

MGM University

Vision

- To ensure sustainable human development which encourages self-reliant and self-content society.
- To promote activities related to community services, social welfare and also Indian heritage and culture.
- To inculcate the culture of non-violence and truthfulness through vipassanna meditation and Gandhian Philosophy.
- To develop the culture of simple living and high thinking

Mission

- To impart state of art education and technical expertise to students and give necessary training to teachers to create self-reliant society for future.
- To encourage students to participate in Indian and International activities in sports, literature, etc. so that future generation becomes base for free and liberal society
- To educate students in areas like Management, Finance, Human relations to inculcate philosophy of simple living and high thinking value of simple economic society.
- To inculcate culture of non-violence and truthfulness through Vipassana.

To sustain activities of Indian culture (viz. classical dance, music and fine arts) through establishing institutes like Mahagami, Naturopathy, etc.

विद्यापीठ गीत

अत्त दिप भव भव प्रदिप भव,

स्वरूप रूप भव हो

ज्ञान सब्ब दवज्ञान सब्ब भव, सब्ब

दिप भव हो

अत्तादह अत्त नो नाथो, अत्तादह

अत्त नो गदि

अत्त मागगपर अप्रमासे है िुझे

चलना सब्ब का कल्याण हो,

वो कार्गकुशल करना

सब्ब का उत्तम मंगल, पथप्रिशगक हो

अत्त दिप भव भव प्रदिप भव, स्वरूप

रूप भव हो

ज्ञान सब्ब दवज्ञान सब्ब भव, सब्ब

दिप भव हो

बुद्धमं शरनं गच्छादम :

धम्मं शरनं गच्छादम :

संघं शरनं गच्छादम :

Dr. G. Y. Pathrikar College of Computer Science & Information Technology

MGM college of Computer Science and Information Technology was established in 2001 offering undergraduate and postgraduate degree program in Computer Science and Information Technology. College was renamed as Dr.G.Y.Pathrikar College of Computer Science and Information Technology in 2003 in memory of great educationalist, one of the founder member and Ex-Secretary MGM, Dr.G.Y.Pathrikar Sir.

It is first self-financed ISO certified institution offering program dedicated to Computer science and Information technology in Maharashtra and has achieved status of 2f/12b. Ours was the only and first college to be re-accredited as A+ grade with NAAC in the year 2017. Experienced and qualified faculty with Ph.D is strength of our college. Starting with 77 student's College has crossed total students strength of 10,000 passing out. Student are doing well in various MNCs like Infosys, Tech-Mahindra, Wipro, Capgemini, Cognizant etc. Many have their own Startups. Some of the students have completed their Masters and Ph.D. program from foreign countries like US, UK, Australia. Now we are constituent college of MGM University, Chhatrapati Sambhajnagar.

Vision

To be an academic institution in dynamic equilibrium in social, ecological and economical environment striving continuously for excellence in total quality education, research and technological service to the nation.

Mission

- To create and sustain a community of learning in which students acquire knowledge and learn to apply it professionally with due consideration for ethical, and economical issues.
- To upgrade our students in all respect with the help of latest infrastructure in the area of Computer Science and Information Technology in order to build the National Capabilities.
- To understand the culture of Non-violence, truth, peace through Gandhian Philosophy.

Programs offered at Dr. G. Y. Pathrikar College of Computer Science & Information Technology

Undergraduate Programmes	Postgraduate Programmes	PhD Programmes
B.Sc(Computer Science) Honours / Honours with Research	M.Sc(Computer Science)	Ph.D. in Computer Science and Information Technology
B.Sc(Information Technology) Honours/ Honours with Research	M.Sc(Information Technology)	
BCA(Science) Honours / Honours with Research	M.Sc(Data Science)	
B.Sc(Animation) Honours / Honours with Research	M.Sc(Animation)	
Integrated M.Sc. Data Science		
BCA(Digital Marketing) Honours		
B.Sc(Robotics) Honours		

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Name of Program – PG Diploma - (Animation)**Duration – One Years**

Eligibility – Any Bachelor's Degree in Science or Graduate of engineering and technology of this university or any other recognized university as equivalent with minimum 50% marks (45% for reserved category) can apply. 1. Maharashtra State Candidate.

MGMUNIVERSITY

Name of Faculty: Basic and Applied Science

Name of the College/Institute/Department/School: Dr. G. Y. Pathrikar College of Computer Science and Information Technology

Name of the Programme: PG Diploma - (Animation)

Programme Type (UG/PG): PG Diploma

Duration: One Years

First Year - Semester I												
Course Category	Course Code	Course Title	Nature of Course	No. of Credits	Teaching (Contact hrs/ week)		Evaluation Scheme (Marks)			Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	MSA41MML501	User Experience & User Interface Design	Theory	3	3	-	60	40	100	--	16	40
MM	MSA41MML502	Image Editing	Theory	3	3	-	60	40	100	--	16	40
MM	MSA41MML503	Basics of 3D Computer Graphics	Theory	3	3	-	60	40	100	-	16	40
RM	MSA41RML501	Research Methodology	Theory	4	4	-	60	40	100	-	16	40
ME		Elective from Basket-1	Theory	3	3	-	60	40	100	-	16	40
MM	MSA41MMP501	Practical Based on User Experience & User Interface Design	Practical	1	-	2	30	20	50	-	08	20
MM	MSA41MMP502	Practical based on Image Editing	Practical	1	-	2	30	20	50	-	08	20
MM	MSA41MMP503	Practical Based on Basics of 3D Computer Graphics	Practical	1	-	2	30	20	50	-	08	20
ME		Practical based on elective	Practical	1	-	2	30	20	50	-	08	20
Total				20	16	08	420	280	700			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

First Year - Semester II												
Course Category	Course Code	Course Title	Nature of Course	No. of Credits	Teaching (Contact hrs/ week)		Evaluation Scheme (Marks)			Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	MSA41MML504	Visual Effect	Theory	3	3	-	60	40	100	--	16	40
MM	MSA41MML505	Advanced 3D Computer Graphics	Theory	3	3	-	60	40	100	--	16	40
MM	MSA41MML506	VFX Compositing-I	Theory	3	3	-	60	40	100	--	16	40
ME		Elective from Basket-2	Theory	3	3	-	60	40	100	--	16	40
MM	MSA41MMP504	Practical Based on Visual Effect	Practical	1	-	2	30	20	50	--	08	40
MM	MSA41MMP505	Practical based Advanced 3D Computer Graphics	Practical	1	-	2	30	20	50	--	08	20
MM	MSA41MMP506	Practical Based on VFX Compositing-I	Practical	1	-	2	30	20	50	--	08	20
ME		Practical based on elective	Practical	1	-		30	20	50	--	08	20
OJT	MSA41JTJ501	On Job Training / Internship	Practical	4	-	8	60	40	100	--	--	-
Total				20	12	14	420	280	700			

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Elective Subjects List

Basket I - (Elective)

Code	Title
MSA41MEL501	2D Animation
MSA41MEL502	Advanced Visual Effects
MSA41MEL503	3D Modeling
MSA41MEP501	Practical Based on 2D Animation
MSA41MEP502	Practical Based on Advanced Visual Effects
MSA41MEP503	Practical Based on 3D Modeling

Basket 2- (Elective)

Code	Title
MSA41MEL504	Advance video editing and color grading
MSA41MEL505	Virtual Reality
MSA41MEL506	3D Texturing
MSA41MEP504	Practical Based on Advance video editing and color grading
MSA41MEP505	Practical Based on Virtual Reality
MSA41MEP506	Practical Based on 3D Texturing

Syllabus

Semester-I

Course code: MSA41MML501 **Course name:** User Experience (UX) & User Interface (UI) Design

Course category: Major Mandatory **Credits:** 3

Pre-requisites: Basics of mathematics and working of Computer System

Course Objectives:

The basic objective of User Experience & User Interface Design is to Design user friendly simple, functional website And Mobile Apps.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Understand the concept of User Experience Design, solve problems using UX Techniques, Structure and manage the User Requirements for Projects.

CO2: Learn to Design Website Layouts.

CO2: Learn to create personas, journey maps, Empathy map, and wireframes.

CO3: Students efficiently use Design principles when design user interface for websites or mobile apps.

Contents –

Unit	Content	Teaching hours
1	Basics of User Experience Design: Define Experience Design, UXD Myths, Need of User Experience Design, Definition, Advantages of UXD, UXD Strategy, Project Objective and Approach, Business Requirements, UXD Elements, characteristics of UXD.	10
2	Research Using UX Process: Exploring the problem, generating ideas, Refining solution, User Research: User interviews, Contextual inquiry, survey, focus group, card sorting, Research Techniques, Personas: what are Personas, why create personas, finding information for personas, Empathy map.	10
3	Generating Ideas, Content Management, Business Requirement & Solution to Prototype: Content strategy, Information Architecture, User researcher, Building a Network of user Advocacy, Current state, Design principles, Design Deliverables, Fidelity, Better Deliverables. Defining to Design, Design principles, Information Architecture, Wire framing, Prototyping, wireframe vs Prototype Usability Testing, feedback.	10
4	The Importance & Principals of User Interface: Defining the User Interface, Importance of good design, Graphical User Interface, Screen Design, color theory, Typography, Imagery, Emphasis, Balance, Alignment, Contrast, Repetition, color, space, Proximity, Hierarchy, Naturalness, Consistency, Friendliness, Clarity, Interaction, Transparency.	10
5	Elements of user interface design Input Controls: Checkboxes, Radio buttons, Dropdown lists, List boxes, Buttons, Toggles, Text fields, Date field. Navigation Components: Breadcrumb, Search field, Pagination, Slider, Tags, Icons, Image carousel, Informational Components: Tooltips, Icons, Progress bar, Notifications, Message boxes, Modal windows (Pop-up). Containers: Accordion. other Elements: button, card, comment, feed, form, icon, Loaded, Modal, Pagination, Notification, picker, progress bar, Search field, sidebar, slider controls, Stepper, Tab bar, tooltip, Toggle.	5

Text Books: 1. UNDERCOVER User Experience Design Cennyddbowles and James Box. New Riders
2. A Project Guide to UX Design Russ Unger and Carolyn Chandler New Riders 2 nd
3. The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques. Wilbert O. Galitz WILEY 3 rd .

Syllabus Semester-I

Course code: MSA41MML502	Course name: Image Editing
Course category: Major Mandatory	Credits: 3
Pre-requisites: Basic Graphic Design Design	
Course Objectives: The basic objective of Image editing is to edit photos, apply Different types of Effects on Photos, Website Prototype Design.	
Course Outcomes: At the end of the course, the students will be able to -	
CO1: Understand how to design brochures, posters, flyers etc.	
CO2: Learn to Modify Photographs.	
CO3: Learn how to use design principals on Different projects.	
CO4: Prototype designing for mobile app &Website.	

Contents –

Unit	Content	Teaching hours
1	Title of 1 – Unit-I Basics of Image Editing Introduction, Features, Applications, Advantages & Limitations, Image file formats, Resolution, Aspect ratio, image size, color theory, Design principles, Photoshop Workspace, tool box. Navigation Navigate & Save, Windows Explorer, Append Pack and Import, Packing Data Importing Objects Create Edit Object Basic Mesh, Placing Objects, Edit/Object Mode, Mesh Types, Cursor Placement Moving Objects, Scaling Objects, Rotating Objects, Precision Manipulation, Transformation Widget, Mesh Vertex Editing ,Selecting Vertices, Edit Mode Selection ,Creating Vertices, Center Points, Object Display, Shading Smooth/Flat, Extruding Shapes, Proportional Vertex Editing, Knife Tool, Creating Ground ,Edge Loop Selection, Tool Shelf Joining/Separating Meshes, Modifiers	10
2	Title of 2 – Unit-II Art of Selection & Image Enhancement Selection tool: Rectangular marquee, Elliptical marquee tool, Single row & column tool, polygonal lasso, magnetic lasso, Quick selection, magic wand, Refining edge, crop tool, adjusting levels with curves, hue / saturation, color balance, Matte painting.	10
3	Title of 3 – Unit-III Layers & Image Retouching: Understanding layer, merge & group layer, duplicate layer, rearranging layers, layer styles, applying gradient to a layer, adjustment layer, blending modes Retouching tools: spot healing brush, healing brush, patch, content-aware, clone stamp.	10
4	Title of 4 – Unit-IV Masking, Typography, Vector drawing: Define Mask, types of mask, standard type tool: Horizontal & Vertical Type, Horizontal & vertical Type mask, character & paragraph panel path & Direct selection tool, drawing tools: pen tools, shape tools, painting brush tools, actions.	

5	Title of 5 – Unit-V Interface design, Filters& 3D: Website layout design, Units, Design Principles, transformation, UI Elements, wireframes, smart filters, Basic filters: blur, Distort, noise, pixelate, render, stylize, filter gallery, filter effects, smart filter, 3D fundamental, 3D object tool and options, frame animation.	5
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Text Books: 1. Adobe Photoshop CC Andrew faulkner and Conrad Chavez Pearson Publication 2017 Release 2. Photoshop CC the missing manual lesa snider O'REILLY 1 st Edition.		
Reference Books: Photoshop CS6 Training Guide Design Prof.satishjain, M. Geetha BPB.		

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Syllabus Semester-I

Course code: MSA41MML503

Course name: Basics of 3D Computer Graphics

Course category: Major Mandatory

Credits: 3

Pre-requisites: Basic Knowledge of Graphics Design Software.

Course Objectives: The basic objective is to design 3D Model and to Create Animation.

CO1: Understand Different Animation Techniques.

CO2: Learn to design 3D Model

CO3: Learn to create 3D Animation

Contents –

Unit	Content	Teaching hours
1	Title of 1 – Unit-I Introduction: Computer graphics, CG Process, Animation, stages preproduction: script, storyboard, the conceptual art, production: model sheets, concept art, Postproduction: Rendering, Compositing, Editing, Sound, modeling, raster vs vector image, color formats, Resolution, aspect ratio, Frame rate.	10
2	Title of 2 – Unit-II Interface : Views, Time slider, range slider, toolbox window, menu bar, menu sets, manipulators, shelves, moving views and manipulating objects, soft selection, reflection, channel box, layer editor, status line, Preferences, workspace, layout.	10
3	Title of 3 – Unit-III Animation : Scene file management, Creating and Animating a Bouncing Ball, Resolution gate, setting Movement keyframes, Refining Movement in the Graph editor, adjusting spline tangents, Breaking tangents for Fast direction Changes, Animation Principles, Creating a Playblast of your Animation.	10
4	Title of 4 – Unit-IV Modeling with Polygons : Understanding polygons, vertex, Edges, Primitives, importance of Quads, Modeling Toolkit, Main Modeling tools: planes, cube, extruding Faces, Box Modeling, split polygon tool. Edge loops, refining, Mirroring.	10
5	Title of 5 – Unit-V Creating surface : hypershade Window, Marking Menu, Laying out uVs, texture Mapping, Color Map, Additional surfaces. Blend shapes: deformer order, Facial deformers, Facial Blend shapes, Blend shape Interface.	5

Text Books: 1. Introducing Autodesk Maya 2014: Autodesk Official Press. ISBN: 9788126543007
 Dariush Derakhshani Autodesk Official Press 2014.
 2. Autodesk Maya 2014 Essentials: Autodesk Official Press. ISBN: 9781118575079
 Paul Naas Autodesk Official Press 2014.

Syllabus Semester-I

Course code: MSA41RML501	Course name: Research Methodology
Course category: Research methodology	Credits: 4
Pre-requisites: Basics of Research Theory.	
Course Objectives: To understand the state-of-the-art in research methodology. Survey the currently available systems.	
Course Outcomes: At the end of the course, the students will be able to -	
CO1: Demonstrate knowledge of research methodology	
CO2: Understand the Research Problem	
CO3: Understand the Research Design	
CO4: Understand Sampling Design, Measurement and Scaling Techniques	

Contents –

Unit	Content	Teaching hours
1	Introduction: Meaning of Research, Objectives of Research, Motivation in Research, Types of Research, Research Approaches, Significance of Research, Research Methods Verses Methodology, Research and Scientific Method, Importance of Knowing How Research is Done, Research Process, Criteria of Good Research, Problems Encountered by Research in India.	10
2	Defining the Research Problem: What is Research Problem? Selecting the Problem, Necessity of Defining the Problem, Techniques Involved in Defining problem, An Illusion.	10
3	Research Design: Meaning of Research Design, Need of Research Design, Features of Good Design, Important Concepts Relating to Research Design, Different Research Design, Basic Principles of Experimental Designs.	10
4	Sampling Design, Measurement and Scaling Techniques: Implications of a Sample Design, Steps in Sampling Design, Criteria of Selecting a Sampling Procedure, Characteristics of Good Sample Design. Measurement in Research, Sources of Error in Measurement, Meaning and Scaling	10
5	Methods of Data Collection, Processing and Analysis of Data: Collection of Primary Data, Observation Method, Interview Method, Collection of Data through Questionnaires, Collection of Data through Questionnaires Schedules, Processing Operations, Some Problems in Processing, Statistics in Research, Simple Regression Analysis.	

Text Books:	1. Photoshop CC the missing manual lesa snider O'REILLY 1 st Edition.
Reference Books:	1. Research Methodology Methods and Techniques ,C. R. KothariNew Age International Publishers, Second Edition 2. Research Methodology P. Sam Daniel, Aroma G. Sam Gyan Publishing House, First Edition

Syllabus

Semester-I

Course code: MSA41MEL501

Course name: 2D Animation

Course category: Major Elective

Credits: 3

Pre-requisites: Basics Knowledge of Graphics Software.

Course Objectives: To design 2D animation and basic interactive application

Course Outcomes: At the end of the course, the students will be able to -

CO1: To Learn drawing objects

CO2: To Learn basic 2D Animation, character animation

CO3: To Understand Interactive application

CO4: To Design animating banners for websites

Contents –

Unit	Content	Teaching hours
1	Workspace, Graphics & text : Workspace, Application bar tools panel, control panel, stage, Timeline, Action script, action panel, Strokes and Fills, creating shapes, making selections, creating curves, object Properties, text properties.	10
2	Symbols & Mask : Understanding symbols, creating symbol, Editing & managing Symbols, Instances, applying filters, creating and using mask, Animating the Mask and Masked layers, advantages of using mask.	10
3	Animation & interactivity : Motion tween , shape tween, Frame-by-frame animation, shape hints, frame rate, HTML5 components, component source & component life cycle, classic tween animation, frames, key frames, code snippets, inverse kinematics, motion path, animation properties, ease presets, using components on HTML5 canvas, interactive code snippets.	10
4	Multimedia & Video : Using camera in animate, Using camera at runtime, Use sound in animate, importing sounds, sound file formats, Exporting SVG files, working with video file, working with video cue points, apply transformation on graphics object, create symbol instances, creating and arranging objects, 3D graphics, blend modes, graphic filters.	10
5	Advance Animation, Exporting and Publishing : Using bone tool animation, creating and applying Motion presets, creating interactive animations with buttons, creating Motion tween animation, Motion editor, animation with motion path, manipulating Motion tweens, action script, Export SWF files, export file formats, Publishing for Mobile devices, mobile content simulator, creating a sprite sheet, Export QuickTime video files, Troubleshooting video, Export Images and Animated GIFs.	5

Text Books:	1. Adobe Animate Classroom in a Book (2020 Release), Russell Chun Pearson Education 1 st Edition 2. Adobe Animate CC Help - - -
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Syllabus

Semester-I

Course code: MSA41MEL502

Course name: Advanced Visual Effects

Course category: Major Elective

Credits: 3

Pre-requisites: Basics of Motion Graphics Design.

Course Objectives: The basic objective of is to understand Visual effects & Motion Graphic Design.

Course Outcomes: At the end of the course, the students will be able to -

CO1: To explain how tracking works

CO2: To develop fundamental knowledge of concepts of planar tracking.

CO3: To develop practical tracking.

Contents –

Unit	Content	Teaching hours
1	The Fundamentals of Planar Tracking : Creating our first shape for tracking, understanding concepts of planar tracking and co-planar objects, A brief overview of the user-interface when creating and managing layers, The separation between shape data and tracking data.	10
2	Understanding the Planar Tracker : The first track plus exploring the shape tools, tracking off-screen: Technique 1 Reshape, Tracking off-screen: Technique 2 Offset Tracking, Limitations of the planar tracker. What can't you track.	10
3	Screen Replacements and Screen Inserts: Identifying the best place to track, Checking the integrity and stability of the track, Correcting tracking drift using Adjust Track, Keyframing Adjust Track over time.	10
4	Choosing the Best Tracking Settings More details about the Viewer interface, Tracking Translation, Scale and Rotation, When the track fails. Adjusting the Search Area, Tracking Shear vs tracking Perspective.	10
5	Unlink Tracking Tracking camera movement the smart way, Identifying the problem and when Unlink Tracking will be suitable, Positioning the first shape in the correct area, Handling problems when the tracking starts to slip, when is Unlink Tracking not a great solution.	5

Online Reference: 1. Mocha Pro 2019 User Guide:

<https://borisfx.com/support/documentation/mocha/6.0.0/>

2. Web resources available: at: <https://www.curiousturtle.com/product/getting-started-with-mocha-premium-instant-download/>

Reference Book: Visual Effects and Compositing, Jon Gress, New Riders 2014.

Syllabus Semester-I

Course code: MSA41MEL503	Course name: 3D Modeling
Course category: Major Elective	Credits: 3
Pre-requisites: Basics of 3D Designing.	
Course Objectives: Student can able to create, edit, and analyze 3D models. Development of modeling, texturing and rendering	
Course Outcomes: At the end of the course, the students will be able to -	
CO1: Introduction to 3D object and Interface of the software	
CO2: Modeling with polygons and patches	
CO3: Applying material and shading	

Contents –

Unit	Content	Teaching hours
1	Introduction Exploring Interface, Working with files, Importing and Exporting, Grouping, Linking and Parenting objects, Working with Compound Object, Model Types and Modeling Categories, Modifiers, Splines and shapes, Modeling with Polygons, Working with Compound Object.	10
2	Material Working with material editor, Applying Material, Shading Types, Material with maps.	10
3	Shading Compound Material, Unwrap UVW modifier, Pelt mapping, Normal Maps, Texturing	10
4	Working with Animation Working with key, Constraints, Animating Object, Rigging, Working with bones, Inverse kinematics.	10
5	Camera, Lights and Rendering Configuring camera, Light Technique, Atmospheric & Rendering effect, Rendering Image and Video	5

Text Book: 1. 3Ds Max- Bible 2011, Kelly L. Murdock Wiley Publication First Edition

Reference Book: 3ds Max 2008, Sham Tickoo, Pearson Publication, Second Edition

Semester-I

Course code: MSA41MMP501 Course Name: Practical Based on User Experience & User Interface Design	
Course category: Major Mandatory Credits: 1	
Pre-requisites: Basics Knowledge of Design Thinking.	
Course Objectives: The basic objective of User Experience & User Interface Design is to Design user friendly simple, functional website And Mobile Apps.	
Course Outcomes: At the end of the course, the students will be able to -	
CO1: Understand the concept of User Experience Design, solve problems using UX Techniques, Structure and manage the User Requirements for Projects.	
CO2: Learn to create personas, journey maps, Empathy map, and wireframes.	
Contents –	
Sr.no.	Content
1	Write five features of any mobile app
2	Design Empathy map for Coffee shop app.
3	Write User Persona for Designing E-Commerce Website.
4	Write Journey Map for Traveling app.
5	Design wireframe structure for Music app.
6	Design Information Architecture for E-Commerce Website
7	Design mobile app screens for educational website
8	Design Animated screens for app journey information
9	Design Animated slideshow for app features
10	Design text animation for app features

Text Books:

1. UNDERCOVER User Experience Design, Cennydd bowles and James Box, New Riders 1st Edition
2. A Project Guide to UX Design ,Russ Unger and Carolyn Chandler, New Riders, 2nd Edition
3. The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques, Wilbert O. Galitz, WILEY, 3rd Edition

Reference Books:

Online Resources: 1. NPTEL / SWAYAM lectures.

Semester-I**Course code:** MSA41MMP502**Course Name:** Practical based on Image Editing**Course category:** Major Mandatory**Credits:** 1**Pre-requisites:** Basics Knowledge of Graphic Software**Course Objectives:** The basic objective of Image editing is to edit photos, apply Different types of Effects on Photos, Website Prototype Design.**Course Outcomes:** At the end of the course, the students will be able to -**CO1:** Learn to Modify Photographs.**CO2:** Understand how to design brochures, posters, flyers etc.**Contents –**

Sr.no.	Content
1	Create a passport sizes photographs using patterns
2	Design collage template using transformations.
3	Create a clipping mask effects for different types of shapes.
4	Design 2D background using pen tool and selection tools.
5	Design perspective wallpaper using vanishing point filter.
6	Make color correction in image using image Adjustment layers.
7	Design creative background using gradient, texture and patterns.
8	Create blending effect of multiple images using gradient and masking.
9	Design different types of shapes using transformations.
10	To study selection tools of different types object , image selections.

Text Books:

1. Adobe Photoshop CC Andrew faulkner and Conrad Chavez, Pearson Publication, 2017 Release.
2. Photoshop CC the missing manual, lesa snider O'REILLY, 1st Edition

Reference Books:**Online Resources:** 1. NPTEL / SWAYAM lectures.

Semester-I**Course code:** MSA41MMP503**Course Name:** Practical Based on Basics of 3D Computer Graphics**Course category:** Major Mandatory**Credits:** 1**Pre-requisites:** Basics Knowledge of 3D Modeling Software**Course Objectives:** Objective is to design 3D Model and to Create Animation.**Course Outcomes:** At the end of the course, the students will be able to -**CO1:** Understand Different Animation Techniques**CO2:** Learn to design 3D Model**Contents –**

Sr.no.	Content
1	Overview of Graphical User Interface
2	Learning how to add objects
3	Procedure of editing objects
4	Learning different modifiers
5	Learning about Hypershade
6	Procedure to apply keyframe animation to objects
7	Procedure to create a bouncing ball Animation
8	Learning about different types of lights
9	Project Editing
10	12 Principles of Animation

Text Books:

1. Introducing Autodesk Maya 2014: Autodesk Official Press. ISBN: 9788126543007 Dariush Derakhshani, Autodesk Official Press 2014.
2. Autodesk Maya 2014 Essentials: Autodesk Official Press. ISBN: 9781118575079 Paul Naas Autodesk Official Press, 2014

Reference Books:**Online Resources:** 1. NPTEL / SWAYAM lectures.

Semester-I**Course code:** MSA41MEP501**Course Name:** Practical Based on 2D animation**Course category:** Major Elective**Credits:** 1**Pre-requisites:** Basics of Graphics Software.**Course Objectives:** To design 2D animation and basic interactive application**Course Outcomes:** At the end of the course, the students will be able to -**CO1:** Understand Different Animation Techniques**CO2:** Learn to design 3D Model**Contents –**

Sr.no.	Content
1	To Study Motion tween animation.
2	To Create Classic tween and shapes tween animation
3	Human Walk Cycle To Create Profile Walk Cycle
4	To Create Interactive animation
5	Design Character animation with sound and effects.
6	Create ball bouncing animation in animate
7	Create Car animation using different PNG
8	Create bird animation using different JPEG, PNG or PSD
9	Make a giant wheel animation / rotation using different symbols in animate
10	To study export file into different format.

Text Books:1. Adobe Animate Classroom in a Book (2020 Release), Russell Chun, Pearson Education, 1st Edition.**Online Resources:** 1. Adobe Animate CC Help

Semester-I

Course code: MSA41MEP502

Course Name: Practical Based on Advanced Visual Effects

Course Category: Major Elective

Credits: 1

Pre-requisites: Basics of Motion Graphics Design

Course Objectives: The basic objective of is to understand Visual effects & Motion Graphic Design

Course Outcomes: At the end of the course, the students will be able to -

CO1: To explain how tracking works

CO2: To develop fundamental knowledge of concepts of planar tracking

Contents –

Sr.no.	Content
1	To study mocha AE & Mocha Pro and user interface splines and tracking
2	Create Track planer surface and add png to match the footage motion
3	Stabilize Footage in mocha using different track options
4	Replace any footage with your own footage using motion tracking and mocha ae.
5	Erase Anything in Your Footage with Mocha Pro using tracker
6	Add Face Paint with Power Mesh and the Insert Module
7	Create Clean Plate in Mocha Pro Erase Anything in Your Footage
8	Export your tracking data in different software for match move purpose
9	Use mocha pro different technique for rotoscope
10	Export shape data and track data and import it in other software, also export video output in mocha.

Reference Books:

1. Visual Effects and Compositing, Jon Gress, New Riders, 2014.

Online Resources:

Semester-I**Course code:** MSA41MEP503**Course Name:** Practical Based on 3D Modeling**Course Category:** Major Elective**Credits:** 1**Pre-requisites:** Basics of 3D Designing.**Course Objectives:** Student can able to create, edit, and analyze 3D models. Development of modeling, texturing and rendering**Course Outcomes:** At the end of the course, the students will be able to -**CO1:** Modeling with polygons and patches**CO2:** Applying material and shading**Contents –**

Sr.no.	Content
1	To study mocha AE & Mocha Pro and user interface splines and tracking
2	Create Track planer surface and add png to match the footage motion
3	Stabilize Footage in mocha using different track options
4	Replace any footage with your own footage using motion tracking and mocha ae.
5	Erase Anything in Your Footage with Mocha Pro using tracker
6	Add Face Paint with Power Mesh and the Insert Module
7	Create Clean Plate in Mocha Pro Erase Anything in Your Footage
8	Export your tracking data in different software for match move purpose
9	Use mocha pro different technique for rotoscope
10	Export shape data and track data and import it in other software, also export video output in mocha.

Reference Books:

1. Visual Effects and Compositing, Jon Gress, New Riders, 2014.

Online Resources:

Syllabus Semester-II

Course code: MSA41MML504

Course name: Visual Effect

Course category: Major Mandatory

Credits: 3

Pre-requisites: Basics of Compositing Techniques.

Course Objectives: The basic objective of is to understand Visual effects & Motion Graphic Design.

Course Outcomes: At the end of the course, the students will be able to -

CO1: To Learn Visual Effects

CO2: To Understand Motion Graphic Design

CO3: To Perform Video Editing

Contents –

Unit	Content	Teaching hours
1	Workspace & Workflow: Workspace, creating a project and importing footage, creating a composition and arranging layers, adding effects and layer properties, Animating the composition, customizing workspaces, Controlling the brightness of the user interface. Creating a project and importing footage, Composition basics, creating a composition and arranging layers.	10
2	Importing footage & Layers : Importing video and audio Working with footage items, frame rate, Importing and interpreting video and audio, Preparing and importing 3D image files, working with footage items, animating text, Preparing and importing still images. Creating Selecting and arranging layers, Layer properties, Blending modes and layer style.	10
3	Animation and Masking : Animation basics, Keyframes, selecting, and deleting keyframes, Editing, moving, and copying key frames, Assorted animation tools, Speed, Tracking and stabilizing motion, Graph editor, Assorted animation tools, Tracking 3D Camera Movement, 3D camera tracker effect, face Tracking, Animating with Puppet tool Paint tools: Brush, Clone Stamp, and Eraser, creating shapes & Masks, mask Tracking.	10
4	Effects, Transparency and compositing : Effects and animation presets, 3D Channel effects, Audio effects, Blur and Sharpen effects, Channel effects, the rolling shutter repair effect, Color Correction effects, Keying effects, Noise and Grain effects, Compositing and transparency overview, Alpha channels, masks, and mattes, Keying, Roto Brush and Refine Matte.	10
5	Text, Rendering and Exporting : Creating and editing text layers, Formatting characters and the Character panel, Formatting paragraphs and the Paragraph panel Preparing and importing 3D image files, Animating text. Basics of rendering and exporting, Rendering and exporting for Flash Professional and Flash Player, Rendering and exporting still images and still-image sequences.	5

Text Book: ADOBE® AFTER EFFECTS Classroom in a Book (2020 Release) Brie Gyncild & Lisa Fridsma Adobe Press, 1st Edition.

Syllabus Semester-II

Course code: MSA41MML505

Category: Major Mandatory

Course name: Advanced 3D Computer Graphics

Credits: 3

Pre-requisites: Basics of 3D Modeling

Course Objectives: Objective is to design 3D Model, lightning, texturing and rigging.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Learn to create 3D Animation.

CO2: Learn to create 3D Modeling, Texturing and Lightning.

Contents –

Unit	Content	Teaching hours
1	Blend Shape: Understanding blend shape, working of blend shape, Deformer order, Planning for Facial deformers, creating your Facial Blend shapes, Blend shape Interface, understanding how Joints Work, building joints chain, Mirroring joints chain Connecting All your Chains.	10
2	Lightning: Basic lightning concept, Three-Point Lighting, Practical Lighting, lights, common light attributes, light types, Light Linking, creating shadows, Lighting Effects.	10
3	Shading and Texturing: Shading, shader types, and shade types: Lambert, Phong, Blinn Shader, Phong E, Anisotropic, Layered, Ramp, Shader Attributes, UV Mapping, Texture node, Texture Nodes, Ramp Texture.	10
4	Rigging & Animation: Grouping, Parenting, Pivot Points, Null Objects, Constraints, Understanding Hierarchy: Outliner Set Keyframes, Forward Kinematics vs Inverse Kinematics, The Joint tool, Bones, Skinning, Weighting Lattice Deformers. Scale animation, animation curves, objects graph editor, Spline Curves, animation principals: squash, stretch, anticipation, and follow-through, understanding timings, Squash and Stretch, rotation, Motion Trails, path animation, Transferring Animation, inverse kinematics, Playblasting.	10
5	Rendering : concept of Rendering, Rendering Animated Sequences Rendering Setup, setting resolution, selecting render engine, Render View Window, IPR Rendering, Reflections and Refractions, Using Cameras, Render Layers.	5
Text Book: 1. Introducing Autodesk Maya 2014: Autodesk Official Press. ISBN: 9788126543007 Dariush Derakhshani Autodesk Official Press 2014		
Reference Book: 1. Autodesk Maya 2014 Essentials: Autodesk Official Press. ISBN: 9781118575079 Paul Naas Autodesk Official Press 2014		

Syllabus Semester-II

Course code: MSA41MML506

Course name: VFX Compositing – I

Category: Major Mandatory

Credits: 3

Pre-requisites: Basics of Compositing

Course Objectives: To cover specialized areas of compositing for high end visual effects productions.

Course Outcomes: At the end of the course, the students will be able to -

CO1: To explain how VFX works.

CO2: To develop fundamental knowledge of concepts underlying Visual effects.

CO3: To develop practical VFX skills.

Contents –

Unit	Content	Teaching hours
1	Title of 1 – Unit-I Interface: Navigating the interface, Building Node Graphs, Creating key frames, The Curve Editor.	10
2	Title of 2 – Unit-II Transformations and Animation: Keyframe animation, Math expressions and linking, creates animated elements, Correcting for lens distortion.	10
3	Title of 3 – Unit-III Color and Rotoscoping: Color management, Color correcting composites, Rotoscoping, Masking operations.	10
4	Title of 4 – Unit-IV Compositing CGI and Channels: Mastering channels system, Multi-pass CG compositing, adding motion blur, Adding depth of field.	10
5	Title of 5 – Unit-V Keying Luma keys, all four of chroma keyers, Proper use of Add mix and Keymix nodes, how to merge multiple keys.	5

Text Book: 1. Digital Compositing for Film and Video, Steve Wright, Focal Press, Third Edition

Reference Book:

Syllabus

Semester-II

Course code: MSA41MEL504

Course name: Advanced Video Editing and color grading

Category: Major Elective

Credits: 3

Pre-requisites: Basics of Compositing

Course Objectives: To study video editing and color grading.

Course Outcomes: At the end of the course, the students will be able to -

CO1: To learn video editing workflow.

CO2: Understanding editing controls and speed duration options.

CO3: Understanding Advanced color correction& color grading

Contents –

Unit	Content	Teaching hours
1	Introduction and Adding effects: Adding clips to timeline, appending clips, marking In and Out with precision, Multiple camera angles, trimming edits, mixing audio, switching transitions, resizing and stabilizing clips, adding a title ,effect library, panning and zooming clips, audio effects.	10
2	Organizing new project and assembling a rough cut: Interface, importing clips, viewing clip metadata, making new bins, keyword smart bins, creating a timeline, scrubbing with JKL keys, using timecode, Replacing a shot	10
3	Movie clips and refining timeline: Importing project, relinking media, color coding clips, splitting clips, cutting and pasting clips, Customize the layout for trimming, Ripple Trimming, Using roll trimming, Slipping a clips, trimming with selection tools, working with audio, align sound effects, setting track levels, recording audio in a timeline. Creating masking effects, green screen key, animating with keyframes.	10
4	Color correction: Color page layout, modifying lift, gamma and gain, primary corrected controls, Understanding nodes, making secondary color correction, applying resolve FX, tracking power windows, balancing color and brightness using the color wheels, making neutral color grades with primaries bars.	10
5	Secondary Color correction: Selecting areas with qualifiers, Reversing selections with outside nodes, combining qualifiers and power windows, using a tracker, stabilizing a clip, creating a bleach bypass, grades across projects, consolidating media.	5

Text Book: 1. The Beginners' guide to Davinci Resolve 16, Paul Saccone and Dion Scoppettuolo

Semester-II

Course code: MSA41MEL505

Course name: Virtual Reality

Category: Major Elective

Credits: 3

Pre-requisites: Basics of Graphics and 3D Software

Course Objectives: Understanding Concept of virtual reality and its working also describes the fundamentals of sensation, perception, technical aspects of virtual reality systems.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Student should understand VR Environment.

CO2: Understand the design and implementation of the hardware that enables VR systems to be built.

CO3: Describe the importance of interaction and audio in VR systems.

Contents –

Unit	Content	Teaching hours
1	Introduction: Definition of VR, modern experiences, historical perspective. Hardware, sensors, displays, software, virtual world generator, game engines, human senses, perceptual psychology, psychophysics.	10
2	The Geometry of Virtual Worlds & Light and Optics: Geometric modeling, transforming rigid bodies, yaw, pitch, roll, axis-angle representation, quaternions, 3D rotation inverses and conversions, homogeneous transforms, transforms to displays, look-at and eye transforms, canonical view and perspective transforms, viewport transforms. Light propagation, lenses and images, diopters, spherical aberrations, optical distortion; more lens aberrations; spectral properties; the eye as an optical system; cameras; visual displays.	10
3	Movie clips and refining timeline: Importing project, relinking media, color coding clips, splitting clips, cutting and pasting clips, Customize the layout for trimming, Ripple Trimming, Using roll trimming, Slipping a clips, trimming with selection tools, working with audio, align sound effects, setting track levels, recording audio in a timeline. Creating masking effects, green screen key, animating with keyframes.	10
4	Color correction: Color page layout, modifying lift, gamma and gain, primary corrected controls, Understanding nodes, making secondary color correction, applying resolve FX, tracking power windows, balancing color and brightness using the color wheels, making neutral color grades with primaries bars.	10
5	Secondary Color correction: Selecting areas with qualifiers, Reversing selections with outside nodes, combining qualifiers and power windows, using a tracker, stabilizing a clip, creating a bleach bypass, grades across projects, consolidating media.	5

Text Book: 1. Virtual Reality, Steven M. LaValle, Cambridge University Press

2. Understanding Virtual Reality: Interface, Application and Design, and Alan B Craig, (The Morgan Kaufmann Series in Computer Graphics)". San Francisco, CA William R Sherman, Morgan Kaufmann Publishers

Semester-II**Course code:** MSA41MEL506**Course name:** 3D Texturing**Course Category:** Major Elective**Credits:** 3**Pre-requisites:** Basics of Graphics and 3D Software**Course Objectives:** The Student should understand the texturing workflow**Course Outcomes:** At the end of the course, the students will be able to -**CO1:** Student should understand about substance painter workflow**CO2:** Understanding layers and masking system**CO3:** Understand rendering and exporting to different 3D applications.**Contents –**

Unit	Content	Teaching hours
1	Introduction What is PBR Texturing, Substance painter role in Industry, Exploring user interface?	10
2	Texturing Workflow UV Mapping, Types of Texture Maps, Difference between 2D and 3D painting application, The UI and Tools, Viewport & Navigation.	10
3	Working with Materials, Layers and Masks: Materials and Smart Materials, Layers and Masks, Layer Operations, Masks, Smart Masks, Mask Operations.	10
4	Working with Procedural Maps: Filters, Commonly used Filters, Generators, Dirt Generators, Dripping Rust Generators, Auto Stitches, Grunge and other Procedural Maps, Use of patterns as Height Maps.	10
5	Rendering with Iray and Integrating with other 3D Applications: Launching the Renderer, Render Settings, Low Poly and High Poly Workflow, Blender to Substance Painter Workflow, Maya to Substance Painter Workflow.	5

Text Book: 1. Beginning PBR Texturing: Learn Physically Based Rendering with Allegorithmic's Substance Painter, Abhishek Kumar, Apress Publications.

Syllabus

Semester-II

Course code: MSA41MMP504

Course Name: Practical Based on Visual Effects

Course category: Major Mandatory

Credits: 1

Pre-requisites: Basics Knowledge of Motion Graphics Design.

Course Objectives: The basic objective of is to understand Visual effects & Motion Graphic Design.

Course Outcomes: At the end of the course, the students will be able to -

CO1: To Learn Visual Effects

CO2: To Understand Motion Graphic Design

Contents –

Sr.no.	Content
1	Remove green or blue screen background using chroma key
2	Make a motion graphics advertisement using images, text, shapes and PNG
3	Animate PNG car using nest option in premiere pro
4	Create image slide show using different effects and transitions
5	Make double role video using different masking method
6	Create text animation using different tools and effect.
7	Create basic matte painting using PSD or JPEG and PNG
8	Remove rope or wire of any VFX footage
9	Create logo animation using different tools and effects
10	Rotoscope any video and change background or add any objects or text in between.

Text Books: ADOBE® AFTER EFFECTS Classroom in a Book (2020 Release) Brie Gyncild& Lisa Fridsma, Adobe Press, 1st Edition

Reference Books:

Online Resources: 1. NPTEL / SWAYAM lectures.

Syllabus

Semester-II

Course code: MSA41MMP505

Course Name: Practical based on advanced 3D Computer Graphics

Course category: Major Mandatory

Credits: 1

Pre-requisites: Basics Knowledge of Motion Graphics Design and 3D Modeling.

Course Objectives: Objective is to design 3D Model, lightning, texturing and rigging.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Learn to create 3D Animation.

CO2: Learn to create 3D Modeling, Texturing and Lightning.

Contents –

Sr.no.	Content
1	Learning different types of lights available in Maya
2	Procedure to create a bouncing ball animation
3	Learning different settings in Arnold rendering
4	Knowing different types of Light
5	Learning 3 Point Lighting Setup
6	Learning Camera setup and properties
7	Procedure to Render an image
8	Procedure to render an animation
9	Learning Basic Video Editing
10	Learning different types of lights available in Maya

Text Books: 1. Introducing Autodesk Maya 2014: Autodesk Official Press. ISBN: 9788126543007
Dariush Derakhshani, Autodesk Official Press, 2014

Reference Books: 1. Autodesk Maya 2014 Essentials: Autodesk Official Press. ISBN: 9781118575079
Paul Naas, Autodesk Official Press, 2014

Online Resources: 1. NPTEL / SWAYAM lectures.

Syllabus

Semester-II

Course code: MSA41MMP506

Course Name: Practical based on VFX Compositing – I

Course category: Major Mandatory

Credits: 1

Pre-requisites: Basics Knowledge of Motion Graphics Design and 3D Modeling.

Course Objectives: To cover specialized areas of compositing for high end visual effects productions.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Learn to create 3D Animation.

CO2: Learn to create 3D Modeling, Texturing and Lightning.

Contents –

Sr.no.	Content
1	To Study overview of Interface
2	Animate car using PNG & JPEG image
3	To study procedure of chroma removal
4	To study procedure of background, rope / wire removal.
5	To study Design Matte painting
6	To study procedure of tracking in VFX
7	To study procedure of 3D tracking in VFX
8	To study different types of lightning techniques
9	To study Match move technique in VFX
10	To Study the procedure Rendering file into different formats.

Text Books: 1. Digital Compositing for Film and Video Steve Wright, Focal Press, Third Edition

Reference Books:

Online Resources: 1. NPTEL / SWAYAM lectures.

Syllabus

Semester-II

Course code: MSA41MEP504 **Course Name:** Practical Based on Advance video editing and color grading

Course category: Major Elective **Credits:** 1

Pre-requisites: Basics Knowledge of Video Editing

Course Objectives: To study video editing and color grading.

Course Outcomes: At the end of the course, the students will be able to -

CO1: Understanding editing controls and speed duration options.

CO2: Understanding Advanced color correction& color grading.

Contents –

Sr.no.	Content
1	To study user interface of software.
2	Learning Editing controls on timeline davinci resolve
3	Learning Animated Text the easy way using Transitions in Davinci Resolve
4	To Study Editing video using different tools in Davinci
5	To Study Important shortcuts and its uses in Davinci
6	Use of Different Time Remap, Retime/Velocity option in Davinci to match the music beats
7	To Make a highlight video using Use Ink Overlays
8	Create a trans video using different effects
9	Make a news editing video using TEXT/SUBTITLES & Green Screen Davinci Resolve
10	To Study color correction and color grading in davinci resolve

Text Books: The Beginners' guide to Davinci Resolve 16, Paul Saccone and Dion Scoppettuolo

Reference Books:

Online Resources: 1. NPTEL / SWAYAM lectures.

Syllabus

Semester-II

Course code: MSA41MEP505

Course Name: Practical Based on Virtual Reality

Course Category: Major Elective

Credits: 1

Pre-requisites: Basics Knowledge of 3D Designing

Course Objectives: Understanding Concept of virtual reality and its working also describes the fundamentals of sensation, perception, technical aspects of virtual reality systems

Course Outcomes: At the end of the course, the students will be able to -

CO1: Understand the design and implementation of the hardware that enables VR systems to be built.

CO2: Describe the importance of interaction and audio in VR systems–

Contents

Sr. No.	Mini Project
1	Create a virtual environment for any use case. The application must include at least 4 scenes which can be changed dynamically, a good UI, animation and interaction with objects. Mini project consist of theoretical understanding implements with suitable mini project.

Text Books: 1. Virtual Reality, Steven M. LaValle, Cambridge University Press
Reference Books:
Online Resources: 1. NPTEL / SWAYAM lectures.

Syllabus

Semester-II

Course code: MSA41MEP506

Course Name: Practical based on 3D Texturing

Course category: Major Elective

Credits: 1

Pre-requisites: Basics Knowledge of Video Editing

Course Objectives: The Student should understand the texturing workflow

Course Outcomes: At the end of the course, the students will be able to -

CO1: Student should understand about substance painter workflow

CO2: Understanding layers and masking system

Contents –

Sr.no.	Content
1	Understanding the UI and Navigation in Substance Painter
2	Learning the procedure to Unwrap the UV
3	Learning the procedure Materials
4	Learning the Layer System in Substance Painter
5	Learning about the types of Smart Masks
6	Learning the use of different types of Generators
7	Learning the different types of procedural Maps
8	Learning the Renderer and knowing different render settings
9	Blender to Substance Painter Workflow
10	Maya to Substance Painter Workflow

Text Books: 1. Beginning PBR Texturing: Learn Physically Based Rendering with Allegorithmic's Substance Painter, Abhishek Kumar, Apress Publications

Reference Books:

Online Resources: 1. NPTEL / SWAYAM lectures.