

## Liverpool John Moores University

Title: Mixed Reality Technologies  
Status: Definitive  
Code: **6206COMP** (128006)  
Version Start Date: 01-08-2021

Owning School/Faculty: Computer Science and Mathematics  
Teaching School/Faculty: Computer Science and Mathematics

Team	Leader
Liang Men	Y
Yun Sheng	

**Academic Level:** FHEQ6      **Credit Value:** 20      **Total Delivered Hours:** 46  
**Total Learning Hours:** 200      **Private Study:** 154

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Workshop	22

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	Design and Develop a Mixed Reality Prototype	50	
Exam	AS2	Examination	50	2

### Aims

*To describe the concepts and technologies for mixed reality.  
To explain the principles and techniques of modelling and rendering virtual reality using appropriate tools and technology.  
To provide opportunity for students to design, develop and evaluate mixed reality solution.*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Elaborate on the concepts, technologies and application in Mixed Reality.
- 2 Critically evaluate the issues associated with developing Mixed Reality applications and the technical issues involved.
- 3 Apply principles and techniques to design a Mixed Reality Application.
- 4 Evaluate the use of appropriate tools and technology to develop a Mixed Reality Application.

## Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

MR Application	3	4
Examination	1	2

## Outline Syllabus

*Mixed Reality: Definition, Augmented Tele-existence, Taxonomy, Issues associated to Mixed Reality, Applications of Mixed Reality Technology.*

*Sensory Augmentation: Sound, Stereoscopic display, haptic devices.*

*Mixed Reality Challenges: cyber-sickness, accommodation-convergence conflicts, latency and rendering considerations, user interfaces.*

*Interaction patterns: Selection, viewport manipulation, locomotion techniques.*

*Developing for AR: marker, markerless and location based augmented reality.*

## Learning Activities

Lectures – to deliver the concepts, methodologies and techniques on mixed reality technologies.

Workshop – Tutor-led workshop activities which will enable the students to practice the methods and techniques to design and prototype a mixed reality application.

Further exercises – additional exercises for students to work on in their own time.

Directed learning – provides additional reading to enable workshop work to be completed.

Learning materials can be accessed digitally via University Virtual Learning Environment (VLE).

## Notes

The module will focus on the novel input and output technologies that enables blended experience between the physical reality and virtual reality. It will also cover

design of virtual world and development of mixed reality applications as well as the proposal of mixed reality solutions for a specific application. Students will be working in collaboratively during lab sessions to develop MR solutions.