M.Tech Augmented Reality and Virtual Reality

2. **Applicable for** (B.Arch, B.Des, M.Des, M.Sc.Electronics/Electronic Media/Biotechnology/Physics/Mathematics/Statistics/VisualCommunication)

Syllabus:
Section 1: Mathematics:

Linear Algebra: Matrices and matrix operations, Determinants and system of linear equations, Basic concepts of eigenvalues.

Probability and Statistics: Random variables, Mean, median, mode, standard deviation, Uniform and normal distributions, Conditional probability and Bayes theorem

Graphs: Connectivity, Matching, Coloring, Combinatorics: Counting, Recurrence Relations, Generating Functions.

Section 2: Physics

Optics And Lenses, Motion, Force, Gravity (Simulation Dynamics), Sound Waves and Audio Perception (For Spatial Sound Design), Light, Color

Section 3. Multimedia and Digital Media Foundations

Image File Formats and Compression, Video Codecs and Streaming, Media Types and Technical Fundamentals, Audio File Formats and Sampling

Media Aesthetics and Representation, Continuity Editing and Montage, Digital Storytelling & Narrative Design, Animation, Design Thinking

Section 4: Visual Literacy and Spatial Design

Visual Grammar & Design Foundations, Visual Design Principles, Grid Systems and Layouts, Visual Hierarchy and Focal Points, Typography, Color Theory

Cognitive Load in Design, Cognitive Visual Perception, 2D and 3D Space Representation, Wayfinding and Spatial Navigation, Responsive and Adaptive Layouts

Section 5: Human Perception and Interaction

Basics of Human Sensory Perception – Visual, Auditory, Tactile, Perception of Depth, Motion, and Space – Monocular and Binocular Cues, Visual Attention and Information Processing

Section 6: Principles of Design:

Principles of Design – Balance, Contrast, Alignment, Proximity, Hierarchy, Elements of Visual Communication – Lines, Shapes, Texture, Color, Color Theory – Primary, Secondary, Complementary colors; Color Harmonics