**Course Title: Introduction to Virtual Reality**

**Course Objectives:** Understand the basic principles of virtual reality such as rendering of novel objects, stereoscopic vision, and perception

**Tentative list of topics to be covered:** In this course the participants will be introduced to Virtual Reality and will be completing one scripting assignment through which they will be able to complete a basic VR demo.

The course contents will be as follows: a) Geometric Modeling: Modeling of Geometric Objects in 3D. Viewing and transformations of objects in 3D world. Understanding visibility of objects b) Illumination and Rendering aspects, local illumination models and shading of models. Studying methods for mapping textures to objects. Rendering tricks for visual realism. c) Understanding Visual Perception: Understanding the perception of depth and differences between monocular and stereo vision. Understanding the perception of motion, stroboscopic motion, Understanding the perception of color, d) Animation and motion generation: Models of animating objects, keyframe based animation, procedural animation, physics -based motion techniques, collision detection and response e) Tracking: 2D and 3D localisation techniques, sensors for measurement of localisation, sensor fusion, probabilistic localisation techniques, Kalman filters for tracking

Training to include a significant practical component involving scripting of a demonstration using WebGL or some other related scripting language such as 3js.