Title	Mandatory/ Optional	Estimated size (learning hours)
MAT.O1.R0: Introduction to Information Technology	Mandatory	150
MAT.O2.R0: Introduction to Multimedia	Mandatory	150
MAT.O3.R0: Multimedia Processing Techniques	Mandatory	150
MAT.O4.R0: Multimedia Design Principles and Applications	Mandatory	150
Project Work	Mandatory	120

MAT.O1.R0: Introduction to Information Technology

Module Duration : 150 Hours

Objective : The objective of this module is to provide an introduction to Information Technology and IT Tools.The students will become IT literate , and will understand the basic IT Terminology .The students will be able to understand the role of Information Technology and more specifically computers , communication technology and software in the present social and economic scenario.

Learning Outcomes:

After successful completion of the module, the students shall be able to:

- Demonstrate an understanding of the basic structure of a computer and apply data conversion techniques
- Demonstrate an understanding of basic architecture of a computer and acquire skills on handling input/output devices, ports and interfaces
- Acquire skills on working with various operating system environments(Windows/Linux/Mac)
- Acquire skills on using office automation tools
- Update oneself with Intellectual Property and prevailing copyright issues
- Demonstrate an understanding of the features of various handheld devices and acquire skills on mobile applications development principles
- Acquire skills on basic networking and internet technologies
- Acquire skills on usage of social networks and appreciate the role of IT in society

MAT.O2.R0: Introduction to Multimedia

Module Duration : 150 Hours

Objective : The objective of this module is to provide concept about an application , which uses a collection of multiple media sourcese.g. text, graphics, images, audio, animation and video.Students will learn about multimedia , which is a field concerned with the computer controlled integration of text, graphics,drawings,still and moving images(Video),animation, audio and any other media where every type of information can be represented,stored,transmitted and processed digitally.

Learning Outcomes:

After successful completion of the module, the students shall be able to:

- Acquire a basic understanding of Multimedia systems and its applications including requirements of Multimedia communication systems
- Acquire skills on Multimedia objects and its representation
- Acquire basic skills on Multimedia editing techniques
- Acquire basic skills on Multimedia compression technologies
- Acquire basic skills on Multimedia application design techniques
- Acquaint oneself with various Multimedia Authoring and Publishing Tools

MAT.O3.R0: Multimedia Processing Techniques

Module Duration : 150 Hours

Objective : The objective of this module is to provide baisc skills about processing and editing of multimedia content with more emphasis on image processing.The students will acquire requisite skills to create, edit and modify the multimedia content using different software tools.

Learning Outcomes:

After successful completion of the module, the students shall be able to:

- Acquire basic understanding of Image and its representation
- Acquire basic understanding of digital representation of color
- Acquire skills on image capture concepts and techniques
- Acquire basic understanding of image and slide scanning
- Acquire skills on Image Processing Techniques and Concepts
- Acquire basic understanding of Scalable Vector Graphics
- Acquire basic understanding of MIDI
- Acquire skills on Image Editing techniques
- Acquire skills on graphic and image pattern generation
- Acquire skills on Sound Editing techniques
- Acquire skills on Video Editing techniques

MAT.O4.R0: Multimedia Design Principles and Applications

Module Duration : 150 Hours

Objective : The objective of the module is to impart the students the skills to use visually rich and dynamic graphic elements to enhance web pages and sites.Advanced concepts on page layout and site optimization will be imparted with emphasis on principles used to craft dynamic web pages that get noticed.Exercises and projects will allow students to apply the principles of web design to thier own sites that will be developed using interactive multimedia elements.

Learning Outcomes: After successful completion of the module, the students shall be able to:

- Acquire basic understanding of Design and its need
- Acquire skills on Visual Design Elements and its methodologies
- Acquire skills on Human Computer Interface Design principles
- Apply Information Architecture principles in Multimedia Design
- Acquire skills on Animation Design principles
- Acquire skills on application of Visual Effects in Multimedia Design
- Implement the multimedia design principles and applications with examples/case studies

Detailed Curriculum

Name of the Component : Introduction to Information Technology (MAT.O1.R0)

Name of Unit of Qualification	: Computer Appreciation	
Duration	: 10 Hours	
Topics	: Computer Fundamentals	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Demonstrate an understanding of the basic structure of a computer and apply data conversion techniques	What is computer? Basic structure of computer Data representation in computer, Binary number system, Hexadecimal Number system, representation of visual data	5
	Binary to Decimal Conversion, Decimal to Binary Conversion, Binary Coded Decimal, ASCII Code, UNICODE.	5
Name of Unit of Qualification	: Computer Organization	
Duration	: 25 Hours	
Topics	: CPU, Memory, Input & Output Devices, Ports & Interfaces, Computer Software	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Demonstrate an understanding of basic architecture of a computer and acquire skills on handling input/output devices, ports and interfaces	Fundamentals of Control Unit, Arithmetic Unit, Instruction Set, Register, Concept of processor speed, illustration with popular processors, Basic introduction to GPU	6
	Memory Organization, RAM, Read Only Memories, Flash Memory, Basics of other storage devices-HDD,CD/DVD, Blue-Ray, Magnetic Tape	3
	Keyboard, Mouse, microphone ,trackball, joystick, scanner, OMR, Bar/QR Code Reader, MICR Digitizer, Card Reader, Cameras, fingerprint scanner and other biometric devices	3
	Display(CRT,LCD,LED),Printers-Dot Matrix, Inkjet, Laser, Plotters,	

	Projector & Visualiser	3
	Serial and Parallel Ports, Connectors: DIN, RCA,AV;USB, Firewire (IEEE 1394),HDMI	5
	Relationship between Hardware and Software; System Software, Application Software, Compiler, Assemblers, Linkers & Loaders	5
Name of Unit of Qualification	: Operating Systems	
Duration	: 30 Hours	
Topics	: Basic Concepts of OS, Case Study	
Learning Outcome (NO)	**Topics**	**Hours**
Acquire skills on working with various operating system environments (Windows/Linux/Mac)	Functions of OS; Basic concept of resource management, CPU, memory, I/O; Power up process: BIOS, Bootstrap Loader, File systems and User Management	10
	Case Study on the following OS: 1.**Microsoft Windows:** An overview of different versions of Windows, Basic Windows Elements, File Management through Windows. Using essential accessories, Systems Tools-Disk Cleanup, Disk Defragmenter **2. Linux :** An overview of Linux, Basic Linux elements: System Features, Software Features, File structure, File Handling in Linux **3.Mac Environment:** Overview of Mac OS, Features of the Mac OS. File and User Management, GUI and Mac Devices and Tools	20
Name of Unit of Qualification	: Office Automation	
Duration	: 35 Hours	
Topics	: Word Processing, Spreadsheets, Presentation and Publishing Tools	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on using office automation tools	Basics of Word Processing	15
	Basics of Spreadsheets	10

	Basics of Presentation and Publishing Tools	10
Name of Unit of Qualification	: Intellectual Property Right and Copyright Issue	
Duration	: 10 Hours	
Topics	: Intellectual Property Rights, Copyright Elements & Protection	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Update oneself with Intellectual Property and prevailing copyright issues	Introduction to Intellectual Property Right and Copyright Issue, Exceptions to Copyright Protection, Guidelines for Clearance, Copyright Elements,Payments,Collaboration	10
Name of Unit of Qualification	: Handheld Devices(Mobiles and Tabs)	
Duration	: 10 Hours	
Topics	:Handheld Devices, Apps and popular applications	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Demonstrate an understanding of the features of various handheld devices and acquire skills on mobile applications development principles	Features of different Handheld Devices like –mobile phone, smart phone, Tablets, Introduction to Android as OS for Handheld Devices.	5
	Concepts of Apps, some popular applications.	5
Name of Unit of Qualification	: Basic Networking & Internet	
Duration	: 20 Hours	
Topics	:Internet, Protocols, OSI Layers,IPV4,IPV6,Wireless Communications	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on basic networking and internet technologies	Overview of the internet, protocols, basic definition: networks and topologies, access networks and physical media, concept of OSI protocol layers.	4
	TCP/IP(features of IPV4,IPV6),	

	WWW, FTP, Email, DNS, ISP, Concept of multimedia streaming	8
	Basics of Wireless Communications, Introduction to Wi-Fi, Bluetooth, GSM, CDMA,GPRS, 3G,4G	8
Name of Unit of Qualification	: Information Technology & Society	
Duration	: 10 Hours	
Topics	: Social Networks, e-Governance, e-Commerce, e-Learning, IT-ethics	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on usage of social networks and appreciate the role of IT in society	Social Networks, e-Governance, e-Commerce, e-Learning, IT-ethics	10

Name of the Component : Introduction to Multimedia (MAT.O2.R0)

Name of Unit of Qualification	: Introduction to Multimedia	
Duration	: 20 Hours	
Topics	: Multimedia Objects, Components of Multimedia Systems, features and its communication	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire a basic understanding of Multimedia systems and its applications including requirements of Multimedia communication systems	Definition of Multimedia, Multimedia Objects: Text, Graphics, Animation, Audio, Images, Video. Definition of Hypertext and Hypermedia. Applications in Education, Entertainment, Advertising World	10
	Components of a Multimedia System, Desirable features for a multimedia system, requirements of multimedia communication	10
Name of Unit of Qualification	: Representation of Multimedia Objects	
Duration	: 45 Hours	
Topics	: Analog Signals, Text, Graphics, Image, Audio, Video	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on Multimedia objects and its representation	Representation of Analog Signals, A/D: Sampling and quantization	4
	Text: Font and their representation (bimap, true type)	7
	Graphics: Raster and Vector representation, aliasing problems	7
	Image: (bit depth, resolution, color(RGB,CMYK,HSB),introduction to BMP,GIF,TIFF,PNG and JPEG Formats	7
	Audio (speech and wideband audio, sampling rate and aliasing, quantisation, introduction to MP3, WMA, WAV, MIDI etc.	10

	Video (frame rate and resolution, interlaced and non-interlaced video, colour planes(YCBCR,YUV),Video broadcast standards(PAL, ntsc, secam), HD Video,3D TV, Video representation: AVI, MPEG, Quick Time, real video(.rm)	10
Name of Unit of Qualification	: Concepts of Multimedia Editing	
Duration	: 30 Hours	
Topics	: Image Editing, Video Editing, Subtitling	
Learning Outcome (NO)	**Topics**	**Hours**
Acquire basic skills on Multimedia editing techniques	Digital Audio, Music Sequencing and Notation, Image/Graphics Editing, Video Editing(Linear, Non-Linear),Subtitling	30
Name of Unit of Qualification	: Introduction to compression technology	
Duration	: 15 Hours	
Topics	: Basics of Image Compression ,Audio and Video Compression	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic skills on Multimedia compression technologies	Concept of lossy and lossless compression, Concept of rate-distortion characteristics, Basic s of image compression, Basics of audio compression and Basics of video compression	15
Name of Unit of Qualification	: Multimedia Application Design	
Duration	: 15 Hours	
Topics	: Content Design, Technical Design, Visual Design ,Design Metaphors	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic skills on Multimedia application design techniques	Content design, technical design, visual design, design metaphors, example studies, interactivity	15
Name of Unit of Qualification	: Multimedia Authoring and Publishing	
Duration	: 25 Hours	
Topics	: Authoring System, Online Publishing and Offline Publishing	

Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquaint oneself with various Multimedia Authoring and Publishing Tools	Definition of an Authoring System, uses of an authoring system, Definition and functioning of Authoring Metaphor, Different Metaphors Offline Publishing : Flash, Power Point Online Publishing : HTML 5,Dreamweaver	25

Name of the Component : Multimedia Processing Techniques (MAT.O3.R0)

Name of Unit of Qualification	: Introduction to Multimedia Processing	
Duration	: 05 Hours	
Topics	: Raster Graphics, Vector Graphics, Digital Image Representation	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic understanding of Image and its representation	Definition of Image, Raster Graphics, Vector Graphics, Digital Image Representation, Bit allocation for intensity range	05
Name of Unit of Qualification	: Digital Representation of Color	
Duration	: 5 Hours	
Topics	: Color Models(RGB,CMYK,HSV), Color Palette	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic understanding of digital representation of color	Basic Color Models (RGB,CMYK,HSV) and their use, Color Characteristics, Color Palette, Monitor Vs Print Display	5
Name of Unit of Qualification	: Image Capture	
Duration	: 5 Hours	
Topics	: Exposure, Aperture, Resolution, Focal Length	
Learning Outcome (NO)	**Topics**	**Hours**
Acquire skills on image capture concepts and techniques	Exposure, Aperture, Field of view, resolution, focal length	5
Name of Unit of Qualification	: Scanning	
Duration	: 5 Hours	

Topics	: Image and Slide Scanning	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic understanding of image and slide scanning	Basic Principles of Image and Slide Scanning	05
Name of Unit of Qualification	: Image Processing	
Duration	: 10 Hours	
Topics	: Thresholding, Histogram Manipulation, Filters	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on Image Processing Techniques and Concepts	Thresholding, Intensity Histogram, Histogram Manipulation for Image enhancement, Basic Low pass, high pass, Filters: median filtering, layer, Image Manipulation(cropping, scaling, rotation),Bitmap Image Editing	10
Name of Unit of Qualification	: Scalable Vector Graphics	
Duration	: 5 Hours	
Topics	: SVG Elements, SVG Shapes, Gradients	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic understanding of Scalable Vector Graphics	Introduction, Why SVG, Use of SVG in HTML, SVG Elements, SVG Shapes, Filters, Effects, Gradients- Linear and Non Linear	5
Name of Unit of Qualification	: Introduction to MIDI	
Duration	: 5 Hours	
Topics	: MIDI Interfaces, MIDI Instruments, MIDI File Formats	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic understanding of MIDI	Definition, MIDI Interfaces, MIDI Instruments, MIDI	5

	File structures, MIDI File Formats	
Name of Unit of Qualification	: Image Editing	
Duration	: 50 Hours	
Topics	: Masks and Channels ,Retouching and Repairing, Painting and Editing, Basic Pen Tool Techniques, Creating Special Effects	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on Image Editing techniques	Working with masks and channels, Creating a quick mask, Editing a quick mask, Saving a selection as a mask, editing a mask, Loading a mask as a selection and applying effects, creating a gradient mask, loading the gradient mask as a selection and applying effects	10
	Using the Clone stamp tool for repair, Using the pattern Stamp tool to create, Using the Healing Brush and Healing Patch to repair flaws, History palette and snapshots	10
	Using the Photoshop paint engine, Using blending modes, painting shadows and highlights, smoothing the edges of strokes, Using the History brush, Brush palette, painting with specialty brushes, Using the color and swatch palettes, adding brush libraries, saving customized preset brushes, Image and canvas size, creating and painting with custom brushes, Pattern Maker Filter	10
	Drawing paths with the pen tool, drawing straight paths, drawing curved paths, combining straight and curved lines, drawing a path around artwork, Using keyboard shortcuts	10
	Automating multi-step tasks, playing and batch-playing actions, Using guides, saving and loading a selection, Hand-coloring selections on a layer, combining and moving selections, colorizing a selection, adjusting color balance, applying filters, creating a cutout effect, Improving performance with	10

	filters	
Name of Unit of Qualification	: Image and Graphic Pattern Generation	
Duration	: 25 Hours	
Topics	:Creating basic shapes, working with brushes, transforming objects, blending shapes and colors, creating layers, creating watercolour effects, printing artwork & producing color separations, drawing cylinders and boxes, preparing graphics for web publication	
Performance Criteria	**Contents**	**Hrs.**
Acquire skills on graphic and image pattern generation	Setting up the document, using the tools, drawing shapes, painting artwork, copying & scaling shapes, painting, filling with color, stroking with color, building a custom palette, copying paint attributes, saturating colors, painting with patterns and gradients, painting with a pattern brush, drawing with the pen, drawing straight lines, drawing curves, editing curves	3
	Using the art brushes, using scatter brushes, changing the color attributes of brushes, using a fill color with brushes, using calligraphic brushes, using pattern brushes, creating brushes	3
	Scaling objects, rotating objects, distorting objects, changing the perspective, using the free transform tool, making multiple transformations	3
	Creating a gradient fill, adjusting the direction of gradient blend, adding colors to a gradient, creating smooth color blends, creating shapes with pathfinder, uniting shapes, intersecting objects, trimming objects, blending colors with the soft mix and hard mix command, dividing shapes with the divide command	3
	Moving objects and layers, locking layers, viewing layers, pasting layers, merging layers	2
	Setting smart guide preferences, painting	3

	with the gradient mesh tool, specifying the number of mesh lines, applying colors to the mesh, highlighting a mesh object ,editing mesh points, reflecting mesh objects, modifying mesh lines	
	Drawing three dimensional objects, drawing cylinders, drawing boxes	2
	Overview of printing, color management, printing B & W proofs, creating color separations, working with two-color illustrations, creating a trap, overprinting objects, Vector vs Bitmap, placing a Photoshop file, copying a placed image, masking an image, sampling colors in placed images, replacing a placed image	3
	Optimizing images for the web, exporting flat color artwork, exporting continuous tone and gradient artwork, linking objects in an image map to URLs	3
Name of Unit of Qualification	: Sound Editing	
Duration	: 15 Hours	
Topics	: Sound Editing Software, Editing Sound Files, Dubbing	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on Sound Editing techniques	Introduction to Sound Editing Software, Working with existing sound files, adding effect, recording sound clips, Dubbing	15
Name of Unit of Qualification	: Video Editing	
Duration	: 20 Hours	
Topics	: Video Editing Tools, Importing and capturing projects, editing techniques, video effects	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on Video Editing techniques	Introduction to video editing tools, importing and capturing projects, working with clips, editing techniques, transitions , video effects	20

Name of the Component: Multimedia Design Principles & Applications (MAT.O4.R0)

Name of Unit of Qualification	: Design Overview	
Duration	: 15 Hours	
Topics	: Design and its needs, Learning and Learning Modes, System Quality, Elements of user Interface	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire basic understanding of Design and its need	Need for design, Human Factors ,Fundamentals of Human Perception, Human skill level and behavior, dialogues and tasks, learning and learning modes, Cognitive Domain Learning, Affective and Psychomotor Domain Learning, Multimedia Educational Software, Modeling, System Quality, Elements of user interface	15
Name of Unit of Qualification	: Elements of Visual Design	
Duration	: 30 Hours	
Topics	: Visual Design Elements, Visual rhetoric, Visual Design Methodology	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on Visual Design Elements and its methodologies	Introduction to basic visual elements-Line, shape, colour, texture, layout, motion, framing, surfaces, visual hierarchy, typography. Elements of composition, visual rhetoric, organizing information, factors designers consider when creating illustration and visual design, designing for screen, spatial relationships in the interface, symbols and semiotics in the interface. Visual Design methodology. Clarity, consistency, appearance, visual coding layout principles	30
Name of Unit of Qualification	: Human Computer Interface Design	
Duration	: 25 Hours	
Topics	: Information Design, User Interface Design, Cognitive Walkthrough	

Learning Outcome (NO)	**Topics**	**Hours**
Acquire skills on Human Computer Interface Design principles	Information Design, interaction and sensorial design, guidelines for user interface design, dialogue design, Cognitive walkthrough- case studies/examples-Different Android Applications	25
Name of Unit of Qualification	: Information Architecture	
Duration	: 20 Hours	
Topics	: Story, Flowchart, Scripts, Storyboard	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Apply Information Architecture principles in Multimedia Design	Definitions of story, flowchart, scripts, storyboard. Necessity of the pre-production documentations, Interactive Flowchart and storyboard. Examples and case studies.	20
Name of Unit of Qualification	: Animation Design	
Duration	: 25 Hours	
Topics	: 2D Design Concepts, Principles of animation, Editing & Animatics , Designing Characters	
Performance Criteria (OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on Animation Design principles	• Introduction & Learning perspective drawing-Drawing for Animation: Gesture Drawing, Action Drawing, Line of Action, Dynamic Poses, Action Sketches • 2D Design concepts & composition • Principles of Animation • Process of 2D Animation Film Making • Editing & Animatics • Input Sound, Sound Effects-Sound Recording • Designing, Developing Characters	25
Name of Unit of Qualification	: Visual Effects	
Duration	: 20 Hours	
Topics	: Examples of Visual Effects, fade-in/ fade-out, motion blur	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquire skills on application of Visual Effects in Multimedia	What are visual effects, when to use visual	20

Design	effects, examples of visual effects-glare effect, fade-in/fade-out, motion blur	
Name of Unit of Qualification	: Design Application Examples / Case Studies	
Duration	: 15 Hours	
Topics	: Design Specifics, Screen Layout Designs, Human Computer Interaction, Hypermedia & Navigation	
Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Implement the multimedia design principles and applications with examples/case studies	Need for design, design specifics, scripts, storyboards, advantages and effectiveness of storyboards, flowcharts, writing a script, screen layout designs, human computer interaction, hypermedia & interaction	15