, working with Text: Selecting, Formatting, Aligning, Finding Replacing Text, Bullets & Numbering, Header & Footer, Working with Tables, Properties Using spell checker, Grammar, Auto Correct Feature, Graphics: Inserting Pictures, Clip art, Drawing Objects, Setting page size and margins; Printing documents, Mail-Merge.

UNIT IV **8 hours**

MS-Excel: Environment, Creating, Opening & Saving Workbook, Range of Cells, Formatting Cells, Functions: Mathematical, Logical, Date Time, Auto Sum, Formulas. Graphs: Charts. Types & Chart Toolbar, Printing: Page Layout, Header and Footer Tab.

MS PowerPoint: Environment, Creating and Editing presentation, Auto content wizard using built-in templates, Types of Views: Normal, Outline, Slide, Slide Sorter, Slide Show, Creating, customized templates; formatting presentations, AutoShapes, adding multimedia contents, printing slides

Internet: Basic Internet terms: Web Page, Website, Home page, Browser, URL, Hypertext, Web Server, Applications: WWW, e-mail, Instant Messaging, Videoconferencing.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning**.**

Suggested Readings

- *Sinha P.K. and Sinha P. (2002). Foundations of Computing, First Edition, BPB.*
- *Sanders D.H. (1988). Computers Today, Fourth Edition, McGraw Hill.*
- *Rajaraman V. (1996). Fundamentals of Computers, Second Edition, Prentice Hall of India, New Delhi.*
- *Jain Satish (1999). Information Technology, Paperback Edition, BPB.*

Web Sources

- *https://byjus.com/govt-exams/computer-fundamentals/*
- *https://www.chtips.com/computer-fundamentals/what-is-computer-fundamentals/*
- *https://www.tutorialspoint.com/computer_fundamentals/index.htm*

Course Title: Communication Skill – I	L	T	P	Credits
Course Code: BAV104	2	0	0	2

Total Hours: 30

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Formulate an outline for effective Organizational Communication.

CO2. Summarize the information, ideas, concepts and opinions from a variety of sources.

CO3. Attain the competence in oral, written, and visual communication.

CO4. Learn the correct practices about the strategies of Effective Business writing.

Course Content

UNIT I **8 hours**

English Language: Sentence, Sentence Formation, Parts of speech, Tenses, Active passive voice, Direct/Indirect speech, Vocabulary.

Business Communication: Definition, Types, Medias, Objectives, Modals, Process and Barriers to communication in an organization & ways to handle and improve barriers of business communication.

UNIT II **7 hours**

Oral Communication: Verbal communication and its types, Non- Verbal Communication and its types.

Listening Skills: Types of listening and Traits of a good listener, Note taking, barriers to listening & remedies to improve listening barriers, Cambridge Tests of listening.

UNIT III **7 hours**

Reading Skills: Newspaper / Magazine/ Article Reading from English Newspaper, Cambridge Readings.

UNIT IV **8 hours**

Writing Skills: Essay Writing, Letter writing: Formal, informal and Job –application, Resume writing.

Presentation Skills: Presentation Purpose in Business world, how to Prepare PPT, Tips for the required body language while delivering the presentation in front of a third party.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings

- *Kumar, S., &Lata, P. (2011). Communication skills. Oxford University Press.*
- *Training, M. T. D. (2012). Effective communication skills. Bookboon.*
- *Hargie, O. (Ed.). (1986). The handbook of communication skills (p. 37). London: Croom Helm.*

Web Sources

- *https://haiilo.com/blog/top-5-communication-skills-and-how-to-improve-them/*
- *https://www.thebalancemoney.com/communication-skills-list-2063779*
- *https://corporatefinanceinstitute.com/resources/management/communication/*

Course Title: Sketching	L	T	P	Credits
Course Code: BAV105	0	0	6	3

Total Hours: 90

Learning Outcomes

After the completion of the course the learner will be able to

CO1. To work independently and define success for themselves.

CO2. Knowledge and skills in the use of basic tools, techniques, and processes sufficient to work from concept to finished product, including knowledge of paints and surfaces

CO3. To explore the expressive possibilities of various media, and the diverse conceptual modes available to the painter.

CO4. An understanding of basic principles of design and color, concepts, media and formats

Course Content

Unit I: Introduction for drawing in animation

An introduction of how to make drawings for animation, shapes and forms, about 2D and 3D drawings, Life drawing, Caricaturing-fundamentals, Exaggeration, Silhouette.

Unit II: Background Elements

Background elements, trees, mountains, clouds, water bodies, meadows, buildings, science fiction story backgrounds, backgrounds of mythological stories perspective drawing Lights and shadows day night scenes. Perspective drawing Lights and shadows day night scenes, Concept of layers, Background, stage, foreground elements, Layout designs.

Unit III: Human Anatomy

MALE AND FEMALE ANATOMY- Structure of male and female body, comparative study of male and female body. Draw human body from 2d and 3d basic shapes.
Body parts: - Head, Torso, hands, legs, foot and palm.
Face: - Different elements of face and their distribution on face. Study of mouth, nose, eyes and ears.

Unit IV: Child, Animal and cartoon study

Child, Animal and cartoon study- Understanding child's figure, proportion and construction of child body, face, chubbiness, hand, feet and gestures. Animals from basic forms, understanding motion and grace of animals, turning animals to character, face, legs, tails, perspectives. Understanding cartoon characters, drawing from basic shapes, line of action, distortion of proportion, cartoon faces, eyes, mouths, hairs, nose, hands, feet, gestures and poses.

Course Title: Motion Graphics	L	T	P	Credits
Course Code: BAV106	0	0	6	3

Total Hours: 90

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Use After Effects software

CO2. Implement 2D animation applications

CO3. Animate with different techniques (Frame, Key frame, Cut-out, Stop-motion, etc.) using After Effects software.

CO4. Make the animations ready for broadcasting.

Unit I: Introduction to Motion Graphics

a) Overview of Motion Graphics: Definition and applications.

b) History and Evolution of Motion Graphics.

c) Fundamental Principles: Key frames, timing, and spacing.

d) Software Introduction: Adobe After Effects, Cinema 4D, and other industry-standard tools.

e) Basic Animation Techniques: Transformations, transitions, and easing.

Unit II: Design Principles and Typography

a) Design Basics: Color theory, composition, and balance.

b) Typography in Motion: Choosing fonts, kerning, and animating text.

c) Creating Dynamic Text Animations: Text layers, animators, and effects.

d) Integrating Graphic Elements: Logos, icons, and images.

e) Case Studies: Analyzing successful motion graphic designs.

Unit III: Visual Effects and Compositing

a) Introduction to Visual Effects: Basic concepts and workflows.

b) Keying and Masking: Techniques for background removal and compositing.

c) Working with Particles and Simulations: Particle systems, emitters, and dynamics.

d) 3D Integration: Combining 2D and 3D elements.

e) Green Screen Techniques: Shooting, keying, and compositing.

Unit IV: Storytelling and Project Development

a) Narrative Techniques: Storyboarding and planning.

b) Concept Development: Ideation and conceptualization.

c) Layer Management and Precomposing: Organizing projects efficiently.

d) Sound Design: Incorporating audio elements and syncing with visuals.

e) Final Project: Creating a complete motion graphic piece from concept to final render.

Course Title: Entrepreneurship Setup & Launch Course	L	T	P	Cr.
Course Code: BAV110	0	0	04	02

Introduction:

This semester lays the foundation for the learner to understand what entrepreneurship is, beyond just starting a business. It introduces key ideas like problem-solving, value creation, and self-awareness. The learner will begin exploring basic business concepts while discovering their own interests and strengths.

Learners Objective:

CO1. Understand the core concepts of entrepreneurship through relatable, real- life examples.

CO2. Begin to see themselves as problem-solvers and creators.

CO3. Learn about business paths and choose one to try based on interest or local fit.

CO4. Launch a micro-hustle (online or offline) to earn their first income.

CO5. Build confidence and self-belief by doing.

Outcome: By the end of this semester, learners will start a simple business activity, earn their first income, and build belief in their ability to do business.

Guiding Principles/Approach:

This syllabus is built on principles of **experiential learning, growth mindset development**, and **identity-first learning**. Drawing from learning science and behavior design, the course shifts students from passive learning to *active doing*, where they try out small business activities in real contexts. The design helps students not just learn entrepreneurship, but begin to see themselves as entrepreneurs. Emphasis is placed on *small wins, peer collaboration, and locally relevant opportunities* to ensure learning feels achievable and connected to their realities. The curriculum focuses on conceptual understanding without heavy theory, combining *practical action, reflection, and*

collaboration. By making progress visible and success feel possible, it plants the seeds of self-reliance, initiative, and long-term motivation.

Semester Syllabus:

Format: 12 weeks, 4 hours/week | 2 credits
Revenue Target: ₹10,000

Week	Learning Goal	Measurable Outcome
1	Understand what entrepreneurship is and who can be an entrepreneur	Students define entrepreneurship in their own words and list 2 entrepreneurs from their local area or community
2	Connect personal identity to entrepreneurship (strengths, interests, struggles)	Students create a "value map" showing how a skill/interest/problem from their life could become a business opportunity
3	Learn about 5 business paths: content creation, dropshipping, cloud kitchen/food business, gig economy and local services	Students explore 1–2 examples from each domain and share one they're most curious to try and why
4	Choose a path and generate a basic business idea	Students write down a clear offer (what, for whom, why) and one way to reach their customer
5	Take first real action: message, post, pitch, or sell	Students reach out to or serve 1 real potential customer and record what happened

6	Reflect on first attempt and share with peers	Students share their result, a challenge faced, and one idea to improve next time
7	Improve and try again: aim for first ₹100	Students apply a change, try again, and aim to make their first ₹100 or get meaningful response
8	Learn how to identify and understand your target customer	Students talk to 2 potential customers or observe them and list 3 insights about their needs
9	Learn how to serve your target audience better	Students improve one part of their offer (product, delivery, messaging, or interaction) based on customer feedback or need
10	Explore core entrepreneurial values (resilience, honesty, effort)	Students reflect on 1 value they're building and show it in a business task or peer story
11	Focus on earning and staying consistent	Students complete a second earning task and track their consistency (e.g., same product or message for 3 days)
12	Reflect on earnings, grit, and how to keep going	Students record total earnings, one resilience moment, and one support system or habit they'll continue with

Weekly Component:

Component	Duration	Description
Learning Module	~1.5 hrs	- Introduces key concepts in a simple and engaging way - Includes, examples, and 1–2 interactive discussions or quizzes

Action Lab	~2 hrs	- Hands-on task on the weekly concept - Includes step-by-step guidance, templates, and worksheets - Ends with a submission (e.g., video, reflection, or proof of action)
Resources	Self-paced	- Supplementary videos, short readings, real-life stories, and tools to deepen understanding at their own pace

Evaluation Criteria

Evaluation Component	Description	Weightage
Weekly Task Completion	Timely submission of weekly tasks including reflections, activities, quizzes etc.	40%
Target Completion	Performance-based evaluation on hitting **revenue or profit targets** (e.g., generating ₹10,000 revenue)	30%
Final Project	A comprehensive project based on the semester's theme	30%

Course Title: Corel Draw	L	T	P	Credits
Course Code: BAV107	3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Navigate the Corel DRAW interface.
CO2. Explore viewing modes and customizing options.
CO3. Create and manipulate objects.
CO4. Outline, fill, and transform objects.

Unit I: 10 hours

Introduction to Corel DRAW

Overview of Vector Graphics: Differences between vector and raster graphics. Getting Started with Corel DRAW: Interface, tools, and workspace customization. Basic Drawing Tools: Lines, shapes, curves, and Bezier tools. Working with Color: Color palettes, fills, and outlines. Basic Text Handling: Adding, formatting, and editing text.

Unit II: 10 hours

Advanced Drawing Techniques

Object Management: Grouping, ungrouping, locking, and aligning objects. Layers and Organization: Using layers for complex designs. Advanced Shapes and Paths: Node editing, shape tools, and path operations. Creating and Editing Symbols: Symbol libraries and usage. Effects and Styles: Applying shadows, glows, transparency, and blends.

Unit III: 12 hours

Design and Layout

Page Layout: Setting up multi-page documents, margins, and guidelines. Working with Images: Importing, tracing, and editing bitmaps. Typography: Advanced text effects, font management, and text wrapping. Designing with Precision: Using grids, rulers, and snapping. Templates and Styles: Creating and using templates and graphic styles.

Unit IV: 13 hours

Practical Applications and Projects

Branding and Identity Design: Creating logos, business cards, and stationery. Print Design: Designing brochures, flyers, and posters. Web Graphics: Creating web assets, buttons, and banners. Advanced Illustration Techniques: Vector illustration, digital painting, and artistic effects. Final Project: Designing a comprehensive project integrating all learned skills.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

- "CorelDraw X7: The Official Guide" by Gary David Bouton
- "CorelDraw X8: The Official Guide" by Gary David Bouton
- "CorelDraw Tips and Tricks" by Anand Dixit
- "Mastering CorelDraw" by Rick Altman

Web Sources:

- https://www.coreldraw.com/en/
- https://en.wikipedia.org/wiki/CorelDRAW

Course Title: Photoshop	L	T	P	Credits
Course Code: BAV108	3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Examine the Adobe Photoshop application and determine the relationship with other multimedia applications.
CO2. Use Adobe Photoshop as the software to generate computer graphics.
CO3. Combine Graphic techniques.
CO4. Demonstrate usage of design principles by applying them in their arrangement of graphic and text elements

Unit I: 10 hours

Introduction to Adobe Photoshop

Overview of Raster Graphics: Understanding pixels and resolution. Getting Started with Photoshop: Interface, tools, and workspace customization. Basic Image Editing: Cropping, resizing, and rotating images. Working with Layers: Layer management, blending modes, and layer masks. Color and Brushes: Color modes, swatches, gradients, and brush tool basics.

Unit II: 12 hours

Advanced Image Editing

Selection Tools: Marquee, lasso, magic wand, and quick selection tools. Advanced Retouching: Healing brush, clone stamp, and content-aware fill. Adjustment Layers: Brightness/contrast, levels, curves, and color balance. Filters and Effects: Applying and customizing filters, smart filters. Text and Typography: Adding and formatting text, text effects.

Unit III: 12 hours

Compositing and Creative Techniques

Layer Styles: Drop shadows, bevel and emboss, and other effects. Masking Techniques: Layer masks, clipping masks, and vector masks. Compositing Images: Combining multiple images, blending techniques. Pen Tool and Paths: Creating and editing paths, vector shapes. Smart Objects: Using smart objects for non-destructive editing.

Unit IV: 11 hours

Practical Applications and Projects

Photo Manipulation: Advanced retouching and creative edits. Graphic Design: Creating posters, flyers, and social media graphics. Web Design: Designing web layouts, optimizing images for web. Digital Painting: Custom brushes, painting techniques, and textures. Final Project: Developing a comprehensive project incorporating all learned skills.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

- "Adobe Photoshop Classroom in a Book" by Andrew Faulkner and Conrad Chavez
- "Photoshop CC: The Missing Manual" by Lesa Snider
- "The Adobe Photoshop Book for Digital Photographers" by Scott Kelby
- "Adobe Photoshop CC for Photographers" by Martin Evening

Web Sources:

- https://en.wikipedia.org/wiki/Adobe_Photoshop
- https://www.geeksforgeeks.org/introduction-to-photoshop/

SEMESTER II

Course Title: 2D digital Animation	L	T	P	Credits
Course Code: BAV201	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. familiarize the students with various approaches, methods and techniques of Animation Technology.

CO2. develop competencies and skills needed for becoming an effective Animator.

CO3. Mastering traditional & digital tools to produce stills and moving images.

CO4. enable students to manage Animation Projects from its Conceptual Stage to the final Product creation

Course Contents

Unit I **15 hours**

Working with the drawing & shape tools, Drawing Shapes, Drawing with Primitive Tools, merge drawing mode vs object drawing mode, modifying shapes, direct selection tool, sub selection tool, gradient & mixing colors, 3d transform Working with symbols, characteristics of symbols, editing symbols, buttons, button states, button library.

Unit II **15 hours**

Importing & modifying graphics, bitmap graphics & basic shape modification, working with vector objects, import Photoshop file into Animate CC, working with text, modifying text properties, breaking text apart, converting text into shapes.

Unit III **15 hours**

Basics of animation, Timeline, Layers, animating text with shape tween, frames and key frame, frame by frame animation, onion skin, motion tween, creating motion tween along path, working with motion editor.

Unit IV **15 hours**

Implementation of 12 Principles of Animation, produce in-between poses for animation, export the movie

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

- Adobe Creative Team, “Adobe Animate CC Classroom in a Book Book”,
- Russell S. ChunBeginning Adobe Animate CC: Learn to Efficiently Create and Deploy Animated and Interactive Content

Web Sources:

- https://www.renderforest.com/blog/2d-animation
- https://unity.com/topics/what-is-2d-animation

Course Title: Introduction to 3D Modeling	L	T	P	Credits
Course Code: BAV202	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Makes the definition of 3D modelling.

CO2. Gains knowledge about 3D modelling application programs.

CO3. create and develop a 3D model in SketchUp.

CO4. Uses basic 3D model creation techniques.

Course Contents

Unit I **15 hours**

Introduction to Maya, Understanding User Interface, understanding 3D Concept, setting up image planes and working in multiple viewports. Learning the difference between NURBS and Polygon modeling, using curves and Boolean techniques to create basic shapes.

Unit II **15 hours**

Polygon Modeling: Introduction to polygon modeling, making hard surface objects and props like guitars, speakers, pen, watches and various house hold objects.

Unit III **15 hours**

Relationship editor and outliner, the channel box, Layer Editor, Attribute Editor, the connection editor, Duplicating objects duplicate with transform and duplicate special options, Pivot points, Grouping and Parenting, Working with Shelves, Using layers

Unit IV **15 hours**

Introduction to snapping (to grid, point, curves, and view planes), Helpline, command line, range slider, playback controls, preferences. Introduction to materials, using hyper shade, rendering a still, Rendering an image sequence

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Darakhshani Dariush, “Introduction to Autodesk Maya 2015”. Autodesk
2. PalamarTodd, “Mastering Autodesk Maya 2016”. Wiley

Web Sources:

- https://en.wikipedia.org/wiki/3D_modeling
- https://professional3dservices.com/blog/what-is-3d-modeling.html

Course Title: Communication Skill - II	L	T	P	Credits
Course Code: BAV203	2	0	0	2

Total Hours: 30

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Develop Coherence, Cohesion and Competence in Oral Discourse through Intelligible Pronunciation.
CO2. Ability to handle the interview process confidently
CO3. Develop and Expand Writing Skills through Controlled and Guided Activities
CO4. Identify Common Errors and Rectify them.

Course Contents

Unit I: **6 hours**

Advanced Communication Techniques

Building upon foundational communication skills, Advanced verbal communication strategies, Non-verbal communication cues and their impact, Active listening techniques, developing empathy and rapport in communication, handling difficult conversations effectively, Understanding cultural differences in communication.

Unit II: **8 hours**

Persuasive Communication

Crafting persuasive messages, understanding audience psychology and motivation, utilizing storytelling techniques to enhance persuasion, Structuring arguments for maximum impact, Negotiation and persuasion tactics, Overcoming objections and resistance, Ethical considerations in persuasive communication.

Unit III: **10 hours**

Interpersonal Dynamics

Developing strong interpersonal relationships, Conflict resolution strategies, building trust and credibility, Assertiveness training, setting boundaries in communication, Giving and receiving constructive feedback, Collaborative problem-solving techniques.

Unit IV: **6 hours**

Professional Communication

Business communication etiquette, writing effective emails, memos, and reports, Presentation skills for professionals, conducting successful meetings and interviews, networking skills and building professional connections, Cross-cultural communication in the workplace, Using technology for efficient communication.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "Crucial Conversations: Tools for Talking When Stakes Are High" by Kerry Patterson, Joseph Grenny, Ron McMillan, and Al Switzler
2. "Influence: The Psychology of Persuasion" by Robert B. Cialdini
3. "Difficult Conversations: How to Discuss What Matters Most" by Douglas Stone, Bruce Patton, and Sheila Heen.

4. "How to Win Friends and Influence People" by Dale Carnegie

Web Sources:

- https://ncert.nic.in/vocational/pdf/kees101.pdf
- https://in.indeed.com/career-advice/resumes-cover-letters/communication-skills

Course Title: 2D Animation Lab	L	T	P	Credits
Course Code: BAV204	0	0	6	3

Total Hours: 90

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Analyze timing and sequencing of Animation.
CO2. Apply the techniques of animation staging for creating a scene.
CO3. Compare the application for exporting animation file.
CO4. Design 2D animation with background in a scene

Course Contents

1. Introduction to Animation Principles (Adobe Animate, Blender)
2. Creating Simple Drawings (Adobe Animate, Toon Boom Harmony)
3. Frame-by-Frame Animation (Adobe Animate, Krita)
4. Animating with Keyframes (Toon Boom Harmony, Adobe Animate)
5. Character Sketching and Design (Adobe Animate, Blender)
6. Creating a Walk Cycle (Toon Boom Harmony, Adobe Animate)
7. Adding Timing and Spacing (Toon Boom Harmony, Blender)
8. Animating with Tweens (Adobe Animate, Toon Boom Harmony)
9. Animating Expressions and Emotions (Adobe Animate, Krita)
10. Creating a Lip Sync Animation (Toon Boom Harmony, Adobe Animate)
11. Animating Simple Actions (Jump or Throw) (Blender, Toon Boom Harmony)
12. Character Rigging Basics (Adobe Animate, Spine 2D)
13. Introduction to Layers (Adobe Animate, Toon Boom Harmony)
14. Background Design and Animation (Krita, Adobe Animate)
15. Animating Complex Character Movements (Toon Boom Harmony, Blender)
16. Animating Effects (Smoke, Fire, etc.) (Toon Boom Harmony, Blender)
17. Using Camera Movements in Animation (Adobe Animate, Toon Boom Harmony)
18. Animating a 2D Short Story (Adobe Animate, Blender)
19. Exploring Animation Export Formats (Adobe Animate, Toon Boom Harmony)
20. Project: Full Animated Scene (Blender, Adobe Animate)

Course Title: 3 D Modeling Lab	L	T	P	Credits
Course Code: BAV205	0	0	6	3

Total Hours: 90

Learning Outcomes

After the completion of the course the learner will be able to

1. Think and solve problems in the 3D space.
2. Understand the coordinate system in 2D and 3D.
3. Use coordinates, points, vectors, and angles.
4. Calculate the sizes and distances of objects.

Course Contents

1. Introduction to 3D Modeling Basics (Blender, Autodesk Maya)
2. Creating Simple 3D Shapes (Blender, SketchUp)
3. Modeling with Primitives (Blender, Autodesk Maya)
4. Introduction to Polygonal Modeling (Blender, Autodesk Maya)
5. Creating 3D Text (Blender, Autodesk Maya)
6. Object Transformation: Scale, Rotate, and Translate (Blender, 3ds Max)
7. Working with Subdivision Surfaces (Blender, Autodesk Maya)
8. Sculpting a Basic 3D Model (Blender, ZBrush)
9. UV Mapping and Texturing Basics (Blender, Autodesk Maya)
10. Creating a Low-Poly 3D Model (Blender, SketchUp)
11. Introduction to Lighting in 3D Scenes (Blender, 3ds Max)
12. Applying Materials and Textures (Blender, Substance Painter)
13. Rigging and Animating a 3D Character (Blender, Autodesk Maya)
14. Modeling an Organic Shape (Blender, ZBrush)
15. Creating and Texturing Terrain (Blender, Autodesk Maya)
16. Introduction to 3D Rendering (Blender, 3ds Max)
17. Modeling a 3D Object from Reference Images (Blender, Autodesk Maya)
18. Simulating Physics in 3D (Blender, Autodesk Maya)
19. Exporting 3D Models to Game Engines (Blender, Unreal Engine)
20. Project: Creating a Complete 3D Scene (Blender, 3ds Max)

Course Title: Introduction to Texture and Shading in 3 D	L	T	P	Credits
Course Code: BAV206	3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Execute creative concepts and ideas through a variety and combination of techniques including hand drawn, computer generated, 2D and 3D storyboards and animatics.

CO2. Create sophisticated models for the entertainment, medical, and architectural industries.

CO3. Create 3D characters and creatures ranging from life-like and anatomically correct, to cartoon and anime styles.

CO4. Combine texture mapping, shaders, lighting environments, animating cameras and 'rigs' for 3D models and characters in animation sequences.

Course Contents

Unit I **10 hours**

Introduction to texturing and shading, working with Shader - Blin, Phong and Lambert etc. Working with Shader Properties - Ambient, Diffuse, Specular, gloss, opacity.

Unit II **10 hours**

Working with Maps Bump and Opacity, Reflection & Refraction. Creating custom shaders in Maya using the hyper shade.

Unit III **13 hours**

Introduction to UV mapping, Types of UV Mapping Automatic UV mapping, Planar UV mapping, Cylindrical UV mapping, Spherical UV mapping, User-defined UV mapping, Camera UV mapping, Transfer UVs between meshes, UV Texture editor overview UV sets: Create UV sets, Switch between UV sets, Duplicate, rename, or delete a UV set, assign a texture to a UV set, Copy UVs from one UV set to another.

Unit IV **12 hours**

Editing UV's in Texture editor: Select UVs, Display a subset of UVs, Display a texture behind the UVs, Delete UVs, Update a texture image after UV modification, Use the UV Texture Editor grid, Save an image of the UV layout, Modify UVs using the UV Lattice Tool, Modify UVs using the UV Smudge Tool, Separate & attach UV shells, Relax UV's,Unfold a UV mesh, Flip or rotate UV shells, Copy UVs,

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Lanier Lee, "Advanced Maya Texturing and Lighting", Wiley
2. Birn Jeremy, "Digital Lighting and Rendering", New Riders; 2 edition

Web Sources:

Course Title: Story Boarding	L	T	P	Credits
Course Code: BAV207	3	0	0	3

- https://opetussuunnitelmat.peppi.jamk.fi/realization/37432?lang=en

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Pairing and synchronizing dialogue with digital images.
CO2. Writing the actions of each board to complement the digital images.
CO3. Identifying the elements of a script.
CO4. Developing the intended message of a script.

Course Contents

Unit I: 10 hours

Introduction to Storyboarding

Understanding the role and importance of storyboarding in visual storytelling, History and evolution of storyboarding in filmmaking and animation, Overview of storyboarding software and tools, Fundamental principles of composition, framing, and shot design.

Unit II: 10 hours

Storytelling Techniques

Narrative structure and pacing in storyboarding, creating compelling characters and environments through visual storytelling, Sequential storytelling and panel layout, Shot types and camera angles for effective storytelling, Emotion and storytelling, Visualizing sound and motion in storyboards.

Unit III: 12 hours

Advanced Storyboarding Concepts

Storyboarding for different genres such as action, comedy, drama, and horror, creating storyboards for complex sequences like action scenes, chase sequences, and dialogue-driven scenes, Storyboarding for visual effects and animation, Understanding continuity and visual storytelling consistency.

Unit IV: 13 hours

Professional Storyboarding Practices

Storyboarding for previsualization and pitching, Collaboration and communication in the storyboarding process, Feedback and revision techniques, Creating animatics and previsualization sequences, Portfolio development and presentation skills for storyboard artists.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "Prepare to Board! Creating Story and Characters for Animated Features and Shorts" by Nancy Beiman
2. "Storyboarding Essentials: SCAD Creative Essentials (How to Translate Your Story to the Screen for Film, TV, and Other Media)" by David Harland Rousseau and Benjamin Reid Phillips
3. "The Animator's Sketchbook: How to See, Interpret & Draw Like a Master Animator" by Tony White

4. "The Visual Story: Creating the Visual Structure of Film, TV and Digital Media" by Bruce Block

Web Sources:

- https://www.youtube.com/watch?v=B90v9HHyURs
- https://www.canva.com/create/storyboards/

Course Title: Gender Equality	L	T	P	Credits
Course Code: BAV208	2	0	0	2

Total Hours: 30

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Demonstrate knowledge of the history of women's studies as an academic discipline, with an understanding of its growth and relation to the fields of gender and sexuality studies.

CO2. Articulate and understand the history of feminism and the ways in which feminism has enhanced the lives of women and men.

CO3. Demonstrate fluency in feminist theories and methodologies and their applications to a number of different academic fields.

CO4. Understand the difference between "sex" and "gender" and be able to explain social construction theories of identity.

Course Contents

Unit I **7 hours**

a) Introduction to Gender Equality.
b) Definition and importance of gender equality.
c) Historical overview of gender roles and rights.
d) Key concepts: sex vs. gender, gender identity, and gender expression.
e) Global perspective on gender equality: progress and challenges.
f) International frameworks and agreements: CEDAW, Beijing Platform for Action, Sustainable Development Goals (SDG 5).

Unit II **8 hours**

a) Gender in Society and Culture
b) Gender stereotypes and their impact.
c) Media representation of gender and its societal effects.
d) Intersectionality: understanding how gender intersects with race, class, sexuality, and other identities.
e) Gender roles in different cultures and societies.
f) Case studies: influential gender equality movements and leaders.

Unit III **7 hours**

a) Gender Equality in the Workplace and Education
b) Gender disparities in education: access, quality, and outcomes.
c) Strategies for promoting gender equality in educational settings.
d) Workplace gender equality: understanding the gender pay gap, glass ceiling, and work-life balance.
e) Legal frameworks and policies promoting workplace equality.
f) Best practices for creating inclusive and equitable work environments.

Unit IV **8 hours**

a) Gender differences in health outcomes.
b) Gender Equality and Health
c) Reproductive rights and health.
d) Addressing gender-based violence and its impact on health.
e) Mental health and gender.

f) Policies and programs promoting gender-sensitive healthcare.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Gender Trouble: Feminism and the Subversion of Identity by Judith Butler
2. Half the Sky: Turning Oppression into Opportunity for Women Worldwide by Nicholas D. Kristof and Sheryl WuDunn
3. The Gendered Society by Michael Kimmel
4. Invisible Women: Data Bias in a World Designed for Men by Caroline Criado Perez

Web Sources:

- https://library.ship.edu/gender-equality
- https://timeforequality.org/news/gender-news/top-50-gender-equality-blogs-and-websites/

Semester III

Course Title: Advanced Animation	L	T	P	Credits
Course Code: BAV301	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Demonstrate advanced knowledge and skills in animation techniques, including character rigging, timing, and facial animation.

CO2. Create detailed storyboards and animatics that effectively communicate complex narratives and visual storytelling strategies.

CO3. Apply advanced VFX animation techniques and physics simulations to produce realistic animation effects such as fire, water, and particle systems.

CO4. Develop a professional portfolio or demo reel that showcases their animation expertise, understanding of industry pipelines, and rendering optimization techniques.

Course Contents

Unit I: Advanced Animation Techniques **15 Hours**

Exploring Complex Animation Concepts: Introduction to advanced animation methodologies and strategies.

Character Rigging and Dynamics: Rigging characters for complex movements. Exploring IK (Inverse Kinematics) and FK (Forward Kinematics).

Advanced Timing and Spacing: Mastering the principles of animation with a focus on detailed motion, secondary actions, and follow-through.

Facial Animation and Lip Sync: Techniques for detailed facial animations, lip sync, and expressive emotions.

Unit II: Advanced Storyboarding and Animatics **15 Hours**

Creating Detailed Storyboards: Focusing on dynamic framing, complex camera angles, and story flow for sophisticated animation projects.

Animatics and Pre-visualization: Developing polished animatics with detailed motion, sound, and timing to refine animation sequences before production.

Storytelling Through Animation: Understanding visual storytelling principles for emotional impact, rhythm, and pacing in longer or more intricate animations.

Unit III: Special Effects and Simulation in Animation **15 Hours**

Animating Special Effects (VFX): Advanced techniques for animating effects such as fire, water, explosions, and particle systems in 2D/3D animation.

Physics Simulations in Animation: Integrating real-world physics into animation using simulation techniques for hair, cloth, and rigid body dynamics.

Compositing for Animation: Using advanced compositing techniques to blend 2D and 3D elements, incorporating green screen, rotoscoping, and layering.

Unit IV: Industry Pipeline and Portfolio Development **15 Hours**

Professional Animation Pipelines**:** Understanding studio pipelines, from concept to final production, and how advanced animation fits into larger projects.

Rendering and Export Optimization: Setting up scenes for professional rendering, applying advanced lighting, shading, and material effects.

Portfolio and Demo Reel Creation:
Developing a portfolio or demo reel to showcase high-level animation skills, focusing on quality, creativity, and technical proficiency.

Transaction Mode
Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "The Animator's Survival Kit" by Richard Williams
1. "Character Animation Crash Course!" by Eric Goldberg
2. "Timing for Animation" by Harold Whitaker and John Halas
3. "The Illusion of Life: Disney Animation" by Frank Thomas and Ollie Johnston

Web Sources:

- https://www.animationmentor.com/blog/
- http://www.11secondclub.com/
- https://www.cartoonbrew.com/
- https://cgsociety.org/

Course Title: Audio and Video Editing	L	T	P	Credits
Course Code: BAV302	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Navigate and utilize the basic interface and tools in Adobe Audition and Adobe Premiere Pro for audio and video editing projects.

CO2. Execute audio editing techniques, such as recording, waveform editing, amplitude adjustments, and mixing different sound elements.

CO3. Apply essential video editing techniques, including clip adjustments, transitions, and basic video effects in Premiere Pro.

CO4. Export high-quality audio and video outputs while utilizing advanced compositing techniques such as green screen keying, color correction, and format selection.

Course Contents

Unit I: Introduction to Adobe Audition & Premiere Pro **15 Hours**

Adobe Audition:

Introduction to Adobe Audition, exploring the software interface, and setting up your project. Comparing the Waveform and Multitrack editors, understanding basic components of the editors.

Adobe Premiere Pro:

Introduction to Premiere Pro, understanding its purpose and the concept of non-linear editing. Overview of digital video principles such as video formats, frame rates, aspect ratios, and video outputs. Introductory project workflow, including adding footage, time code, and the basic interface of Premiere Pro.

Unit II: Audio and Video Editing Basics **15 Hours**

Adobe Audition:

Recording audio, appending audio files, importing raw data, and inserting audio files into a multitrack session. Supported import formats, visual fading, amplitude changes, working with markers, converting sample types, and waveform editing enhancements.

Adobe Premiere Pro:

Basic video editing, rough editing, working with layers, using the Ripple edit, Slip edit, and Razor tools. Navigating and understanding the tools for editing clips. Helpful editing techniques such as markers, replacing footage, and exporting stills. Adjusting clip properties (position, size, anchor) and working with time (speed, rate, and backward edits).

Unit III: Advanced Sound and Video Mixing **15 Hours**

Adobe Audition:

Mixing different genres of music (Pop Rock, Hip Hop, EDM), Foley, Reverb, Modify Routing, Gain Structure, Automation, and Master Harmonic Distortion.

Metering, mid and side techniques, fixing hum and broadband noise, and working with various audio file formats and encoding methods.

Adobe Premiere Pro:

Attributes of video: Understanding pixels, frame rates, and HD formats.

Creating moving elements with layered animations, fading effects, and applying various video transitions. Working with audio in video clips: cutting, changing, and fixing audio issues. Applying video effects like flare, lightning, mirror, and creating titles, credits, and lower thirds.

Unit IV: Exporting and Compositing **15 Hours**

Adobe Audition:

Exporting audio, EQ, loudness normalization, learning compression techniques, panning, level balancing, delay, EQ types, and filters. Synchronizing sound effects (SFX) and exporting audio and video in various formats.

Adobe Premiere Pro:

Basic compositing techniques, including green screen keying and color correction (brightness, contrast, hue saturation, and color balance). Exporting video sequences using Media Encoder and understanding various video formats.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Film Sound: Theory and Practice - by Elisabeth Weis (Editor), John Belton (Editor)
2. Sound for Film and Television- Tomlinson Holman.
3. Audio Postproduction for Film and Video - Jay Rose
4. Adobe "Adobe Premiere Pro CC Classroom in a Book", Pearson Education India

Web Sources:

- https://helpx.adobe.com/audition/user-guide.html
- https://helpx.adobe.com/premiere-pro/user-guide.html
- https://premieregal.com/
- https://audio.tutsplus.com

Course Title: AI Tools for Animations	L	T	P	Credits
Course Code: BAV303	2	0	0	2

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Understand and explain the role of AI technologies in modern animation workflows, including character animation, motion capture, and procedural generation.

CO2. Apply AI techniques to automate character rigging, skinning, and generate realistic movements and behaviors in animation projects.

CO3. Utilize AI-driven tools for procedural animation, facial animation, and lip-syncing, exploring their applications in environments, crowds, and character expressions.

CO4. Demonstrate practical skills in using AI-based animation tools like Adobe Character Animator, DeepMotion, Houdini, and Faceware to enhance animation processes.

Course Contents

Unit I: Introduction to AI in Animation 6 Hours

a) Understanding the role of AI in modern animation workflows.
b) Overview of AI technologies and tools used in animation.
c) Applications of AI in character animation, motion capture, and procedural generation.
d) Introduction to key AI concepts: machine learning, neural networks, and deep learning.
e) Practical session: Exploring AI tools and their applications in animation.

Unit II: AI-Based Character Animation 8 Hours

a) AI techniques for automating character rigging and skinning.
b) Using AI for generating realistic character movements and behaviors.
c) Introduction to motion capture technology and AI-based motion retargeting.
d) Practical session: Implementing AI-based character rigging and animation using tools like Adobe Character Animator and DeepMotion.

Unit III: Procedural Animation with AI 10 Hours

a) Understanding procedural animation and its benefits.
b) AI-driven techniques for generating procedural animations.
c) Applications of procedural animation in environments, crowds, and particle systems.
d) Practical session: Creating procedural animations using Houdini and AI plugins.

Unit IV: AI in Facial Animation and Lip Sync 6 Hours

a) Techniques for AI-based facial animation and emotion detection.
b) Automating lip-syncing using AI tools.
c) Applications of deep learning in realistic facial animation.
d) Practical session: Implementing AI-driven facial animation and lip-sync using tools like Faceware and Adobe Character Animator.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative

Learning.

Suggested Readings:

1. "Artificial Intelligence for Games" by Ian Millington and John Funge
2. "Deep Learning for Computer Vision" by Rajalingappaa Shanmugamani
3. "Character Animation Crash Course!" by Eric Goldberg (supplemental for traditional concepts)
4. "Practical Deep Learning for Cloud, Mobile, and Edge" by AnirudhKoul, Siddha Ganju, and MeherKasam

Web Sources:

- https://www.deepmotion.com/
- https://www.adobe.com/products/character-animator.html
- https://www.sidefx.com/products/houdini/
- https://facewaretech.com/

Course Title: Multimedia and Its Applications	L	T	P	Credits
CourseCode:BAV304	4	0	0	4

Total Hours:60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. To understand the technologies behind multimedia applications

CO2. To learn representations, perceptions and applications of Multimedia

CO3. To understand the basic concepts of Multimedia Systems

Course Content

UNIT I **15 Hours**

Definition - Classification - Multimedia application -Multimedia Hardware - Multimedia software - CDROM - DVD. Multimedia Audio: Digital medium - Digital audio technology - sound cards - recording - editing - MP3 - MIDI fundamentals - Working with MIDI - audio file formats - adding sound to Multimedia project.

UNIT II **15 Hours**

Multimedia Text: Text in Multimedia -Multimedia graphics: coloring - digital imaging fundamentals - development and editing - file formats - scanning and digital photography

UNIT III **15 Hours**

Multimedia Animation: Computer animation fundamentals - Kinematics - morphing - animation s/w tools and techniques. Multimedia Video: How video works - broadcast video standards - digital video fundamentals – digital video production and editing techniques - file formats.

UNIT IV **15 Hours**

Multimedia Project: stages of project - Multimedia skills - design concept - authoring - planning and costing –Multimedia Team. Multimedia-looking towards Future: Digital Communication and New Media, Interactive Television, Digital Broadcasting, Digital Radio, Multimedia Conferencing

Transactional Mode

Lecture Method, E-Team Teaching, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, and Collaborative Learning.

Suggested Readings:

- *Kiran Thakrar, Prabhat k.andleigh, "Multimedia System Design", Prentice Hall India.*
- *Malay k Pakhira, "Computer graphics, Multimedia and Animation", Prentice Hall India, 2nd Edition.*
- *Shalu Gupta and Amandeep Kaur, "Fundamentals of Multimedia and Applications", Kalyani Publishers, 2025.*
- *NPTEL & MOOC courses titled Multi media*
- *https://nptel.ac.in/courses/106105163/*
- *W3schools.com/html/html-media.asp*

Web Sources:

- https://www.khanacademy.org/computing
- https://www.tutorialspoint.com/office_automation/index.htm
- https://www.microsoft.com/en-us/learning/microsoft-office-training.aspx
- https://www.geeksforgeeks.org/microsoft-office-suite/

Course Title: Digital Compositing	L	T	P	Credits
Course Code: BAV304	0	0	4	2

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Understand the fundamentals of digital compositing, including the history, software, and key techniques such as keying, masking, and color grading.

CO2. Apply advanced compositing techniques, such as layer-based compositing, matte painting, match moving, and multi-pass compositing to create realistic visual effects.

CO3. Seamlessly integrate animated sequences with live-action footage, incorporating motion blur, depth of field, and particle effects in compositing projects.

CO4. Execute specialized compositing projects for various genres, including sci-fi, fantasy, and horror, and apply compositing techniques to virtual reality (VR), augmented reality (AR), and stereoscopic 3D films.

Course Contents

Unit I: Introduction to Digital Compositing **15 Hours**

Understanding the fundamentals of digital compositing, History and evolution of compositing in filmmaking and visual effects, Overview of compositing software and tools, Compositing workflow and pipeline, Basic principles of color theory and color grading, Introduction to keying and masking techniques.

Unit II: Advanced Compositing Techniques **15 Hours**

Layer-based compositing techniques, Integration of live-action footage with digital elements, Matte painting and set extensions, Multi-pass compositing for realistic lighting and shadow effects, Match moving and camera tracking, Creating believable visual effects such as explosions, fire, and atmospheric effects.

Unit III: Compositing for Animation **15 Hours**

Compositing animated sequences, Character integration into live-action footage, Motion blur and depth of field in compositing, Particle effects and dynamics integration, Lip-syncing and facial animation integration, Advanced techniques for seamless integration of 2D and 3D animation elements.

Unit IV: Specialized Compositing Projects **15 Hours**

Compositing for specific genres such as sci-fi, fantasy, and horror, Creating futuristic interfaces and HUD elements, Digital matte painting for environments and landscapes, Compositing for virtual reality and augmented reality experiences, Stereoscopic compositing for 3D films and immersive media.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "The Art and Science of Digital Compositing" by Ron Brinkmann
2. "Digital Compositing for Film and Video" by Steve Wright
3. "Compositing Visual Effects: Essentials for the Aspiring Artist" by Steve Wright
4. "Nuke 101: Professional Compositing and Visual Effects" by Ron Ganbar

Web Sources:

• https://www.fxguide.com/

- https://www.videocopilot.net/
- https://www.nukepedia.com/
- https://www.sidefx.com/

Course Title: RotoScopy	L	T	P	Credits
Course Code: BAV306	0	0	4	2

Total Hours: 60

Learning Outcomes

Upon completion of this course, learners will be able to:

1. Demonstrate a fundamental understanding of rotoscopy, its history, and its application in animation and visual effects.
2. Apply precise tracing techniques, working with motion blur and complex shapes, and utilize edge detection and matte manipulation for clean and efficient rotoscoping.
3. Employ advanced rotoscoping techniques for challenging shots, including hair and fur, and integrate rotoscoped elements seamlessly into live-action footage.
4. Use rotoscoping in visual effects compositing, including creating mattes for green screen, object removal, and stereoscopic rotoscoping for 3D films and VR projects.

Course Contents

Unit I: Introduction to Rotoscopy **15 Hours**

Understanding the basics of rotoscopy, History and evolution of rotoscopy in animation and visual effects, Overview of rotoscoping software and tools, Rotoscoping workflow and techniques, Basic principles of animation applied to rotoscoping.

Unit II: Rotoscoping Fundamentals **15 Hours**

Tracing techniques for creating clean and accurate rotoscope shapes, Working with motion blur and complex shapes, Understanding edge detection and refinement tools, Matte creation and manipulation, Time-saving techniques for efficient rotoscoping.

Unit III: Advanced Rotoscoping Techniques **15 Hours**

Advanced rotoscoping workflows for challenging shots, Techniques for rotoscoping hair and fur, Dealing with motion interpolation and interpolation errors, Integration of rotoscoped elements into live-action footage, Color correction and matching for seamless integration.

Unit IV: Rotoscoping for Visual Effects **15 Hours**

Rotoscoping for visual effects compositing, Creating mattes for green screen and blue screen compositing, Rotoscoping for object removal and replacement, Tracking and matchmoving integration with rotoscoped elements, Stereoscopic rotoscoping for 3D films and VR projects.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "The Art and Science of Digital Compositing" by Ron Brinkmann
2. "Digital Rotoscoping and Paint Techniques" by Ron Ganbar
3. "The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures" by Jeffrey A. Okun and Susan Zwerman
4. "Rotoscoping: Techniques and Tools for the Aspiring Artist" by Benjamin Bratt

Web Sources:

- https://www.fxguide.com/
- https://www.rotofactory.com/
- https://www.videocopilot.net/
- https://www.nukepedia.com/

Course Title: Digital Painting	L	T	P	Credits
Course Code: BAV307	3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Understand the fundamentals of digital painting and its application across industries, distinguishing between digital and traditional painting techniques.

CO2. Demonstrate proficiency in using digital painting tools and software such as Adobe Photoshop, Corel Painter, and Procreate, including setting up a workspace and customizing tools.

CO3. Apply basic painting techniques such as brushwork, blending, layering, and masking, while utilizing principles of color theory, value, and composition in their digital artwork.

CO4. Create realistic lighting effects, shadows, and highlights, demonstrating an understanding of how light interacts with different surfaces and materials in digital painting.

Course Contents

Unit I Introduction to Digital Painting: 10 Hours

Understanding the basics of digital painting and its applications in various industries such as illustration, concept art, and digital media. Exploring the advantages of digital painting compared to traditional painting techniques.

Unit II Digital Painting Tools and Software: 10 Hours

Introduction to digital painting software such as Adobe Photoshop, Corel Painter, and Procreate. Exploring the interface, tools, and basic functionalities of digital painting software. Learning how to set up a digital workspace and customize brushes and settings.

Unit III Basic Painting Techniques: 12 Hours

Learning the fundamental painting techniques used in digital painting, including brushwork, blending, layering, and masking. Understanding the principles of color theory, value, and composition in digital painting.

Unit IV Understanding Light and Shadow: 13 Hours

Exploring the principles of light and shadow in digital painting. Learning how to create realistic lighting effects, cast shadows, and highlights using digital painting techniques. Understanding how light interacts with different surfaces and materials.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readinngs:

1. "Digital Painting Techniques" by 3dtotal Publishing
2. "Beginner's Guide to Digital Painting in Photoshop" by NykolaiAleksander and Richard Tilbury
3. "Color and Light: A Guide for the Realist Painter" by James Gurney
"ImagineFX Magazine" (for inspiration and tutorials)

Web Sources:

• https://www.artstation.com/

- https://www.digitaltutors.com/
- https://conceptartempire.com/
- https://www.ctrlpaint.com/

Course Title: Color Grading	L	T	P	Credits
Course Code: BAV308	3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

1. Understand the fundamental principles of color theory and its application in color grading, including color models and their impact on video aesthetics.
2. Demonstrate proficiency in professional color grading software, such as DaVinci Resolve and Adobe Premiere Pro, including navigating interfaces and using grading tools effectively.
3. Apply primary and secondary color correction techniques, including adjusting exposure and white balance, as well as isolating and modifying specific colors using qualifiers and masks.
4. Utilize advanced color grading techniques to work with log and RAW footage, create mood and emotion through color, and match shots for consistency, while understanding the processes for exporting and delivering final graded projects.

Course Contents

Unit I: Introduction to Color Grading **10 Hours**

Color Theory and Principles:

Introduction to the basics of color theory and how it applies to color grading in video. Understanding color models (RGB, HSL) and their impact on image correction and aesthetics. Overview of the role of color grading in storytelling and mood creation.

Software Interface and Tools: Introduction to professional color grading software like DaVinci Resolve, Adobe Premiere Pro, and Final Cut Pro. Understanding software interfaces, scopes, and tools (Waveform Monitor, Histogram, Vectorscope). Setting up a color grading project and understanding timeline workflow for grading.

Unit II: Basic Color Correction Techniques **10 Hours**

Primary Color Correction:

Adjusting exposure, contrast, and white balance to achieve proper color balance. Understanding shadows, midtones, and highlights.

Introduction to LUTs (Look-Up Tables) and using basic LUTs for color correction.

Secondary Color Correction: Isolating specific colors using qualifiers (e.g., hue, saturation) and modifying them. Targeting skin tones and fixing color issues with selective color grading. Understanding masking tools and how to apply them in selective color adjustments.

Unit III: Advanced Color Grading Techniques **12 Hours**

Working with Log and RAW Footage:

Understanding log and raw video formats and their importance in advanced color grading. Grading log and raw footage to bring out dynamic range and detail. Using curves, hue vs. saturation, and hue vs. hue controls for fine-tuned adjustments. Matching Shots and Creating Mood: Color grading techniques to match shots within a scene and across different scenes. Using color to create mood and emotion in a scene, from warm and cool tones to dramatic looks. Applying stylized color grades to enhance the visual narrative (e.g., cinematic grading, vintage looks).

Unit IV: Exporting and Delivering Graded Projects **13 Hours**

Finalizing the Color Grade:

Applying finishing touches, ensuring consistency across the timeline, and finalizing the grade. Reviewing graded projects using scopes for accurate color rendition.

Exporting and Encoding for Different Media:
Exporting color-graded projects in different formats for various platforms (e.g., web, broadcast, film). Understanding export settings, compression techniques, and maintaining color accuracy during rendering.

Transaction Mode:
Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:
1. Color Correction Handbook: Professional Techniques for Video and Cinema" by Alexis Van Hurkman
2. The Art and Technique of Digital Color Correction" by Steve Hullfish

Web Sources:
- https://www.blackmagicdesign.com/products/davinciresolve/
- https://www.premiumbeat.com/blog/color-grading-tutorials/
- https://www.artoftheguillotine.com/
- https://www.colorgradingcentral.com/

Course Title: Cleanup	L	T	P	Credits
Course Code: BAV310	3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Understand the role of cleanup in the animation production process, differentiating between rough animation and cleanup, while recognizing its significance in maintaining quality and consistency.

CO2. Demonstrate proficiency in using various tools and software for cleanup work, including Adobe Photoshop, Adobe Animate, Toon Boom Harmony, and TVPaint Animation, including navigating interfaces and utilizing essential functionalities.

CO3. Analyze and improve line quality in animation drawings, applying principles of clean lines, line weight, and consistency to enhance overall artwork.

CO4. Execute the character cleanup process, refining and polishing rough character designs, while ensuring accuracy in proportions, anatomy, and details, particularly in facial expressions and movements.

Course Contents

Unit I Introduction to Cleanup: 10 Hours

Understanding the role and importance of cleanup in the animation production process. Exploring the difference between rough animation and cleanup, and the significance of maintaining consistency and quality in cleanup work.

Unit II Tools and Software: 10 Hours

Introduction to the tools and software used in cleanup work, including digital drawing tablets, software such as Adobe Photoshop, Adobe Animate, Toon Boom Harmony, and TVPaint Animation. Exploring the interface, tools, and basic functionalities of cleanup software.

Unit III Understanding Line Quality: 12 Hours

Learning how to analyze and improve the line quality in animation drawings. Understanding the principles of clean lines, line weight, and line consistency. Exploring techniques for creating smooth, fluid lines with proper spacing and thickness.

Unit IV Character Cleanup: 13 Hours

Understanding the process of cleaning up character animation drawings. Learning how to refine and polish rough character designs, ensuring accuracy and consistency in proportions, anatomy, and details. Exploring techniques for cleaning up facial expressions, gestures, and movements.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "The Animator's Survival Kit" by Richard Williams
2. "The Art of Clean Up: Life Made Neat and Tidy" by UrsusWehrli
3. "Clean Up Your Act: Effective Ways to Organize --- Your Life and Business" by Tim Challies

4. "The Animation Studio: How to Create Stop Motion, 2D and 3D Animation in the Digital Age" by Helen Piercy

Web Sources:

- https://www.animationmentor.com/
- https://www.todaysanimation.com/
- https://www.digitalartsonline.co.uk/
- https://www.animationresources.org/

Course Title: Digital Marketing	L	T	P	Credits
Course Code: BAV309	2	0	0	2

Total Hours: 30

Learning Outcomes

After completion of this course, the learner will be able to:

CO1. Understanding the digital marketing concepts and its usefulness in business.
CO2. Planning steps for digital marketing strategy and successfully executing it.
CO3. Applying Search Engine Optimization techniques (SEO) and Search Engine Marketing (SEM) to maximize reach and enhance engagement of users.
CO4. Analyzing web using analytics tools and gaining insights to various tools for Social Media Marketing.

Course Content

Unit I **6 Hours**

Digital Marketing Basics: Digital Marketing meaning and its importance, Traditional vs Digital Marketing, Benefits of Digital Marketing, Internet Marketing basics, Digital Marketing channels, Types of Business models, Digital Marketing strategies (P.O.E.M framework), Inbound and Outbound marketing, Digital Transformation model, 4Cs of Digital Marketing.

Unit II **8 Hours**

Social Media Marketing – Introduction, Social Media marketing strategies, Overview of Social media platforms – Instagram, Snapchat, Facebook, Mobile, Twitter, Content Planning and Strategy, Influential marketing, Content marketing, Digital Marketing campaign.

Unit III **10 Hours**

Search Engine Optimization – Introduction to SEO, On-Page and Off-Page Optimization, Role of Keywords in SEO, Organic vs Non-Organic SEO, Blogging as marketing strategy, Types of Blogs. Search Engine Marketing – Introduction to Paid marketing, Google Adwords, Types of campaigns and Campaign creation.

Unit IV **6 Hours**

Tools for SMM and Marketing communication – Overview of Buffer, Hoot suite, Canva, Trello and Hot jar. Web Analytics: Meaning, Purpose and process, Types, Tools for analytics – Google analytics, Audience analytics, Acquisition analytics, Behavior analytics, and Conversion analytics.

Transactional Mode:

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning

Suggested Readings:

1. Rajan Gupta, Supriya Madan, “Digital Marketing”, BPB Publication, Ist Edition, 2022
2. Seema Gupta, “Digital Marketing”, McGraw Hill, 2nd Edition, 2018.
3. Puneet Singh Bhatia, “Fundamentals of Digital Marketing”, Pearson, 2nd Edition, 2020.

Web Sources:

- https://josephscollege.ac.in/lms/Uploads/pdf/material/DigitalMarketing_Notes.pdf
- https://www.digitalmarketer.com/digitalmarketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf

Semester IV

Course Title: Lighting and Rendering	**L**	**T**	**P**	**Credits**
Course Code: BAV401	**4**	**0**	**0**	**4**

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Understand the Role of Lighting and Rendering: Articulate the importance of lighting and rendering in digital graphics and visual storytelling, including the basic concepts of light sources, shadows, and reflections.

CO2. Apply Lighting Fundamentals: Demonstrate proficiency in lighting techniques, including three-point lighting, and the use of various light types to create mood and atmosphere in digital scenes.

CO3. Utilize Advanced Lighting Techniques: Implement advanced techniques such as global illumination, HDRI, and volumetric lighting to enhance realism in rendering projects.

CO4. Execute Rendering Techniques: Analyze and apply different rendering algorithms, shading models, and post-processing effects, while optimizing render settings for efficient production workflows.

Course Content

Unit I Introduction to Lighting and Rendering **15 Hours**

a) Overview of lighting and rendering in digital graphics.
b) The importance of lighting and rendering in visual storytelling.
c) Basic concepts: light sources, shadows, and reflections.
d) Types of lighting: natural vs. artificial, direct vs. indirect.
e) Introduction to rendering engines: CPU vs. GPU rendering.

Unit II Fundamentals of Lighting **15 Hours**

a) Properties of light: intensity, color, and temperature.
b) Lighting techniques: three-point lighting (key, fill, and backlight).
c) Understanding and using different types of lights: point light, directional light, spot light, area light.
d) Creating mood and atmosphere with lighting.
e) Practical exercises with different lighting setups in software (e.g., Maya, Blender, 3ds Max).

Unit III Advanced Lighting Techniques **15 Hours**

a) Global illumination and its impact on realistic rendering.
b) Light mapping and baking techniques for optimized rendering.
c) High dynamic range imaging (HDRI) for realistic lighting environments.
d) Volumetric lighting and fog for atmospheric effects.
e) Case studies of lighting setups in film and game production.

Unit IV Rendering Techniques and Optimization **15 Hours**

a) Understanding rendering algorithms: rasterization vs. ray tracing.

b) Shading models: Phong, Blinn-Phong, Lambertian, and physically-based rendering (PBR).
c) Materials and textures: creating realistic surfaces using shaders.
d) Render settings and optimization techniques to reduce render times.
e) Post-processing effects: bloom, depth of field, motion blur, and color correction.
f) Exporting and compositing rendered images.

Transactional Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning

Textbooks:

1. Digital Lighting and Rendering by Jeremy Birn
2. The Art of 3D Computer Animation and Effects by Isaac V. Kerlow
3. Advanced Global Illumination by Philip Dutre, Philippe Bekaert, and KavitaBala
4. Real-Time Rendering by Tomas Akenine-Möller, Eric Haines, and Naty Hoffman

Web Sources:

- https://www.digitaltutors.com/learn/lighting-and-rendering
- https://www.cgarchitect.com/
- https://www.thegnomonworkshop.com/
- https://www.3dtotal.com/

Course Title: Rigging and Animation (Maya)		L	T	P	Credits
Course Code: BAV402		4	0	0	4

Total Hours: 60

Learning Outcomes

Upon completion of this course, learners will be able to:

CO1. Understand Rigging Concepts: Explain the principles of rigging in 3D animation, including the creation of joint chains, and differentiate between forward and inverse kinematics.

CO2. Execute Advanced Rigging Techniques: Build a complete character skeleton and apply skinning techniques, including weight painting and using deformers for realistic character movement and expression.

CO3. Implement Animation Fundamentals: Apply key principles of animation to create basic animations using keyframes, and utilize Maya's tools for editing and refining animation curves.

CO4. Create Complex Animations: Develop advanced character animations that incorporate facial expressions, constraints, and motion capture data, and finalize animations by polishing details and adding secondary motion.

Course Content

Unit I Introduction to Rigging in Maya **15 Hours**

a) Overview of rigging in 3D animation.
b) Introduction to Maya interface and tools.
c) Basic concepts: joints, skeletons, and kinematics.
d) Creating a simple joint chain.
e) Forward kinematics (FK) vs. inverse kinematics (IK).
f) Setting up IK handles and controllers.

Unit II Advanced Rigging Techniques **15 Hours**

a) Building a complete character skeleton.
b) Skinning: binding the mesh to the skeleton.
c) Weight painting for smooth deformations.
d) Creating and using deformers: blend shapes, lattices, and clusters.
e) Rigging facial expressions and lip-syncing.
f) Introduction to rigging scripts and automation.

Unit III Introduction to Animation in Maya **15 Hours**

a) Key principles of animation: squash and stretch, anticipation, and follow-through.
b) Understanding the timeline and keyframing.
c) Creating basic animations: bouncing ball and simple walk cycle.
d) Graph Editor: editing animation curves for smooth motion.
e) Using the Dope Sheet for timing adjustments.

Unit IV Advanced Animation Techniques **15 Hours**

a) Character animation: refining walk and run cycles.
b) Animating facial expressions and dialogue.
c) Using constraints for more complex animations.
d) Working with animation layers for non-destructive editing.
e) Introduction to motion capture data and cleanup.

f) Finalizing animations: polishing and adding secondary motion.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. The Animator's Survival Kit by Richard Williams
2. Maya Character Creation: Modeling and Animation Controls by Chris Maraffi
3. Rig it Right! Maya Animation Rigging Concepts by Tina O'Hailey
4. Maya Studio Projects: Game Environments and Props by Michael McKinley

Web Sources:

- https://help.autodesk.com/view/MAYAUL/2024/ENU/
- https://www.digitaltutors.com/learn/animation-in-maya
- https://www.pluralsight.com/courses/maya-rigging-fundamentals
- https://www.cgma.com/courses/rigging-in-maya/

Course Title: Minor Project		L	T	P	Credits
Course Code: BAV403		2	0	0	2

Total Hours: 30

Learning Outcomes

After the completion of the course the learner will be able to:

CO1. Demonstrate Proficiency in Animation Software: Utilize various animation tools and software (e.g., Adobe Photoshop, Autodesk Maya) to create a cohesive animation project, showcasing the skills learned throughout the course.

CO2. Implement Creative Concepts: Independently select and develop a subject matter for the animation project, demonstrating creativity and understanding of visual storytelling principles.

CO3. Collaborate Effectively: Work collaboratively in pairs to complete the project, managing tasks and responsibilities to ensure a successful outcome.

CO4. Document the Production Process: Prepare a comprehensive project report that outlines the stages of production, including planning, execution, and post-production, effectively communicating the project's development.

The students need to submit an animation project prepared using techniques and tools taught during the course (Adobe Photoshop, Adobe Illustrator, Corel Draw, Adobe Flash, Adobe Premiere, Autodesk Maya and Adobe After effects).

Following points should be taken care of while working on project:

1. Students can choose themselves the subject matter and scenes
2. A project can be done jointly by maximum of two students
3. Minimum of 750 frames
4. Use at least two different software
5. Effective use of cameras, focus on viewers' attention
6. Project report showcasing the stages of the project

Web Sources:

- https://helpx.adobe.com/after-effects/tutorials.html
- https://www.autodesk.com/education/free-software/maya
- https://www.lynda.com/Maya-tutorials/Animation-Maya-Character-Rigging/193103-2.html
- https://www.tutorialspoint.com/coreldraw/index.htm

Course Title: Advanced Compositing (Lab)		L	T	P	Credits
Course Code: BAV404		0	0	4	3

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. **Utilize Compositing Software**: Demonstrate proficiency in using advanced compositing software (Adobe After Effects, Nuke, Fusion) for visual effects and post-production tasks.

CO2. **Implement Keying and Rotoscoping Techniques**: Effectively apply keying techniques and advanced rotoscoping methods to isolate elements within a composite, ensuring high-quality results.

CO3. **Perform Color Correction and Grading**: Execute color correction and grading processes to enhance the visual aesthetics of a composite, using various tools and techniques.

CO4. **Integrate 3D Elements**: Combine 3D elements with live-action footage, utilizing camera tracking and match moving techniques to achieve realistic composites.

CO5. **Create and Implement Advanced Effects**: Design and implement advanced visual effects using particle systems, motion blur, depth of field, and other techniques to enhance storytelling in compositing projects.

CO6. **Optimize Composites for Output**: Finalize and optimize composite outputs by understanding render settings and ensuring the quality and consistency of visual elements.

Course Content

Unit I Introduction to Advanced Compositing

a) Overview of compositing in visual effects and post-production.
b) Introduction to compositing software: Adobe After Effects, Nuke, Fusion.
c) Basic concepts: layers, masks, and blend modes.
d) Importing and organizing assets in a compositing project.
e) Understanding color space and bit depth.

Unit II Keying and Rotoscoping

a) Keying techniques: chroma key (green/blue screen) and luma key.
b) Using keying tools: Keylight, Primatte, and Ultimatte.
c) Refining keying results: edge refinement, despill, and matte choker.
d) Rotoscoping fundamentals: drawing and animating masks.
e) Advanced rotoscoping: motion tracking and planar tracking.
f) Practical lab exercises on keying and rotoscoping.

Unit III Color Correction and Grading

a) Principles of color theory in compositing.
b) Color correction tools: levels, curves, and color balance.
c) Matching colors across different elements of a composite.
d) Introduction to color grading: creating mood and atmosphere.
e) Using lookup tables (LUTs) for consistent grading.
f) Practical lab exercises on color correction and grading.

Unit IV Advanced Compositing Techniques

a) Working with 3D elements in a composite: 3D camera tracking and match moving.

b) Integrating CGI with live-action footage: shadows, reflections, and ambient occlusion.
c) Particle systems and simulations: creating rain, smoke, fire, and other effects.
d) Advanced effects: motion blur, depth of field, and lens flares.
e) Multi-pass compositing: using render passes to achieve photorealism.
f) Finalizing a composite: output settings and render optimization.
g) Case studies and project-based learning.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Digital Compositing for Film and Video by Steve Wright
2. The Art and Science of Digital Compositing by Ron Brinkmann
3. Compositing Visual Effects: Essentials for the Aspiring Artist by Steve Wright
4. Nuke 101: Professional Compositing and Visual Effects by Ron Ganbar

Web Sources:

- https://helpx.adobe.com/after-effects/tutorials.html
- https://www.nuke.com/
- https://www.fxphd.com/
- https://www.pluralsight.com/courses/after-effects-color-correction-grading

Course Title: Rigging And Animation (Lab)		L	T	P	Credits
Course Code: BAV405		0	0	4	3

Total Hours: 60

Learning Outcomes

Upon completion of the Rigging and Animation (Lab) course, students will be able to:

CO1. Understand Rigging Fundamentals and construct character rigs
CO2. Implement Facial Rigging and animate using Core principles
CO3. Create character animations
CO4. Utilize Animation Constraints, incorporate Motion Capture Data, and Produce Short Animated Sequences

Course Content

Unit I Introduction to Rigging

a) Overview of the rigging process in 3D animation.
b) Exploring Maya interface and essential tools for rigging.
c) Creating basic joint chains: understanding joint orientation and hierarchy.
d) Introduction to kinematics: Forward Kinematics (FK) vs. Inverse Kinematics (IK).
e) Setting up simple IK handles and creating basic controllers.
f) Practical lab: Building a simple rig for a character's arm.

Unit II Character Rigging Techniques

a) Constructing a complete character skeleton.
b) Skinning: binding the mesh to the skeleton for deformation.
c) Weight painting: distributing influence for smooth deformations.
d) Creating and configuring deformers: blend shapes, lattices, clusters.
e) Rigging facial features for expressions and lip-syncing.
f) Advanced controllers: set-driven keys, custom attributes, and SDKs.
g) Practical lab: Rigging a full character model.

Unit III Introduction to Animation

a) Principles of animation: squash and stretch, anticipation, timing, and follow-through.
b) Keyframing basics: setting, moving, and deleting keyframes in Maya.
c) Animating simple objects: bouncing ball and pendulum swing.
d) Using the Graph Editor: understanding and manipulating animation curves.
e) Timing and spacing adjustments using the Dope Sheet.
f) Practical lab: Animating a bouncing ball with varying timing.

Unit IV Advanced Animation Techniques

a) Character animation: walk cycles, run cycles, and other basic movements.
b) Animating facial expressions and syncing dialogue.
c) Using constraints for complex animations: parent, point, orient, and aim constraints.
d) Animation layers: managing and blending multiple animation sequences.

e) Introduction to motion capture data: importing, retargeting, and cleaning up mocap data.
f) Polishing animations: adding secondary actions and refining movements.
g) Practical lab: Creating a short animated sequence with a character.

Transaction Mode
Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Textbooks:
1. The Animator's Survival Kit by Richard Williams
2. Maya Character Creation: Modeling and Animation Controls by Chris Maraffi
3. Learning Autodesk Maya 2022: A Comprehensive Guide by Cadcim Technologies
4. Maya Professional Tips and Techniques by Lee Lanier

Web Sources:
•https://knowledge.autodesk.com/support/maya/learn-explore/caas/simplecontent/content/maya-help.html
• https://www.animationmentor.com/
• https://www.cgsociety.org/

Course Title: Matte Painting
Course Code: BAV406

L	T	P	Credits
3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Comprehend the History and Techniques
CO2. Utilize Digital Painting Tools
CO3. Create Complex Environments
CO4. Integrate Matte Paintings into Visual Media

Course Content

Unit I Introduction to Matte Painting **10 Hours**

a) Definition and history of matte painting in film and digital media.
b) Overview of traditional vs. digital matte painting techniques.
c) The role of matte painting in visual effects and storytelling.
d) Introduction to software and tools: Adobe Photoshop, Adobe After Effects, and other digital painting tools.
e) Basic concepts: composition, perspective, and color theory.
f) Practical lab: Creating simple matte paintings using reference images.

Unit II Digital Painting Techniques **10 Hours**

a) Understanding and creating different types of brushes in Photoshop.
b) Techniques for painting skies, clouds, and basic landscapes.
c) Working with layers: blending modes, masks, and layer styles.
d) Texturing and detailing: adding realism to digital paintings.
e) Photo-bashing techniques: integrating photographic elements into paintings.
f) Practical lab: Painting a detailed landscape scene.

Unit III Advanced Matte Painting Techniques **12 Hours**

a) Creating complex environments: cityscapes, forests, mountains.
b) Incorporating 3D elements: using 3D software (e.g., Maya, Blender) to create base models.
c) Camera projection techniques: projecting matte paintings onto 3D geometry.
d) Light and shadow: understanding lighting in different scenarios and painting accordingly.
e) Atmospheric effects: adding fog, haze, and depth to paintings.
f) Practical lab: Creating a multi-layered matte painting with depth and lighting effects.

Unit IV Integration and Compositing **13 Hours**

a) Integrating matte paintings into live-action footage.
b) Using tracking and match-moving techniques to ensure proper alignment.
c) Compositing matte paintings with visual effects software: Adobe After Effects or Nuke.
d) Color correction and grading to match footage.
e) Final touches: adding motion blur, grain, and other post-production effects.
f) Case studies: analysis of professional matte paintings in films and TV.
g) Practical lab: Completing a project by integrating a matte painting into a live-action sequence.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Books:

1. D'artiste Matte Painting by Dylan Cole, Chris Stoski, and Alp Altiner
2. Digital Matte Painting Essentials: 1 by David Mattingly
3. Photoshop for 3D Artists: Volume 1 by Steve Caplin
4. The Invisible Art: The Legends of Movie Matte Painting by Mark Cotta Vaz and Craig Barron

Web Sources:

https://www.animationmentor.com/

https://www.todaysanimation.com/

https://www.digitalartsonline.co.uk/

https://www.animationresources.org/

Course Title: Match Move	L	T	P	Credits
Course Code: BAV407	3	0	0	3

Total Hours: 45

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Understand the Fundamentals of Match Moving: Comprehend the definition, importance, and processes involved in match moving within visual effects.

CO2. Utilize Tracking Software Effectively: Demonstrate proficiency in using various match moving software such as PFTrack, Boujou, Mocha, and After Effects.

CO3. Implement 2D and 3D Tracking Techniques: Execute both 2D and 3D camera tracking, solving common tracking issues and integrating 3D elements into footage.

CO4. Analyze and Complete Advanced Match Moving Projects: Apply advanced techniques in match moving, including object tracking and scene reconstruction, culminating in a comprehensive project.

Course Content

Unit I Introduction to Match Moving **10 Hours**

a) Definition and importance of match moving in visual effects.
b) Overview of the match moving process and applications.
c) Introduction to match moving software: PFTrack, Boujou, Mocha, and After Effects.
d) Basic concepts: tracking points, camera movement, and coordinate systems.
e) Practical lab: Setting up a simple match move project and tracking basic footage.

Unit II 2D Tracking Techniques **10 Hours**

a) Understanding 2D tracking and its applications.
b) Types of trackers: point trackers, planar trackers.
c) Tracking techniques: manual, automatic, and hybrid tracking.
d) Solving common tracking issues: motion blur, occlusions, and lighting changes.
e) Practical lab: Using 2D tracking to stabilize footage and track simple objects.

Unit III 3D Camera Tracking **12 Hours**

a) Introduction to 3D camera tracking: concepts and workflow.
b) Identifying and selecting trackable features in footage.
c) Solving the camera: creating a 3D camera move from 2D footage.
d) Refining the solve: adjusting track points and optimizing the camera path.
e) Integrating 3D elements into tracked footage.
f) Practical lab: Performing a full 3D camera track and placing 3D objects into a scene.

Unit IV Advanced Match Moving Techniques **13 Hours**

a) Object tracking: tracking moving objects independently from the camera.
b) Match moving with green screen footage: integrating CGI into keyed footage.
c) Using lens distortion data: undistorting and redistorting footage for accurate tracking.
d) Scene reconstruction: creating a 3D environment from tracked footage.
e) Combining match move data with other VFX elements: particles, simulations, and matte paintings.
f) Case studies: analysis of complex match moving projects in film and television.

g) Practical lab: Completing an advanced match move project with multiple elements.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Textbooks:

1. Matchmoving: The Invisible Art of Camera Tracking by Tim Dobbert
2. The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures by Jeffrey A. Okun and Susan Zwerman
3. Digital Compositing for Film and Video by Steve Wright
4. The Filmmaker's Guide to Visual Effects: The Art and Techniques of VFX for Directors, Producers, Editors and Cinematographers by EranDinur

Web Sources:

- https://www.creativebloq.com/advice/the-ultimate-guide-to-matchmoving
- https://www.fxguide.com/featured/matchmoving-fundamentals/
- https://cgmeetup.com/

Course Title: Yoga for Human Excellence		L	T	P	Credits
Course Code: BAV408		2	0	0	2

Total Hours: 30

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Understand the origins and philosophy of yoga, including its holistic approach to well-being.

CO2. Demonstrate safe and effective yoga postures (asanas) while understanding their anatomical and physiological aspects.

CO3. Employ techniques for mental and emotional balance through mindfulness, meditation, and positive thinking.

CO4. Explore the deeper dimensions of yoga that contribute to spiritual growth and self-realization.

Course Content

Unit I: Introduction to Yoga Philosophy 6 Hours

a) Understanding the origins and philosophy of yoga.
b) Exploring the eight limbs of yoga (Ashtanga Yoga) according to Patanjali's Yoga Sutras.
c) Introduction to Hatha Yoga and its principles.
d) The holistic approach of yoga towards physical, mental, and spiritual well-being.
e) Practical session: Basic yoga postures (asanas) and breathing techniques (pranayama).

Unit II: Physical Aspects of Yoga Practice 8 Hours

a) Exploring the anatomy and physiology of yoga postures.
b) Understanding alignment principles for safe and effective practice.
c) Developing strength, flexibility, and balance through asana practice.
d) Yoga for stress relief and relaxation: practicing restorative and gentle yoga sequences.
e) Practical session: Sun Salutations (Surya Namaskar) and variations.

Unit III: Mental and Emotional Well-being 10 Hours

a) The role of yoga in promoting mental health and emotional balance.
b) Techniques for mindfulness and meditation in yoga practice.
c) Yoga psychology: understanding and managing emotions.
d) Cultivating positive thinking and resilience through yoga.
e) Practical session: Guided meditation and relaxation techniques.

Unit IV: Yoga for Spiritual Growth and Self-Realization 6 Hours

a) Exploring the deeper dimensions of yoga beyond physical practice.
b) The concept of self-awareness (AtmaBodha) and self-realization (AtmaJnana).
c) Integrating yoga philosophy into daily life: living with mindfulness and compassion.
d) Understanding the interconnectedness of all beings (Yoga Vasishtha).
e) Practical session: Yoga Nidra for deep relaxation and inner exploration.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative

Learning.

Suggested Books:

1. "The Heart of Yoga: Developing a Personal Practice" by T.K.V. Desikachar
2. "Light on Yoga" by B.K.S. Iyengar
3. "The Yoga Sutras of Patanjali" by Sri Swami Satchidananda
4. "The Key Muscles of Yoga" by Ray Long

Web Sources:

- https://www.yogajournal.com/
- https://www.yogabasics.com/
- https://www.lionsroar.com/category/yoga/
- https://www.yogateacher.com/

Semester V

Course Title: Electronic Media	L	T	P	Credits
Course Code: BAV501	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Analyze the Evolution of Electronic Media: Understand the historical development and growth of electronic media, specifically radio and television, and their impact on society.

CO2. Differentiate Between Media Formats: Compare and contrast the characteristics and functions of radio and television, as well as the distinctions between print and electronic media.

CO3. Apply Scriptwriting Techniques: Demonstrate proficiency in broadcasting writing techniques, including various script formats, to produce engaging content for electronic media.

CO4. Utilize Production Techniques: Understand and implement fundamental principles of video production, including the roles within a production team, camera operation, and basic editing processes.

Course Content

Unit – I **15 Hours**

1. Evolution and growth of Electronic Media (Radio, TV)
2. Characteristics of various Electronic Media (Radio, TV)
3. Radio vs. TV
4. Print vs. Electronic Media

Unit – II **15 Hours**

5. Effect of Electronic Media on Culture and Society
6. Broadcasting Writing Technique and Style
7. Script Formats
8. Editing

Unit – III **15 Hours**

9. Principles of Video Production
10. Basic TV Production Techniques
11. Production Team
12. Camera Crew

Unit – IV **15 Hours**

13. Types of Cameras
14. Budgeting
15. Channel Analysis, Media Appreciation – Film review

16. Distribution of Films
17. Introduction to Editing Software – Adobe Premiere, After Effects, Sound Forge.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Electronic Media: An Introduction, “Lynne S. Gross (Author)”, McGraw-Hill
2. India's communication revolution, “Arvind Singhal, Evertt M. Rogers”, Sage India

Web Sources:

- McGraw-Hill: https://www.mheducation.com/
- Sage India: https://in.sagepub.com/en-in/sas

Course Title: Career Management For Animation	L	T	P	Credits
Course Code: BAV502	4	0	0	4

Total Hours: 60

Learning Outcomes

After the completion of the course the learner will be able to

CO1. Identify Career Opportunities in Animation: Analyze various career paths and opportunities available within the animation industry, including local, national, and international studios.

CO2. Master Communication Skills: Demonstrate effective formal and informal communication skills, including public speaking, email etiquette, and conflict resolution techniques, to facilitate professional interactions.

CO3. Create Professional Presentation Materials: Develop creative presentation skills by preparing a digital resume and a motion graphic resume, effectively utilizing visual aids to enhance engagement.

CO4. Leverage Professional Networks: Understand the importance of professional networking and online platforms for skill enhancement and career growth, including how to create accounts on sites like LinkedIn, Upwork, and others for freelance opportunities.

UNIT- I **15 Hours**

Career opportunities in Animation:

Exploring different opportunities in Animation, A list of local, national, and international studios Existing studios and Industries which require animation

UNIT- II **15 Hours**

Formal Communication: Etiquettes of Public speaking, Business meetings, Telephonic communication, Email etiquettes.

Informal Communication: Introduction, expressing gratitude, expressing regret, Apologize, Resolving conflicts.

Presentation Skills: Preparing presentation, making presentation meaningful and engaging, making effective use of the visual aid, interacting with audiences, dealing with queries from the audiences.

UNIT- III **15 Hours**

Creative use of Animation: Prepare a Digital resume, prepare a Motion graphic resume

Preparing for Interviews: Key factors for being successful in an interview, body language, confidence, subject expertise

UNIT- IV **15 Hours**

Awareness of various platform for enhancing skills and professional growth. Creating Account on websites like animation express, bloggers.com, freelance.com, upwork.com for project work Lifecycle of the project to be developed as a freelancer

Creating and maintaining account on professional networks like LinkedIn for career growth opportunities.

Practical Submission: Digital Reel Resume

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Chaturvedi PD, Chaturvedi Mukesh," Business Communication: Skills, Concepts, and
Applications", Pearson Education India
2. Robin Ryan, "60 Seconds and You're Hired! Revised Edition", Penguin Books
3. Joan van Emden, Lucinda Becker, "Presentation Skills for Students", Palgrave
4. David Barron, "Resume: The Definitive Guide on Writing a Professional Resume to Land You Your Dream Job", CreateSpace Independent Publishing Platform
5. Angela Rose (Author), "Linkedin in 30 Minutes (2nd Edition): How to Create a RockSolid Linkedin Profile and Build Connections That Matter", I30 Media Corporation; 2nd
edition

Web Sources:

- Animation Career Review: https://www.animationcareerreview.com/
- MindTools: https://www.mindtools.com/
- Canva: https://www.canva.com/
- Upwork: https://www.upwork.com/

Course Title: Film Direction and Documentary	L	T	P	Credits
Course Code: BAV503	4	0	0	4

Total Hours: 60

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand the Director's Role in Documentary: Comprehend the historical context and future potential of documentary filmmaking, recognizing the director's pivotal role and the challenges of authorship in the documentary genre.

CO2. Develop Creative Story Ideas: Identify and develop unique story ideas, cultivating personal creative identity while mastering screen craft principles, including screen grammar and narrative structure.

CO3. Master Production Techniques: Demonstrate proficiency in the practical aspects of film production, including camera operation, lighting design, location sound recording, and post-production processes such as editing and sound mixing.

CO4. Apply Cinematic Techniques: Utilize advanced cinematic techniques, including shot composition, the 180-degree and 30-degree rules, and staging, to effectively organize actions within a dramatic scene and enhance storytelling through visual language.

Course Content

Unit- I **15 Hours**

Introduction, history, and future: The Director's Role, A brief And Function History of Documentary; Aesthetics and authorship: Authorship Challenges and Opportunities, Reconstruction, and docudrama, Documentary Theory, Project: Critical writing

Unit – II **15 Hours**

Identity and authorship: Project: Recognizing your Creative Identity, Developing Your Story Idea; Screen craft: Screen Grammar, Project: screen craft Analysis, Projects; Basic Production

Unit- III **15 Hours**

Production: Camera Equipment and Shooting Procedure, Lighting, Location Sound and Postproduction: Designing a Structure, Editing, Using Music and Working with a Composer, Fine Cut to Sound Mix

Unit-IV **15 Hours**

Shots, 180-Degree Rule, 30-Degree Rule, Screen Direction, Film-Time, Compression; Organizing Actions in a Dramatic Scene; Staging: Patterns of Dramatic Movement, Changing the Stage within a Scene, Staging as Part of a Film's Design, Working with a Location Floor Plan; Camera: The Camera as Narrator, Objective Camera, Subjective Camera, Shot Lists, Storyboards and Setups

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. Documentary Storytelling: Creative Nonfiction on Screen, "Sheila Curran Bernard", Focal Press

2. Making Documentary Films and Reality Videos: A Practical Guide to Planning,

Filming, and Editing Documentaries of Real Events, “Barry Hampe”, Holt Paperbacks
3. Video production, “VasukiBelavadi”, Oxford University Press India;
4. Television production handbook, “Herbert Zettl”, Cengage Learning

Web Sources:

- https://www.docuwiki.net/
- https://www.filmmakermagazine.com/
- https://www.studiobinder.com/blog/
- https://nofilmschool.com/

Course Title: Multimedia Systems	L	T	P	Credits
Course Code: BAV504	2	0	0	2

Total Hours: 30

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand Multimedia Systems
CO2. Represent Multimedia Data
CO3. Utilize Multimedia Hardware and Software
CO4. Implement Multimedia Networking

Course Content

Unit I: Introduction to Multimedia Systems **5 Hours**

a) Definition and scope of multimedia systems.
b) Components of multimedia systems: text, graphics, audio, video, and animation.
c) Evolution and history of multimedia technology.
d) Applications of multimedia systems in various fields.
e) Practical session: Exploring different multimedia systems and their applications.

Unit II: Multimedia Data Representation **5 Hours**

a) Fundamentals of multimedia data types and formats.
b) Digital representation of multimedia data: text, images, audio, and video.
c) Data compression techniques for multimedia: lossless and lossy compression.
d) Multimedia file formats and standards: JPEG, MP3, MPEG, MP4, etc.
e) Practical session: Converting and compressing different types of multimedia data.

Unit III: Multimedia Hardware and Software **5 Hours**

a) Overview of multimedia hardware components: input devices, output devices, storage devices, and processing units.
b) Multimedia software tools and applications: authoring tools, editing tools, and playback software.
c) Operating systems and multimedia: support for multimedia features and performance optimization.
d) Practical session: Setting up a multimedia workstation with appropriate hardware and software.

Unit IV: Multimedia Networking and Communication **5 Hours**

a) Principles of multimedia networking: protocols and standards.
b) Streaming multimedia content over networks: techniques and challenges.
c) Quality of Service (QoS) in multimedia communication.
d) Multimedia communication protocols: RTP, RTCP, RTSP, and SIP.
e) Practical session: Implementing and optimizing multimedia streaming over a network.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Textbooks:

1. "Multimedia: Making It Work" by Tay Vaughan
2. "Fundamentals of Multimedia" by Ze-Nian Li and Mark S. Drew
3. "Digital Multimedia" by Nigel Chapman and Jenny Chapman
4. "Multimedia Systems" by Ralf Steinmetz and KlaraNahrstedt

Web Sources:

- https://www.tutorialspoint.com/multimedia_systems/index.htm
- https://www.coursera.org/learn/introduction-to-multimedia
- https://www.codecguide.com/
- https://www.techtarget.com/search/query?q=multimedia%20software
- https://www.w3schools.com/html/html5_video.asp

Course Title:Digital Sculpting (Lab)	L	T	P	Credits
Course Code:BAV505	0	0	4	2

Total Hours: 60

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Create Base Meshes
CO2. Use Sculpting Brushes
CO3. Adjust Subdivision Levels
CO4. Prepare Models for Applications

List of Experiments

1. Creating a Base Mesh – ZBrush, Blender, Autodesk Maya
2. Exploring and Using Sculpting Brushes – ZBrush, Blender
3. Applying and Modifying Subdivision Levels – ZBrush, Blender, Autodesk Maya
4. Using Dynamic Tessellation for Detail Work – ZBrush, Blender
5. Masking Techniques for Detailed Sculpting – ZBrush, Blender
6. Organizing with Polygroups – ZBrush, Blender
7. Applying and Utilizing Alpha Maps – ZBrush, Blender
8. Sculpting Basic Organic Shapes (e.g., Human Head) – ZBrush, Blender, Autodesk Maya
9. Creating and Detailing a Creature Model – ZBrush, Blender, Autodesk Maya
10. Using Dynamesh for Continuous Sculpting – ZBrush
11. Refining Mesh Detail with Smooth Brushes – ZBrush, Blender
12. Sculpting Hard Surface Details with ZModeler – ZBrush
13. Creating Complex Surface Textures with Detail Brushes – ZBrush, Blender
14. Modifying Mesh Resolution with Subdivision and Dynamesh – ZBrush, Blender
15. Using References and Background Images for Accurate Sculpting – ZBrush, Blender, Autodesk Maya
16. Exporting and Preparing Models for 3D Printing – ZBrush, Blender, Autodesk Meshmixer
17. Integrating Sculpted Details into a Low-Resolution Game Model – ZBrush, Blender, Autodesk Maya, Substance Painter

Course Title: Action for Animation	L	T	P	Credits
Course Code:BAV506	0	0	4	2

Total Hours: 60

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Create Keyframe Animations: Develop basic animations using keyframes in Blender, Autodesk Maya, and 3ds Max.
CO2. Animate Character Movements: Execute a variety of animations, including bouncing balls and walk cycles, showcasing understanding of movement dynamics.
CO3. Implement Rigging and Skinning: Rig characters and apply skinning techniques to enable realistic movements.
CO4. Export Animations: Prepare and export animations for integration into game engines like Unity and Unreal Engine.

List of Experiments

1. Creating Basic Keyframe Animations – **Blender, Autodesk Maya, 3ds Max**
2. Animating a Bouncing Ball – **Blender, Autodesk Maya, 3ds Max**
3. Animating a Walk Cycle – **Blender, Autodesk Maya, 3ds Max**
4. Applying and Adjusting Animation Curves – **Blender, Autodesk Maya, 3ds Max**
5. Creating and Using Animation Layers – **Blender, Autodesk Maya**
6. Animating Facial Expressions – **Blender, Autodesk Maya, 3ds Max**
7. Implementing Character Rigging and Skinning – **Blender, Autodesk Maya, 3ds Max**
8. Creating a Lip Sync Animation – **Blender, Autodesk Maya, 3ds Max**
9. Animating a Complex Mechanism or Robot – **Blender, Autodesk Maya, 3ds Max**
10. Simulating Natural Movements (e.g., Cloth, Hair) – **Blender, Autodesk Maya, 3ds Max**
11. UsingMotion Capture Data for Animation – **Blender, Autodesk Maya**
12. Creating a Camera Animation and Movements – **Blender, Autodesk Maya, 3ds Max**
13. Animating a Particle System – **Blender, Autodesk Maya, 3ds Max**
14. Applying and Modifying Animation Rig Constraints – **Blender, Autodesk Maya**
15. Creating a Lip Sync Animation with Phonemes – **Blender, Autodesk Maya, 3ds Max**
16. Animating a Character Interaction (e.g., Handshake) – **Blender, Autodesk Maya, 3ds Max**
17. Exporting Animation for Game Engines – **Blender, Autodesk Maya, 3ds Max, Unity, Unreal Engine**

Course Title: 3D Simulations	L	T	P	Credits
Course Code: BAV507	3	0	0	3

Total Hours: 45

Learning Outcomes:

After completion of this course, learners will be able to:

CO1. Understand 3D Simulation Fundamentals: Comprehend the core principles of 3D simulations and their relevance in various industries.

CO2. Create Dynamic Simulations: Develop and implement rigid body and soft body dynamic simulations, demonstrating interactions under different forces and collisions.

CO3. Execute Fluid Simulations: Produce realistic fluid effects, including water, smoke, and fire, utilizing appropriate simulation parameters and tools.

CO4. Simulate Cloth Dynamics: Create and manage realistic cloth simulations by adjusting material properties and incorporating collision interactions.

Course Content

Unit I: Introduction to 3D Simulations **10 Hours**

a) Understanding the fundamentals of 3D simulations in computer graphics.
b) Overview of simulation techniques and their applications in various industries.
c) Introduction to software tools for 3D simulations: SideFX Houdini, Autodesk Maya, and Blender.
d) Exploring different types of 3D simulations: dynamics, fluid, cloth, and particles.
e) Practical session: Setting up project files and becoming familiar with software interfaces.

Unit II: Dynamics Simulations **10 Hours**

a) Understanding rigid body dynamics and its applications in 3D simulations.
b) Creating dynamic simulations for objects interacting with forces and collisions.
c) Introduction to soft body dynamics for simulating deformable objects.
d) Using constraints and fields to control and enhance dynamic simulations.
e) Practical session: Creating a dynamic simulation of falling objects and colliding with surfaces.

Unit III: Fluid Simulations **12 Hours**

a) Introduction to fluid dynamics and its role in 3D simulations.
b) Creating realistic fluid simulations for water, smoke, fire, and explosions.
c) Understanding fluid solvers and their parameters for simulation control.
d) Using emitters, forces, and turbulence for shaping fluid behavior.
e) Practical session: Creating a fluid simulation of flowing water or a smoke plume.

Unit IV: Cloth Simulations **13 Hours**

a) Understanding cloth simulation techniques for simulating fabrics and clothing.
b) Creating cloth simulations for various materials: silk, cotton, leather, etc.
c) Adjusting parameters for realistic cloth behavior: stiffness, damping, and stretch.
d) Using collision objects and constraints to interact with cloth simulations.
e) Practical session: Simulating a piece of cloth draped over a virtual object.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer

Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "The Art of Rigging" by Lee Montgomery
2. "Mastering Autodesk Maya" by Todd Palamar
3. "Houdini Foundations" by Robert Magee
4. "Blender for Visual Effects" by Sam Vile

Web Sources:

- www.thebalancesmb.com/what-is-3d-simulation-4176754
- www.sidefx.com/products/houdini/what-is-houdini/
- www.autodesk.com/solutions/fluid-simulation-software/overview
- www.3dtotal.com/tutorials/t/clothing-simulation-in-3d-3d-modeling-tutorials-cloth-simulation-3ds-max

Course Title:3D Effects	L	T	P	Credits
Course Code: BAV508	3	0	0	3

Total Hours: 45

Learning Outcomes:

After completion of this course, learners will be able to:

CO1. Understanding 3D Effects
CO2. Application of 3D Techniques
CO3. Gain proficiency in using software tools such as Autodesk Maya, SideFX Houdini, and Blender for creating 3D effects.
CO4. Explore real-world applications of 3D effects in film, animation, gaming, and virtual reality.

Course Content

Unit I: Introduction to 3D Effects **10 Hours**

a) Understanding the role and significance of 3D effects in visual media.
b) Overview of various types of 3D effects: particles, dynamics, fluids, and volumetrics.
c) Introduction to software tools for creating 3D effects: Autodesk Maya, SideFX Houdini, and Blender.
d) Exploring real-world applications of 3D effects in industries such as film, animation, gaming, and virtual reality.
e) Practical session: Setting up project files and becoming familiar with software interfaces.

Unit II: Particle Effects **10 Hours**

a) Understanding particle systems and their behavior in 3D space.
b) Creating particle-based effects such as rain, snow, sparks, and explosions.
c) Controlling particle attributes such as position, velocity, and lifespan.
d) Using forces, fields, and emitters to shape particle motion.
e) Practical session: Creating particle effects for a dynamic scene.

Unit III: Dynamics Effects **12 Hours**

a) Introduction to dynamics simulations for realistic physics-based effects.
b) Creating dynamic simulations for objects interacting with forces, collisions, and constraints.
c) Understanding rigid body dynamics for simulating solid objects.
d) Using soft body dynamics for simulating deformable objects like cloth and rubber.
e) Practical session: Simulating a dynamic destruction effect.

Unit IV: Fluid Effects **13 Hours**

a) Exploring fluid dynamics and its applications in 3D effects.
b) Creating fluid simulations for water, smoke, fire, and explosions.
c) Understanding fluid solvers and adjusting simulation parameters.
d) Using emitters, forces, and turbulence to shape fluid behavior.
e) Practical session: Creating a realistic fluid simulation.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "The Art of Rigging" by Lee Montgomery
2. "Mastering Autodesk Maya" by Todd Palamar
3. "Houdini Foundations" by Robert Magee
4. "Blender for Visual Effects" by Sam Vila

Web Sources:

- www.digitalartsonline.co.uk
- www.cgsociety.org
- www.fxguide.com
- www.pluralsight.com
- www.udemy.com

Semester VI

Course Title: Media Laws and Ethics	L	T	P	Credits
Course Code: BAV601	4	0	0	4

Total Hours: 60

Learning Outcomes:

After completion of this course, learners will be able to:

CO1. Understand the significance of media laws and ethics in the fields of journalism and communication.

CO2. Legal Frameworks Awareness.

CO3. Critical Analysis of Freedom of Speech.

CO4. Ethical Journalism Practices.

Course Content

Unit I: Introduction to Media Laws and Ethics **15 Hours**

a) Understanding the importance of media laws and ethics in journalism and communication.
b) Overview of the legal and regulatory frameworks governing media practices.
c) Exploring the historical evolution of media laws and ethical standards.
d) The role of media in shaping public opinion and the need for ethical journalism.
e) Practical case studies highlighting the impact of media laws and ethics on society.

Unit II: Freedom of Speech and Press Freedom **15 Hours**

a) Understanding the concepts of freedom of speech and press freedom.
b) Exploring the legal protections and limitations of free speech in different jurisdictions.
c) The role of the media in holding governments and institutions accountable.
d) Challenges to press freedom: censorship, media ownership, and government control.
e) Practical exercises on navigating ethical dilemmas related to freedom of speech and press freedom.

Unit III: Legal and Ethical Considerations in Journalism **15 Hours**

a) Understanding defamation laws and the concept of libel and slander.
b) Ethical considerations in reporting sensitive topics: privacy, consent, and confidentiality.
c) Copyright law and fair use: principles and guidelines for media professionals.
d) Balancing public interest with individual rights in journalistic practices.
e) Practical application of legal and ethical principles in news reporting and storytelling.

Unit IV: Media Regulation and Self-Regulation **15 Hours**

a) Overview of media regulation bodies and agencies at national and international levels.
b) Understanding the role of self-regulatory bodies and codes of conduct in the media industry.

c) Case studies on the effectiveness and limitations of media regulation and self-regulation.
d) Exploring emerging challenges in media regulation: online platforms, social media, and misinformation.
e) Practical exercises on ethical decision-making and compliance with media regulations.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Reading:

1. "Media Law and Ethics" by Roy L. Moore and Michael D. Murray
2. "Mass Media Law" by Pember and Calvert
3. "The Ethical Journalist: Making Responsible Decisions in the Digital Age" by Gene Foreman
4. "The Elements of Journalism: What Newspeople Should Know and the Public Should Expect" by Bill Kovach and Tom Rosensti

Web Sources:

- Stanford Encyclopedia of Philosophy - https://plato.stanford.edu/entries/media-ethics/
- Media Law Resource Center - http://www.medialawresourcecenter.org/
- Pew Research Center: Journalism & Media - https://www.pewresearch.org/topics/journalism-media/
- International Journal of Media Law and Ethics - https://www.ijmle.com/
- Reporters Without Borders (RSF) - https://rsf.org/en

Course Title: Multimedia Security	L	T	P	Credits
Course Code: BAV602	4	0	0	4

Total Hours: 60

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand the basics of multimedia security and its importance.
CO2. Identify threats and vulnerabilities in multimedia systems.
CO3. Learn about cryptographic techniques for securing multimedia data.
CO4. Understand digital watermarking and fingerprinting for copyright protection.
CO5. Ensure the authenticity and integrity of multimedia content.

Course Content

Unit I: Introduction to Multimedia Security **15 Hours**

a) Overview of multimedia security: definitions and importance.
b) Understanding multimedia content types: text, audio, images, and video.
c) Threats and vulnerabilities in multimedia systems.
d) Basic principles of information security applied to multimedia.
e) Practical session: Introduction to multimedia security tools and software.

Unit II: Cryptography for Multimedia **15 Hours**

a) Fundamentals of cryptography: symmetric and asymmetric encryption.
b) Key management and cryptographic protocols.
c) Encrypting and decrypting multimedia data.
d) Steganography: hiding information within multimedia content.
e) Practical session: Implementing basic encryption and decryption of multimedia files.

Unit III: Digital Watermarking and Fingerprinting **15 Hours**

a) Introduction to digital watermarking: concepts and techniques.
b) Applications of watermarking in copyright protection and authentication.
c) Types of digital watermarks: visible and invisible.
d) Digital fingerprinting: identifying and tracking multimedia content.
e) Practical session: Creating and embedding digital watermarks in images and videos.

Unit IV: Multimedia Authentication and Integrity **15 Hours**

a) Ensuring the authenticity and integrity of multimedia content.
b) Techniques for detecting tampering and forgery.
c) Hash functions and digital signatures for multimedia authentication.
d) Case studies on multimedia integrity attacks and defenses.
e) Practical session: Implementing integrity checks and authentication mechanisms.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "Multimedia Security: Watermarking, Steganography, and Forensics" by Frank Y. Shih
2. "Introduction to Multimedia Security" by Chun-Shien Lu
3. "Digital Watermarking and Steganography" by Ingemar J. Cox, Matthew L. Miller, Jeffrey A. Bloom
4. "Applied Cryptography: Protocols, Algorithms, and Source Code in C" by Bruce Schneier

Web Sources:

- National Institute of Standards and Technology: https://www.nist.gov/
- Cryptography and Network Security - Principles and Practice: https://www.pearson.com/us/higher-education/program/William-Stallings-Cryptography-and-Network-Security-Principles-and-Practice-7th-Edition/PGM152705.html

Course Title: Entrepreneurship Development	L	T	P	Credits
Course Code: BAV603	2	0	0	2

Total Hours: 30

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand the key concepts and characteristics of entrepreneurship.
CO2. Identify various types of entrepreneurs and their ventures.
CO3. Recognize the role of entrepreneurship in economic growth and development.
CO4. Develop skills to identify business opportunities through market research and feasibility analysis.

Course Content

Unit I: Introduction to Entrepreneurship **7 Hours**

a) Definition and characteristics of entrepreneurship.
b) Types of entrepreneurs and entrepreneurial ventures.
c) The role of entrepreneurship in economic development.
d) Understanding the entrepreneurial mindset and motivation.
e) Case studies of successful entrepreneurs.
f) Practical session: Identifying entrepreneurial traits and skills through self-assessment.

Unit II: Opportunity Identification and Feasibility Analysis **8 Hours**

a) Techniques for identifying and evaluating business opportunities.
b) Conducting market research and competitive analysis.
c) Understanding customer needs and market demand.
d) Feasibility analysis: technical, financial, and operational feasibility.
e) Practical session: Developing a feasibility study for a business idea.

Unit III: Business Planning and Development **8 Hours**

a) Importance of a business plan and its components.
b) Writing a comprehensive business plan: executive summary, business model, market strategy, operations plan, and financial projections.
c) Risk analysis and contingency planning.
d) Practical session: Creating a business plan for a startup idea.

Unit IV: Financing the Entrepreneurial Venture **7 Hours**

a) Sources of financing: self-funding, loans, angel investors, venture capital, and crowdfunding.
b) Preparing financial statements and projections.
c) Understanding funding rounds and investor relations.
d) Practical session: Pitching a business idea to potential investors.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "Entrepreneurship: Theory, Process, and Practice" by Donald F. Kuratko
2. "The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses" by Eric Ries
3. "Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers" by Alexander Osterwalder and Yves Pigneur
4. "The Art of the Start 2.0: The Time-Tested, Battle-Hardened Guide for Anyone Starting Anything" by Guy Kawasaki

Web Sources:

- U.S. Small Business Administration: https://www.sba.gov/
- Entrepreneur Magazine: https://www.entrepreneur.com/
- Harvard Business Review on Entrepreneurship: https://hbr.org/topic/entrepreneurship
- SCORE - Mentoring for Entrepreneurs: https://www.score.org/
- Small Business Development Center (SBDC): https://americassbdc.org/

Course Title: Muscle System	L	T	P	Credits
Course Code: BAV604	0	0	6	3

Total Hours: 90

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand the techniques of muscle simulation in computer animation and their importance in character dynamics.

CO2. Identify key aspects of human muscular anatomy relevant to animation, including muscle groups, origins, and actions.

CO3. Analyze muscle deformation and movement patterns such as flexion, extension, abduction, and adduction.

CO4. Apply various muscle simulation techniques, including dynamic, kinematic, and hybrid approaches, to achieve realistic muscle behaviors.

Course Content

Unit I: Introduction to Muscle Simulation in Animation

a) Overview of muscle simulation techniques in computer animation.
b) Importance of muscle dynamics in character animation.
c) Understanding the principles of biomechanics and muscle behavior.
d) Introduction to software tools for muscle simulation: Autodesk Maya, Blender, and Ziva Dynamics.
e) Practical session: Setting up a basic character rig for muscle simulation.

Unit II: Anatomy of the Muscular System for Animation

a) Detailed study of human muscular anatomy relevant to animation.
b) Understanding muscle groups, origins, insertions, and actions.
c) Muscle deformation and movement: flexion, extension, abduction, and adduction.
d) Analyzing reference footage and anatomy resources for animation.
e) Practical session: Sculpting and rigging muscles on a character model.

Unit III: Muscle Simulation Techniques

a) Overview of different approaches to muscle simulation: dynamic, kinematic, and hybrid.
b) Understanding muscle dynamics solvers and their parameters.
c) Muscle contraction and relaxation: keyframes vs. procedural simulation.
d) Techniques for achieving realistic muscle deformations and movement.
e) Practical session: Rigging and simulating muscles on a character model.

Unit IV: Integration with Character Animation

a) Principles of integrating muscle simulation with character animation.
b) Workflow for incorporating muscle dynamics into animation rigs.
c) Techniques for blending muscle dynamics with traditional animation poses.
d) Challenges and solutions in animating complex muscle interactions.
e) Practical session: Animating a character with simulated muscles in various movements.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative

Learning.

Suggested Readings:

1. "Stop Staring: Facial Modeling and Animation Done Right" by Jason Osipa
2. "Character Animation Crash Course!" by Eric Goldberg
3. "The Animator's Survival Kit" by Richard Williams

Web Sources:

- www.autodesk.com/help/maya/2024/enu/?guid=GUID-DBD1DF7A-9E71-4E82-9F66-4B233C3D5A1D
- www.blender.org/manual/en/latest/addons/rigging/muscle.html
- www.zivadynamics.com
- www.awn.com/animationworld/understanding-muscle-simulation-animation
- www.anatomy4sculptors.com

Course Title: 3d Animation Project	L	T	P	Credits
Course Code: BAV605	0	0	6	3

Total Hours: 90

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand Project Management
CO2. Design and Develop Characters
CO3. Create Environment Assets
CO4. Rig and Animate

Course Content

Unit I: Project Planning and Concept Development

a) Understanding the fundamentals of 3D animation project management.
b) Identifying project goals, objectives, and target audience.
c) Brainstorming and developing animation concepts and storyboards.
d) Creating project timelines, milestones, and deliverables.
e) Practical session: Developing a project proposal and storyboard for the animation project.

Unit II: Character Design and Development

a) Principles of character design for animation: anatomy, proportions, and style.
b) Sketching and conceptualizing characters based on the project requirements.
c) Refining character designs through iterations and feedback.
d) Creating character turnarounds and model sheets.
e) Practical session: Designing and modeling characters for the animation project.

Unit III: Environment Design and Asset Creation

a) Designing environments and backgrounds for the animation project.
b) Conceptualizing and sketching key locations and settings.
c) Modeling and texturing environment assets: props, landscapes, and architecture.
d) Creating reusable assets and optimizing workflow efficiency.
e) Practical session: Modeling and texturing environment assets for the animation project.

Unit IV: Rigging and Animation

a) Rigging characters and objects for animation.
b) Understanding the principles of rigging: joints, controls, and deformers.
c) Planning and blocking out animation sequences.
d) Techniques for creating appealing character poses and movements.
e) Practical session: Rigging characters and animating key scenes for the animation project.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "The Animator's Survival Kit" by Richard Williams

2. "Character Animation Crash Course!" by Eric Goldberg
3. "Digital Lighting and Rendering" by Jeremy Birn
4. "The Art of 3D Computer Animation and Effects" by Isaac Kerlow

Web Sources:

- www.creativebloq.com/inspiration/the-art-of-character-design
- www.cgtrader.com/blog/creating-game-assets
- www.pluralsight.com/courses/animation-rigging-3d

Course Title: Text And Image Compression	L	T	P	Credits
Course Code: BAV606	3	0	0	3

Total Hours: 45

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Explain the fundamentals of data compression and differentiate between lossless and lossy compression techniques.

CO2. Implement text compression methods, including Huffman coding and LZW, to improve data storage efficiency.

CO3. Analyze various image compression algorithms, such as JPEG and PNG, and their applications in different contexts.

CO4. Apply transform-based compression techniques, including discrete cosine transform (DCT), to enhance image quality while reducing file size.

Course Content

Unit I: Introduction to Compression Techniques **10 Hours**

a) Understanding the fundamentals of data compression.
b) Overview of compression algorithms and techniques.
c) Types of compression: lossless and lossy compression.
d) Applications of compression in text and image data.
e) Practical session: Exploring basic compression algorithms and their implementation.

Unit II: Text Compression Techniques **13 Hours**

a) Introduction to text compression methods: Huffman coding, Lempel-Ziv-Welch (LZW), and Run-Length Encoding (RLE).
b) Understanding dictionary-based compression algorithms.
c) Text compression standards: ASCII, Unicode, and UTF-8.
d) Evaluating compression efficiency and performance.
e) Practical session: Implementing Huffman coding and LZW compression for text data.

Unit III: Image Compression Techniques **12 Hours**

a) Overview of image compression principles and methods.
b) Understanding raster and vector graphics.
c) Introduction to lossless image compression algorithms: PNG and GIF.
d) Lossy image compression techniques: JPEG compression and its variants.
e) Practical session: Compressing images using JPEG and PNG compression algorithms.

Unit IV: Transform-based Compression **10 Hours**

a) Principles of transform-based compression techniques.
b) Introduction to discrete cosine transform (DCT) and its applications in image compression.
c) Understanding wavelet transforms and their use in compression.
d) Comparing transform-based compression with other compression methods.
e) Practical session: Implementing DCT-based image compression.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "Introduction to Data Compression" by Khalid Sayood
2. "JPEG: Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell
3. "Understanding Compression: Data Compression for Modern Developers" by Colt McAnlis and AleksHaecky
4. "Introduction to Image Compression" by Malvar, H., and L. Heidelberg

Web Sources:

- https://www.cs.cmu.edu/~112/notes/Compression.html
- https://www.geeksforgeeks.org/data-compression-techniques/
- https://towardsdatascience.com/image-compression-techniques-8eb6f6a07a48
- https://www.tutorialspoint.com/digital_image_processing/dip_image_compression.htm

Course Title: Audio And Video Compression	L	T	P	Credits
Course Code: BAV607	3	0	0	3

Total Hours: 45

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand the principles and importance of audio and video compression, including various compression formats and codecs.

CO2. Evaluate the effectiveness of different audio compression techniques, such as perceptual coding and psychoacoustics, in maintaining sound quality.

CO3. Apply video compression techniques, including spatial and temporal redundancy, and understand standards like MPEG and AVC/H.264.

CO4. Implement advanced video compression methods using HEVC/H.265, comparing its efficiencies with previous compression standards.

Course Content

Unit I: Introduction to Audio and Video Compression 12 Hours

a) Understanding the principles and importance of audio and video compression.
b) Overview of audio and video compression formats and codecs.
c) Introduction to lossless and lossy compression techniques.
d) Applications of audio and video compression in multimedia technology.
e) Practical session: Exploring common audio and video compression formats.

Unit II: Audio Compression Techniques 10 Hours

a) Fundamentals of audio compression: perceptual coding and psychoacoustics.
b) Introduction to audio compression standards: MP3, AAC, and OggVorbis.
c) Understanding the principles of lossy audio compression.
d) Evaluating audio compression quality and bitrate.
e) Practical session: Compressing audio files using different codecs and settings.

Unit III: Video Compression Techniques 13 Hours

a) Principles of video compression: spatial and temporal redundancy.
b) Introduction to video compression standards and codecs: MPEG-2, MPEG-4, and AVC/H.264.
c) Understanding intra-frame and inter-frame compression techniques.
d) Evaluating video compression efficiency and quality.
e) Practical session: Compressing video files using popular codecs and settings.

Unit IV: Advanced Video Compression 10 Hours

a) Introduction to High-Efficiency Video Coding (HEVC/H.265).
b) Understanding the improvements and enhancements in HEVC over previous standards.
c) Techniques for achieving higher compression ratios and improved visual quality.
d) Comparing HEVC with other video compression standards.
e) Practical session: Encoding and decoding videos using HEVC.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative Learning.

Suggested Readings:

1. "Digital Audio Compression: Principles and Applications" by Charles S. Watson
2. "The MPEG Representation of Digital Media" by Leonardo Chiariglione
3. "Video Compression Techniques: A Review" by VasudevBhaskaran and Konstantinos Konstantinides
4. "Streaming Media Architectures, Techniques, and Applications: Recent Advances" by Dhiraj Joshi and Zaigham Mahmood

Web Sources:

- https://www.codecguide.com/
- https://www.soundonsound.com/techniques/understanding-audio-compression
- https://www.digitalpreservation.gov/
- https://www.itu.int/en/ITU-T/studygroups/2013-2016/16/Pages/technologies.aspx

Course Title: Multimedia Communications	L	T	P	Credits
Course Code: BAV608	2	0	0	2

Total Hours: 30

Learning Outcomes

After completion of this course, learners will be able to:

CO1. Understand the principles and components of multimedia communication and their applications.

CO2. Analyze various multimedia data representations and their corresponding file formats and codecs.

CO3. Explain the multimedia networking protocols and their roles in reliable and real-time data transmission.

CO4. Apply techniques for multimedia transmission over networks, including congestion control and adaptive bitrate streaming.

Course Content

Unit I: Introduction to Multimedia Communications 7 Hours

a) Understanding the principles and components of multimedia communication.
b) Overview of multimedia communication technologies and applications.
c) The role of multimedia in enhancing communication experiences.
d) Challenges and opportunities in multimedia communications.
e) Practical session: Exploring multimedia communication tools and platforms.

Unit II: Multimedia Data Representation 8 Hours

a) Fundamentals of multimedia data representation: text, image, audio, and video.
b) Introduction to multimedia file formats and codecs.
c) Understanding compression techniques for multimedia data.
d) Techniques for multimedia data synchronization and integration.
e) Practical session: Encoding and decoding multimedia data using different formats and codecs.

Unit III: Multimedia Networking Protocols 8 Hours

a) Overview of multimedia networking protocols: TCP/IP, UDP, RTP, and RTSP.
b) Introduction to streaming protocols: HLS, MPEG-DASH, and RTMP.
c) Techniques for reliable and real-time multimedia data transmission.
d) Quality of Service (QoS) considerations in multimedia networking.
e) Practical session: Setting up a multimedia streaming server and client.

Unit IV: Multimedia Transmission over Networks 7 Hours

a) Understanding the challenges and requirements of multimedia transmission over networks.
b) Techniques for congestion control and bandwidth management.
c) Adaptive bitrate streaming and dynamic adaptive streaming over HTTP (DASH).
d) Multimedia multicast and broadcast protocols.
e) Practical session: Simulating multimedia transmission over different network conditions.

Transaction Mode

Lecture Method, E-Team Teaching, Video based learning, Demonstration, Peer Discussion, Open talk, Cooperative Teaching, Flipped Teaching, Collaborative

Learning.

Suggested Readings:

1. "Multimedia Communications: Applications, Networks, Protocols and Standards" by Fred Halsall
2. "Multimedia Systems: Algorithms, Standards, and Industry Practices" by Parag Havaldar and Gerard Medioni
3. "Digital Multimedia" by Nigel Chapman and Jenny Chapman
4. "Streaming Media Architectures, Techniques, and Applications: Recent Advances" By Dhiraj Joshi and Zaigham Mahmood

Web Sources:

- https://www.researchgate.net/publication/322143384_Understanding_Multimedia_Communications
- https://www.coursera.org/lecture/internet-of-things/multimedia-networking-protocols-8VtEl
- https://ieeexplore.ieee.org/document/8102085
- https://www.streamingmedia.com/Articles/ReadArticle.aspx?ArticleID=135257