

FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS

FOR

MASTER OF VOCATION (M.VOC.) WEB TECHNOLOGY & MULTIMEDIA (Semester: I – IV)

Session: 2019–20



GURU NANAK DEV UNIVERSITY, AMRITSAR.

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MASTER OF VOCATION (M.VOC.)
(WEB TECHNOLOGY & MULTIMEDIA) SEMESTER SYSTEM

Semester – I:

Paper No.	Subjects	M. Marks		Total
		Th.	Pr.	
Paper – 701	Advanced Graphic Designing	-	100	100
Paper – 702	Image Capturing & Processing	-	100	100
Paper – 703	2D Animation & Character Design	-	100	100
Paper – 704	Scripting Language –1	-	100	100
Paper – 705	Digital Media Production	100	-	100
				500

Semester – II:

Paper No.	Subjects	M. Marks		Total
		Th.	Pr.	
Paper – 801	Video Editing Techniques	-	100	100
Paper – 802	Visual Effects	-	100	100
Paper – 803	Stop Motion	-	100	100
Paper – 804	Scripting Language – 2	-	100	100
Paper – 805	Digital Media Laws and Ethics	100	-	100
				500

MASTER OF VOCATION (M.VOC.)
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Semester – III:

Paper No.	Subjects	G/S	M. Marks		Total
			Th.	Pr.	
Paper – 901	3d Modeling & Texturing	S	-	100	100
Paper – 902	Lighting & Rendering	S	-	100	100
Paper – 903	Motion Graphics	G	-	100	100
Paper – 904	Asp. Net	S	-	100	100
Paper – 905	Workplace Health and Safety	G	100	-	100
					500

Semester – IV:

Paper No.	Subjects	G/S	M. Marks		Total
			Th.	Pr.	
Paper – 1001	Advanced 3d Modeling & Texturing	S	-	100	100
Paper – 1002	Digital Painting	G	-	100	100
Paper – 1003	Digital Portfolio	G	-	100	100
Paper – 1004	Internship	S	200		200
					500

MASTER OF VOCATION (M.VOC.)
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**701. ADVANCED GRAPHIC DESIGNING
(PRACTICAL)**

Max. Marks: 100

Section – A

- Understanding of Raster and Vector Graphics.
- Elements of Design (Color, Line, Shape, Space, Texture & Value)
- Creating images for print & web (Formats and Resolution)

Section – B

- Understanding and working on Typography.
- Use of Plug-ins & Filters.
- Retouching techniques
- Animated GIF Images

Section – C

- Workflow with Photoshop, windows, palettes, features, Masks and Channels, Batch Process, New filters, Advance Layer Techniques. Understanding 3d workflow and creating 3d objects.

Section – D

- Workflow with Corel Draw, Menus and Tools, Inserting-pictures, objects, tables, templates, adjusting the position, resizing, positioning, merging, color shades & shadows and Power Clip. Working with advanced and special interactive effects.

Proposed Assignments: - Digital Portrait, Visiting Card, Sticker, Letterhead with Logo, Wedding Card, Flex Banner, Flyer, Brochure, Book Cover, Newspaper advertising, Magazine Cover, Posters, Ceramic Mug Design.

Books Recommended:

- Design Essentials for The Motion Media Artist By Angie Taylor.
- Production for Graphic Design, Fourth Edition by Alan Pipes.
- The Elements of Graphic Design by Alex White.
- Adobe Photoshop CS5 Classroom in a Book by Adobe Creative Team.
- Adobe Photoshop CS6-Digital Classroom: A Complete Training Package by Jennifer Smith.

MASTER OF VOCATION (M.VOC.)
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**702. IMAGE CAPTURING & PROCESSING
(PRACTICAL)**

Max. Marks: 100

Section – A

- Understanding various parts of DSLR camera.
- Advance features of DSLR camera.
- Handling the Camera
- Use of different Lenses

Section – B

- Functions like– (Aperture, Shutter Speed, Film, ISO)
- Understanding Lighting& How to create 3 point light system.
- Visual Aesthetics.

Section – C

- Camera Angles
- Understanding Panorama
- Image optimizing Techniques using Graphic Tools

Section – D

- HDR Imaging& Lens Correction.
- Editing in Adobe Photoshop/Lightroom
- Capturing Video.
- Shooting for Chroma-key.

Proposed Assignments: Image and Video Manipulations, Portfolio project, Green screen and composite it with a background.

Books Recommended:

- Digital Image Processing by Rafael C. Gonzalez, Richard E. Woods
- The T.V. Production: Handbook – Zetti Herbert
- Elements of film: Lee. R. Bobker

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**703. 2D ANIMATION & CHARACTER DESIGN
(PRACTICAL)**

Max. Marks: 100

- **Working with the drawing & shape tools**
 - Drawing Shapes with Primitive Tools
 - Comparing Merge Drawing Mode vs. Object Drawing Mode
 - Modifying Shapes with the Direct Selection Tool & Sub selection Tool
 - Using the Deco Tool
 - Using Gradients & Mixing Colors
- **Working with symbols**
 - Understanding the Characteristics of Symbols
 - Creating & Editing Symbols
 - Exploring Button States & the Button Library
- **Importing & modifying graphics**
 - Importing Bitmap Graphics & Basic Shape Modifications
 - Importing & Working with Vector Objects
 - Importing a Photoshop File into Flash
- **Working with text**
 - Selecting Text & Other Basic Techniques & Modifying Text Properties
 - Breaking Text Apart & Converting Text to Shapes & Working with TLF Text
- **Animation**
 - Timeline Basics & Using Layers
 - Animating Text with Shape Tweens & Creating Frames & Key frames
 - Creating a Frame-by-Frame Animation & Onion Skin
 - Using Motion Tweens & Creating a Motion Tween along a Path
 - Working with the Motion Editor
- Adding actions to buttons
- Adding sounds to button states
- Create sequences and scenes/shots.
- Create a cartoon character
- Creation of emotions, actions and expressions of a cartoon character
- Incorporate audio / music assets to the character
- Create shadows for animation.
- Animation / Transition of a character from one scene to another.
- Produce in-between poses for animation.
- Export the flash document.
- Implementation of 12 Principles of Animation in Flash.

Books Recommended:

- “Adobe Flash Professional CS6 Classroom in a Book”, Adobe.
- Georgenes Chris “How to Cheat in Adobe Flash CC: The Art of Design and Animation”. Focal Press

MASTER OF VOCATION (M.VOC.)
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**704. SCRIPTING LANGUAGE-1
(PRACTICAL)**

Max. Marks: 100

Section-A

JAVASCRIPT BASICS

Introduction to JAVASCRIPT, Client-Side JavaScript, Comments in JavaScript, Structure of javascript, **JavaScript Data types, JavaScript Variables , JavaScript Reserved Words, JavaScript Operators**

Section-B

JavaScript control Structures

If Statement, If...else Statement, If...else if... Statement, Loop Control, While Loop, Do...while Loop, For Loop, For-in Loop, Switch-Case, **Functions**, Function Definition, Calling a Function, Function Parameters, The return Statement, Nested Functions, constructor, Function Literals

Section-C

Events: Introduction to an event, Onclick event type, Onsubmit event type, Onmouseover and onmouseout, Html 5 standard events

Page Redirect: What is Page Redirection?, JavaScript Page Refresh, Auto Refresh, How Page Re-direction Works?

Section-D

Dialog Box

- Alert Dialog Box
- Confirmation Dialog Box
- Prompt Dialog Box

Void Keyword

Page Printing

- How to Print a Page?

References:

- 1) The ABCs of Java Script by Lee Purcell, Mary Jane Mara, BPB Publications
- 2) Mastering Java Script and javascript by James Jaworski, BPB Publications

MASTER OF VOCATION (M.VOC.)
(WEB TECHNOLOGY & MULTIMEDIA) SEMESTER – I

**705. DIGITAL MEDIA PRODUCTION
(THEORY)**

Time: 3 Hours

Max. Marks: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section – A

Pre-Production: Script writing, Storyboard, Budgeting, Location, staffing Planning Film stock, Frame rate, Equipment etc.

Section – B

Production: Camera preparation (frame rate, shutter speed, shutter angle, white/black balance, Monitor, Back focus, cables, accessories. asa speed, tonal range, lighting ratio, Lighting according to monitor. Highlights, shadows and exposure.

Section – C

Post Production: Off line / on line editing, Recording and editing music voice over for movie. Mixing.

The Motion Picture Industry (Indian)

- a) Production & Distribution
- b) Censorship
- c) Art and Technique of Motion pictures

1. Production Manipulation

- | | |
|-----------------|----------------|
| i) Script | ii) Actors |
| iii) Sets | iv) Costumes |
| v) Aspect Ratio | vi) Film Stock |

Section – D

2. Manipulation During Filming

- | | |
|------------------|--------------------------------|
| i) Lenses | ii) Camera Distance & Position |
| iii) Composition | iv) Camera Movement |
| v) Lighting | vi) Sound |

3. Postproduction Manipulation

- | | |
|----------------------------|-------------------------------------|
| i) Processing and Printing | ii) Editing |
| iii) Special effects | iv) Music |
| v) Sound Effects | vi) Post Synchronization or dubbing |

MASTER OF VOCATION (M.VOC.)
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**801. VIDEO EDITING TECHNIQUES
(PRACTICAL)**

Max. Marks: 100

Section –A

- Nonlinear and Nondestructive Editing
- Manage Assets
- Video Formats
- Audio Formats
- Time code
- Codecs

Section –B

- Creating a new project & the workspace
- Importing assets
- Capturing
- Working with Timeline
- Working with Titles
- Working with Audio
- Use of Master Keys

Section –C

- Working with Matte
- Understanding and working with Chroma Key
- Superimposing Clips
- Working with Video Transitions

Section – D

- Working with Video Effects
- Render Settings
- Integration with other tools.
- Workflow of Premiere/FCP

Proposed Assignments: Video Advertisement, Montage, Short Film, Documentary.

Books Recommended:

- Video Production Handbook: (Focal Press)
- HD Cinematography: (Focal Press)
- Non Linear Editing: Bryce Button (Focal Press)
- Grammar of edit (Second Edition): Roy Thompson (Focal Press)
- Make The Cut: Lori Jane Coleman A.C.E & Diana Friedberg
- Compositing Visual Effects: Steve Wright
- Digital Compositing for Film and Video: Focal Press

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**802. VISUAL EFFECTS
(PRACTICAL)**

Max. Marks: 100

Section –A

Composite in After Effects, The Timeline, Selections: The Key to Compositing, Color Correction, Color Keying, Rot scoping and Paint, Effective Motion Tracking, Color and Light.

Section –B

Visual Effects Description Types, Particles, Analysis, Size, Sand Effects, Smoke Effects, Fire Effects, Cloud Effects, Snow Effects. Fluid Effects, Coloring, Color grading, designing Clouds Background, Designing Fog Effects. Explosion Effects, Fire Effects with flames, Space Effects and designs, Designing Thick Smoke.

Section –C

Designing Paint Effects, coloring paints, Gather raw footage, materials, Effects on seasons, Designing Glass image, Designing Different glass reflection, Designing Glow Effects, Liquid Effects and Reflection design.

Designing Special Effects, Lighting, use of 3rd Party plugins.

Section – D

Introduction and advanced functions, Converting images from 2D to 3D Pictures. Creating 3D Effects, Differentiation 2D effects and 3D effects.

Proposed Assignments: Use Visual effects in your project, Demo reel.

Reference Books:

- Adobe After Effects 5 for Windows After by Antony Bolante : Indian Edition 2002
Published by G.C. Jain for Techmedia
- Adobe After Effects CS6 Visual Effects and Compositing Studio Techniques by Mark Christiansen
- ADOBE® AFTER EFFECTS® Help and Tutorials by Adobe System

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**803. STOP MOTION
(PRACTICAL)**

Max. Marks: 100

- Camera Capturing Techniques
- Practice of Interval shoot
- Camera Angle
- Frame by frame shoot
- Understand Time lapse
- Editing
- Understand the workflow of LR Time lapse.
- Sequence Edit and Composite in Video and Composting softwares.
- Render

Proposed Assignments: Creating Time apse video, Motion Design.

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**804. SCRIPTING LANGUAGE-2
(PRACTICAL)**

Max. Marks: 100

Section – A

Working with String in JavaScript, Working with Date in JavaScript, Working with Number in JavaScript, Working with Boolean in JavaScript, Role of Math Methods in JavaScript.

Working with RegExp in JavaScript: Brackets, Quantifiers, Literal Characters, Metacharacters, constructor.

Section – B

Arrays in JavaScript: Introduction to arrays, Array Properties, Constructor, length, Prototype, Array Methods [concat (), every (), filter (), forEach (), join (), lastIndexOf (), map (), pop (), push (), reduce (), reverse (), shift (), slice (), some (), sort (), splice (), toString (), unshift ()]

Section – C

Cookies: Introduction to cookies, Storing Cookies, Reading Cookies, Setting Cookies Expiry Date, Deleting a Cookie.

Section – D

Objects: Introduction to objects, Object Properties, Object Methods, User-Defined Objects, Defining Methods for an Object, The ‘with’ Keyword.

Usage of DOM structure in JavaScript

Handling Errors and Exceptions in JavaScript

Form Validation

Animation: Manual Animation .Automated Animation .Rollover with a Mouse Event

Multimedia: Checking for Plug-Ins, Controlling Multimedia.

Debugging in JavaScript

References:

1. Learn Advanced Java Script Programming by Tomer Shiran and Yehuda Shiran
2. JavaScript: The Complete Reference¹ by Thomas Powell and Fritz Schneider

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**805. DIGITAL MEDIA LAWS AND ETHICS
(THEORY)**

Time: 3 Hours

Max. Marks: 100

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Section – A

Basic Legal concepts judicial system in India, Fundamental rights; directive principles.

Section – B

Freedom of the press evolution of the concept of freedom of the press – freedom of speech and expression in Indian Constitution: article 19 (1) (a) and reasonable restrictions.

Defamation –libel, slander and defenses of media professional;

Section – C

Press Laws: Official Secrets Act, Press & Registration of Books Act, Copyright Act, Contempt of Court Act, Young Person’s Harmful Publication Act, Indecent Representation of Women’s Act, Drug & Magic Remedies Act, Working Journalists Act, Wage Boards, Film Certification Rules, Intellectual Property Rights, Privacy and Cyber laws. Right to Information Act.

Section – D

Media Ethics and Issues codeof ethics for media personnel; Press Council of India; censorship versus self-regulation; privacy versus public good; embedded journalism and sting journalism.

Books Recommended:

- Kundra. S, ‘Media Laws & Indian Constitution’, Anmol Publications Ltd, New Delhi.
- Vakul Sharma, ‘Handbook of Cyber Laws’, Macmillan, 2002.
- Nirmala Lakshman, ‘Writing a Nation, An Anthology of Indian Journalism’
- Nalinin Rajan, ‘Practising Journalism’, Sage Publications,
- Hamid Moulana, ‘International Information Flow

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**901. 3d Modeling & Texturing
(PRACTICAL)**

Max. Marks: 100

Section – A

- What Is 3d
- Exploring the Interface
- Controlling and Configuring the Viewports
- Working with Files, Importing, and Exporting
- Setting Preferences
- Command Panels
(The Create Panels, The Modify Panels the Hierarchy Panel the Motion Panel, The Display Panel, The Utility Panel)
- Using Primitives & Splines
- 3d Primitives
- Extended Primitives
- 2d Primitives
- Transform Tools
- Cloning Objects and Object Arrays
- Modeling with Modifier
- Modifiers & The Modifier Stack
- Axial Modifier

Section – B

- Polygon Modeling
- Using Primitives & Splines
- Nurbs Modeling
- Nurbs Curves & Surfaces
- Non-Uniform Rational
- B-Spline (Nurbs)
- Using Nurbs For Organic Modeling
- Working with Nurbs
- Basic Mapping & Material

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Section – C

- What Is Material
- Material In 3d Computer Graphics
- Understanding Color Models
- Components of Surface Shading
- Shading Types
- Basic Shading Parameters

Section – D

- Understanding Materials & Maps
- Material & Map Browser
- Map Type
- Bitmap
 - 2d Procedural Maps
 - 3d Procedural Maps
 - Color Modifying Maps
 - Special Maps
 - Reflection & Refraction Map
- 1. Mapping Coordinates
- 2. Adjusting Mapping Coordinates In Coordinate Rollout
- 3. UVW Map Modifiers
- 4. Using Unwrap UVW To Change Mapping
- 5. Exploring the Material Editor Interface

Proposed Assignments: Create a 1 Full Home interior Design, 1 Exterior Design And 1 Character.

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**902. Lighting & Rendering
(PRACTICAL)**

Max. Marks: 100

- Working with Lights
 - Art of Lighting
 - Basics of Lightning
 - Simulation and Color In 2d
 - Types of Light & Their Parameters
 - Lightning in Computer Graphics
 - Diffuse Reflection
 - Ambient Light
 - Shadow Casting
 - Inclusion & Exclusion of Objects
 - Designing Your Lighting
 - A Three Point Lightning Setup
 - Applying Three Point Lighting
 - Adding Volume Light Atmospheric
 - Zone Lighting
 - Mood Lighting
 - Applying Mood Lighting
 - Lighting Free Camera
 - Using Vertex Color to Replace Lighting
- Unit -II
- Rendering Projects
 - V Ray / Mental Ray Rendering Process
 - Output size & other options
 - Rendering few part of the scene
 - Render type
 - Common parameters
 - Render preview
 - Environment Settings
 - Render Effects
 - Render effects
 - Lens effect
 - Glow, ring, blur etc.
 - Creating an environment
 - Adding atmospheric effect
 - Fog, cloud, fire etc.

Proposed Assignments: Give the Lighting To 1 full Home Design (Interior), 1 Exterior Design and 1 Character. Export Final Render in VRAY Or Mental Ray in 3ds MAX.

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**903. Motion Graphics
(PRACTICAL)**

Max. Marks: 100

- Creating a 2D Slide show.
- Designing a text animation.
- Developing a 3D layer animation.
- Create a stabilized video.
- Removing a green screen and adding a back ground.
- Use of a mask effect.
- Using tools for motion tracking.
- Creating a rough footage and using the wire removal option.
- Designing a motion graphics with basic effects.
- Creating a matte painting.
- Designing a text shatter and flow like liquid using tools.
- Creating a text and following the path with the light effects.
- Creating a water effect using CC particle world and median.
- Creating a fire effect, smoke effects using particles.
- Creating rain using particles.
- Rotoscoping& tracking of a footage
- 3D Camera Tracking
- Use of 3rd party plugins.

Candidate can create assignments using After Effects/ Pro show/ Particle illusion/Photokey etc.

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904. Asp. Net
(PRACTICAL)

Max. Marks: 100

Basics concepts of .NET framework

C# Basics: Data types, control Structure, Operators, Arrays, Functions and OOPs Concept, Classes and Objects, Inheritance, Polymorphism, Abstraction and Encapsulation.

Introduction to Standard Controls in .NET: Display information, Accepting user input, Submitting form data, displaying images, Using the panel control, Using the hyperlink control.

Introduction to Validation Controls: Using the required field validator control, Using the range validator control using the compare validator control, Using the regular expression validator control, Using the custom validator control, Using the validation summary controls.

Introduction to Rich Controls: Accepting file uploads, displaying a calendar, displaying advertisement, displaying different page views, Displaying a wizard.

Designing Website with Master Pages: Creating master pages, modifying master page content, Loading master page dynamically.

List Controls: Dropdown list control, Radio button list controls, list box controls, bulleted list controls, custom list controls.

Grid View Controls: Grid view control fundamentals, Using field with the grid view control, Working with grid view control events extending the grid view control.

Database Connectivity with MS SQL Server and ODBC

Reference Book:

- *ASP.NET 3.5: Stephen Walther, Pearson Education.*

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905. Workplace Health and Safety

Time: 3 Hours

Max. Marks: 100
Theory: 100

Instructions for the Paper Setters:-

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Section–A

Importance of High Standards of Health and Safety at workplace

Identification of health and Safety hazards

Identification of people responsible for health and safety and mechanisms to reach out to them

Section–B

Ensuring the success of safety and health management system: monitoring, reporting various incidents and revision of plan.

Types of emergencies, Emergency plans, Evacuation and other emergency procedures in case of fire, flood, earthquake etc.

Section–C

Fire safety in the workplace, Different types of fire extinguishers, classification and usage

Medical assistance in case of health, symptoms and first aid for different medical conditions like cardiac failure, choking, unconsciousness etc.

Section – D

Safety guidelines of System/equipments and machines, various safety symbols: meaning and importance.

Governmental norms and regulations regarding Health and Safety at workplace

A fire drill exercise

Suggested Readings:

1. Schneid D. Thomas, “Workplace Safety and Health: Assessing Current Practices and Promoting Change in the Profession (Occupational Safety & Health Guide Series)”, CRC Press; 1 Edition
2. Gupta A.K, “Industrial Safety and Environment Paperback”, Laxmi Publications; Second Edition

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**1001. Advanced 3d Modeling & Texturing
(PRACTICAL)**

Max. Marks: 100

Section – A

- Working with Maya
- User Interface of Maya
- Modeling Tools in Maya
- Viewports
- Create Primitives

Section – B

- Polygon Modeling
- Low Poly Character
- Modeling cartoon character
- Channel Box
- Attribute Editor
- Nurbs Modeling
- Subdivision Modeling
- Menu Sets
- Mesh & Edit Mesh

Section – C

- 3D High Poly Human Character modeling
- Fast work of importing Adobe Illustrator files into Maya for text and Logo treatments.
- Grouping and Parenting
- Creating Curve and Surfaces
- Attaching and closing Surfaces
- Lofting and revolving surfaces
- Booleans

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Section – D

- 3d High Poly Gaming Robot Character
- Texturing
- About Texturing
- Materials
- Anisotropic, Blinn., Lambert, Layered Shades, Ocean Shades, Phong, Phong E, Ramp Shades, Shading Map, Surface Shades, Use Backgrounds
- Mapping
- UV Texture editor
- Create UVs
- Advance lighting
- Final Rendering

Proposed Assignments: Create a Low Poly Character, 1 Human high poly Character and 1 Cartoon Character, 1 high poly gaming robot character. Give a high-quality material & texture to all 3d Models.

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**1002. Digital Painting
(PRACTICAL)**

Max. Marks: 100

Painting and Blending Techniques, watercolor and oil painting using Photoshop, Creating textures and patterns. adding 3D elements, creating sky mattes, Color grading.

Rotoscoping - Uses and advantages of rotoscoping, Creating rotos with splines, Hierarchical parent and child roto shapes, Interpolation technique, Keyframe rotos, Final inspection, Rotoscope motion blur and semi transparency.

Wire removal technique using various compositing softwares, Removing unnecessary elements from the frames.

Merging different elements & creating a scene for final shot.

Proposed Assignments: Creating the BG environment using Photoshop, Motion matte painting, Color grading.

Books Recommended: -

- *Digital Character Design and Painting: Don Seegmiller*
- *Bold Vision: A Digital Painting Bible: Gary Tonge*
- *Digital Fantasy Painting: Michael Burns*

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1003. Portfolio
(PRACTICAL)

Max. Marks: 100
No. of Hours/week: 6

Final Compilation of all works of the student as a single video – Demo reel
(Minimum 3 Min.)

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1004. Internship

Max. Marks: 200

To acquire practical industry-based experience

- To offer students a period of practical experience in the industry relating to their field of study.

Industrial Training for minimum 4–8 weeks.