M.Tech Augmented Reality and Virtual Reality

1. **Applicable for (***B.E./B.Tech. in any Engineering discipline, M.Sc.* Computer Science, M.Sc. Data Science, M.Sc. IT, M.Sc. AI and ML, M.Sc. Software Engineering, M.C.A)

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)

Section 3: Algorithms and Problem Solving

Variables and Data Types: integers, floats, characters, strings, Operators: arithmetic, relational, logical, Expressions and Statements, Input/Output Handling, Searching Algorithms: Linear and Binary search, Sorting Algorithms: Bubble, Selection, Insertion
Section 4: Programming

Basics of algorithms and flowcharts, Programming logic: variables, loops, functions, Arrays, Stacks and Queues, Object-Oriented Programming
Section 5: Digital Logic

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

Section 6. 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