

**H. N. G. University , Patan**  
**M.Sc.(CA & IT) – Semester - VI**  
**604: Multimedia Technology and Virtual Reality Development**

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- Unit: 1** **[15%]**  
**Introduction to graphics**  
Raster and Vector graphics, Environment elements, Sizing and selecting Images, Masks, Text, Filter, Blending and Compositing, Layers and Layers Effect, Image modes, Color and Printing, Adjusting Images
- Unit: 2** **[25%]**  
**Introduction to Multimedia**  
Concept of Non Temporal and Temporal Media, Basic characteristics of Non-Temporal Media: Images, graphics, Text Basic characteristics of Temporal Media : Video, Audio, Hypertext and Hypermedia.  
Presentations: Synchronization, Event scripts and Interactivity, Introduction to Authoring Systems.  
**Compression Techniques**  
Basic concept of compression, Still Image compression: JPEG compression, Future of JPEG2000  
**Video Compression** : MPEG1 & 2 compression scheme, MPEG-4 natural video compression.  
**Audio Compression** : Introduction to speech and audio compression, mp3 compression scheme. Compression of synthetic graphical objects.
- Unit: 3** **[20%]**  
**Multimedia Systems Architecture**  
General purpose Architecture for multimedia support: Introduction to multimedia PC/workstation Architecture, characteristics of MMX instruction sets,  
I/O Systems: overview of USB port, and IEEE1394 interface, Operating system support for multimedia data: Resource scheduling with real time considerations, file system, I/O device management.
- Unit: 4** **[20%]**  
**3D Computer graphics**  
The virtual world space, positioning the virtual observer, the perspective projection, human vision, Stereo perspective projection, 3D clipping, color theory, simple 3D modeling illumination models, shading algorithms, radiosity, hidden surface removal, realism stereographic images.  
**Geometric modeling**  
From 2D to 3D, space curves, 3D boundary representation,  
**Geometric Transformations**  
Frames of reference, modeling transformations, instances, picking flying.
- Unit: 5** **[20%]**  
**Virtual Reality**  
Introduction to Virtual Reality and Virtual Reality Systems,  
**Related Technology** :Tele-Operation and augmented reality systems, interface to the virtual world input, Head and hand trackers, data globes, haptic input devices, interface to the virtual world-output, stereo display, head-mounted display, Auto-stereoscopic displays, holographic display haptic and force feedback,  
**VRML programming** : modeling object and virtual environment domain, dependent application – medical, visualization, environment etc

**Text Books & Reference Book : -**

1. Multimedia Technology, Tay Vaughan, McGraw-Hill
2. Multimedia Concept & Practice, Hartman & Carey, Phi
3. Virtual Reality Systems, John Vince, Pearson Education Asia.