School of Education Technology
Course Curriculum
PG Diploma in Multimedia and Web Technology (Distance Mode)

FIRST SEMENTER

SL. No.	Code	Subject Name	Contacts Periods/Week		Credit	Marks	
			Theory	Practical		Theory	Sessional
1.	SETD-T-101	Elements of Graphic communication and Animation	4		3	100	
2.	SETD-T-102	Multimedia Technology	4		3	100	
3.	SETD-S-101	Graphics and Animation Laboratory		4	3		100
4.	SETD-S-102	Multimedia Laboratory		4	3		100
		Sub Total	**8**	**8**	**12**	**200**	**200**
		Total	**16**			**400**	

SECOND SEMESTER

SL. No.	Code	Subject Name	Contacts Periods/Week		Credit	Marks	
			Theory	Practical		Theory	Sessional
1.	SETD-T-201	Human Computer Interaction	4		3	100	
2.	SETD-T-202	Multimedia Design Principles and Authoring	4		3	100	
3.	SETD-S-201	Human Computer Interaction Laboratory		4	3		50
4.	SETD-S-202	Multimedia Authoring Laboratory -I		4	3		50
		Sub Total	**8**	**8**	**12**	**200**	**100**
		Total	**16**			**300**	

THIRD SEMESTER

SL. No.	Code	Subject Name	Contacts Periods/Week		Credit	Marks	
			Theory	Practical		Theory	Sessional
1.	SETD-T-301	Internet, Intranet and Web Page Development	4		3	100	
2.	SETD-T-302	Production Management and System Development	4		3	100	
3.	SETD-S-301	Web authoring Laboratory		4	3		50
4.	SETD-S-302	Multimedia Authoring Laboratory - II		4	3		50
		Sub Total	**8**	**8**	**12**	**200**	**100**
		Total	**16**			**300**	

FOURTH SEMESTER

SL. No.	Code	Subject Name	Contacts Periods/Week		Credit	Marks	
			Theory	Practical		Theory	Sessional
1.	SETD-S-401	Dissertation Thesis Viva-Voce		12	6		 100 100
		Total	**12**			**200**	

Syllabus

PG Diploma in Multimedia and Web Technology (Distance Mode)

SETD-T-101: Elements of Graphic Communication and Animation (4-0-0)

Elements of Graphic Communication:

Overview:

Use of Computer Graphics, Classification of application, Typical graphics resolution, Co-ordinate systems, Aspect ratio correction, Image processing and picture analysis, Interactive graphics, conceptual framework of Interactive graphics.

Output primitives :

Points and lines, line drawing algorithms, Circle generating algorithm, Ellipse generating algorithms, Parallel curves algorithms, Attributes of output primitives, Thick primitives, line style & pen style, character generation, Scan converting primitives and scan algorithm, Antialiasing, Filling algorithm, Making copy pixel, page Description Language.

Display technologies:

introduction, Raster Scan display system, Input devices for operation interaction.
Colour printing principles.

Colour and shading:

Achromatic light, Chromatic light, colour Models for Raster Graphics, Reproducing Colours, Using Colour in Computer graphics, Rendering technique for line drawing & shaded images, Shading models for polygon, Surface details, Shadows, Transparency.

2D Transformations:

Basic transformations, Matrix representations and Homogeneous Co-ordinates, Composite transformations, other transformations.

2D viewing:

The Viewing Pipe-line, Viewing Co-ordinate reference frame, Window-to-Viewport co-ordinate transformation, 2-D Viewing functions, Clipping Operations,
Structure concepts, Editing structure, Basic modelling concepts.

2D – Animation :

Overview:

Overview of computer based animation, Animation as a special effect,

Types of Animation:

Sprite & Rendered,

Basics of 2D modeling:

introduction, Creation of Static and Animated Materials,
Keyframing and Animation Editing, Forward and Inverse Kinematics.

Special Effects :

Morphing, Warping, Splash, Blur etc.

Animation file formats

Tools for 2D – Animation.

SETD-T-102: Multimedia Technology (4-0-0)

Introduction :

Evolution of Multimedia, Structure and Components of Multimedia. Multimedia Platforms, Application domains, Multimedia & interactivity.

Sound & Audio:

Basics of Acoustics :

Nature of sound waves, amplitude, frequency, waveform, Dynamic range of hearing, Characteristics of Musical Sound, Tone, Note, Intensity Pitch, Timbre.

Elementary Sound Systems :

Microphone (Principle of operation), Types of Microphones and their suitability of usage, Amplifier (working principles only), Loudspeaker (Types and Principle of operation).

Digitisation of Sound :

PCM, Sampling, Sampling rate, resolution, Bit rate, Quantisation error, Signal-to-Noise Ratio, Nyquist's Sampling Theory.

Electronic Music & Synthesizer:

MIDI Interface, Protocol & Data format.

Architecture of Sound card:

Processing of WAV and MIDI files:

Audio Compression Techniques :

Need for compression, DPCM, ADPCM, SBC, MPEG

Image & Graphics :

What is Image, Filtering, Image processing, Geometric transformation of images, Image composition, Mechanics for image storage.

Principles of Raster Graphics :

Computer Visual Display Concepts, Resolution, Colour & Pallets, Refresh rates and graphic accelerators.

Digital image representation and format:

Image processing & enhancement:

Image scanner principles:

File formats:

Digital still camera and photography:

Video Technology :

Analog Video :

Principles, Broadcast standards, CCD camera, Recording formats and standards.

Digital Video :

Principles, PC Video, Video conference standards, TV Cards, Frame Grabber Principles

IDTV and HDTV principles:

Motion Picture to Video Conversion:

Video Compression :

MPEG

Video Formats :
AVI and QuickTime
Video Editing:
Video editing concepts, conversion, transition, superposition.

Storage Media :

Introduction:
Magnetic media principles and storage density achievable
Disk Technology:
Evolution and basic principles of Compact Disk Technology – CD – DA and CD ROM. CD – DA format and details. CD – ROM format and principles
Writable Compact Disk :
WORM and Magneto – Optical disc principles.
Photo – CD
CD-ROM Production Process:

SETD-T-201: Multimedia Design Principles and Authoring (4-0-0)

Computer Representation of Text :
Importance of Text Representation, Design considerations, Text formats, Font types and sizes, character formats, Scrolling Text, File formats, Special Effects, Tagging, Object Linking and embedding.

Multimedia Document and Interchange formats :
Hypertext, HTML, MHEG and Hypermedia, SGML, Open Document Architecture (ODA), Open Media Framework Interface (OMFI)

Cognitive aspect in Multimedia Presentation :
Cognitive domain of learning, Knowledge and Skill, Retention, Learning Style, Affective and Cognitive domain learning, Role of the creator of Multimedia learning material, Presentation format, Interactivity, System Quality, Media mix.

Authoring Metaphors :
Introduction, Definition & functions of Metaphors, Basic Categories - Slide show metaphor, Book metaphor, Windowing metaphor, Icon metaphor & Network metaphor.

Creating Scripts, flowcharts & Storyboards :
What are scripts, storyboards and flowcharts, Advantages of Storyboarding, Interactive Storyboarding, Simple interactive flowcharts, Complex interactive flowcharts, Writing scripts, Case studies.

SETD-T-202: Human Computer Interaction (HCI) (4-0-0)

Introduction, Human factors, Fundamentals of Human perception, Human skill level and

Behaviour, Dialogues and tasks.

Framework for HCI, Modelling Human Computer Interaction, Cognitive issues in user interface, Graphic Design and Style issues, Standard interface elements in windows.

Human Computer Interface Design : Information Design, Interaction Design and Sensorial design, Guidelines for user interface design, Dialogue Design.

SSADM : Methodology for Dialog design, Prototyping, Prototyping tools.

Visual Design : Introduction, Visual Rhetoric, Organising information, Factors designers consider when creating illustration and visual design, Designing for screen, Typography for computer screen, Spatial relationships in the interface, Symbols & Semiotics in the interface. Visual design methodology : (Clarity, Consistency, Appearance), Visual Coding, Layout Principles.

SETD-T-301: Internet, Intranet and Web Page Development (4-0-0)

Introduction to Digital Communication

Introduction to Computer Networks :

Motivation for using computer networks, Point to Point and Peer to Peer Networks, Client Server Networks, Physical network topologies, ISO Layered Architecture, Geographical extent of Networks – LAN, MAN, WAN.

Introduction to Internet and World wide Web :

What is the Internet, Evolution of the Internet, How Internet Works (Packet Switching). *Services Offered on the Internet* : E-mail, Network News, Telnet, FTP, IRC, Archie, Gopher, WWW.
Internet Access Methods : Dial-up connection, Leased Line connection, ISDN
Internet Service Providers (ISP) : Connection through an ISP Server, Shell and PPP accounts.
What is the World Wide Web, Evolution of the WWW, Client-Server Model of the Internet.
Fundamental Concepts related to WWW : Browsers, Web Servers, Proxy Servers, Domain Name Servers, Hypertext, HTML, URL, HTTP, Home Page, Search Engines.

Network Concepts and TCP/IP :

Definition Network Protocol.
Network Components : Servers, Clients, NIC, Physical media (UTP, STP, Fiber-optic, Coaxial wireless communication etc.), Modems, Hubs, Repeaters, Bridges, Routers, Gateways.
Network Protocols : TCP/IP, NetBEUI, Layers of TCP/IP, *How TCP/IP Works* : The TCP level, The IP level, Datagrams, Octets, header Information. *IP Address* : Host and Network portions of IP address, Class-A Class-B Class-C Networks
Intranet & Internet

HTML :

Introduction : What is HTML, Basic layout of HTML scripts
Head section : Title, Base HREF, LINK HREF, Meta tags
Body Section : Text Formatting and alignment, Fonts, Colours, Ordered and Unordered lists, Links Images, Sounds, Video, Background.
Advanced Elements : Tables, Forms, Frames
Authoring web pages using editors.

Java Script :
Introduction, Architecture of JavaScript applications, Tags in Java Script, Data Types and Variables, Expressions and Operations, Looping and Branching, Events and Event Handling.
Core JavaScript Elements : Array, Boolean, Date, Function, Math Number, Object String, RegExp, *Client-side JavaScript Elements* : Document (Anchor, Layer, Link, Image, Area), Window (Frame, History, Location, Screen), Form (Button, Checkbox, Radio, Select, Submit, Text, Text-area, Hidden).

Use of Java Applets, DHTML and XML

HTTP servers & CGI Concepts.

SETD-T-302: Production Management and System Development (4-0-0)

Production Processes:
Principles of Design Unity, Balance, Proportion, Rhythm, Variety, Emphasis, Economy, Color
Flowchart of the process, Application Design Considerations, Defining Target Audience
Post Production Considerations, Building Blocks, Single User/ Multi-user Presentation
Component Editing: principles & tools -Text, Graphics & Image, Sound, Video, Animation, Dubbing, Subtitling.
Mixing Audio/Video, Media Integration, Streaming Media, Broadcasting issues

Product Development Management:
Life Cycle Model
Human Roles & Teamwork
Product Planning: Authoring Paradigm, Content Analysis, Cost Quality Tradeoff.
Intellectual Property Right & Copyright Issues

Post Production:
CD Production
Web Based Production

Data Base Management Concepts :
Introduction to Database, Relational data model, relational algebra, Introduction to SQL.
Database design : Conceptual databases design. Theory of normalisation.
Relational Theory and SQL : Relational concepts, relational algebra, relational calculus.
Application development using SQL
Database Security

SETD-S-101: Graphics and Animation laboratory (0-0-4)

Vector Graphics:
Exercises for creation of objects like line, box, irregular shapes.
Exercises on rotation, transition, viewport, projection scaling of 2D-objects.

Bit-map Graphics
Exercises on editing, manipulation and enhancement using Photoshop or similar tools.
Exercises on filters and their effects, mode change and their effects.
Exercises on colourisation of a black and white picture.
Exercises on creation, rotation, translation, viewport, projection, scaling of 2D objects.

Creation of static 2D objects and simple animation
Exercise on Keyframing, Lighting, Rendering
Special Effects: Morphing, Splash, Blur etc.

SETD-S-102: Multimedia Laboratory (0-0-4)

Simple project in document presentation from given basic input and manuscript.
Using Internet & E-mail.
Hands-on experience on sound capture (from microphone and CD) and editing software tools like Sound Forge.
Restoration of old records.
Use of video camera & recorders.
Exercises on editing of Motion Video / animation clips using Adobe Premier

SETD-S-201: Human Computer Interaction Laboratory (0-0-4)

Small tasks involving scriptwriting, flowcharting, storyboarding and layout for multimedia / web presentation.
Visual layout design & User Interface using web authoring packages.
Implementation of simple interfaces using PowerPoint.

SETD-S-202: Multimedia Authoring laboratory – I (0-0-4)

Working on a short project involving text, graphics, audio & video editing, image enhancement and component integration.
Design & Development of a CD-ROM based multimedia presentation using an Authoring package (viz. Director).

SETD-S-301: Web authoring laboratory (0-0-4)

Web authoring using HTML editors and Java script.
Use of DHTML, XML

SETD-S-302: Multimedia Authoring laboratory – II (0-0-4)

Product development using Scripting Language viz. Lingo of Director
Animation using Scripting Language viz. Action script of Flash
Use of database in Multimedia Product

SETD-S-401: Dissertation (0-0-12)