21B33C512 – VR and AR

Module designation	VR and AR (Undergraduate)
Semester(s) in which the module is taught	5th
Person responsible for the module	Kurnia Prima Putra, S.Kom.,M.T.
Language	Indonesia – English
Relation to curriculum	This course is an elective course
Teaching methods	Lecture, Presentation
Workload (incl. contact hours, self-study hours)	CH: 09.00-17.00 Face to face: 3x50 minutes / week Independent Study: 3x50 minutes / week Structured assignment: 3x50 minutes / week
Credit points	3 SKS (equivalent 5.1 ECTS)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	**Program Learning Outcomes (PLO)** PLO 3: Demonstrate a responsible attitude towards work in their field of expertise independently; PLO 5: Mastering concepts, theories and applications in the engineering field informatics and computers taught at the educational level secondary and vocational; PLO 7: Able to implement and develop technological knowledge and carry out appropriate research with expertise based on scientific rules, procedures and ethics in order to produce solutions, ideas and criticism PLO 12: Able to create digital and multimedia products needed to convey and/or store information; **Course Learning Objectives (CLO)** This course gives students the ability to build Augmented Reality and Virtual Reality products by utilizing the latest tools and writing scientific articles on the products produced. **Sub CLO:**

	Sub-CLO 1: Students are able to give examples of the use of Augmented Reality and Virtual Reality Sub-CLO 2: Students are able to differentiate between types of Mixed Reality Sub-CLO 3: Students are able to explain the concept of Virtuality Sub-CLO 4: Students are able to apply the A-Frame framework in the development of Virtual Reality Sub-CLO 5: Students are able to build Virtual Reality applications using the A-Frame framework Sub-CLO 6 Students are able to explain the basic concepts of Augmented Reality Sub-CLO 7 Students are able to use Augmented Reality development tools Sub-CLO 8 Students are able to build Virtual Reality applications using one of the Augmented Reality development tools Sub-CLO 9 Students are able to compose scientific articles in the field of Mixed Reality
Content	Students will learn about: ● Introduction to Augmented Reality – Virtual Reality ● Mixed Reality ● Virtuality ● A-Frames ● Augmented Reality ● ARToolKit ● Vuforia ● Augmented Reality Scientific Work - Virtual Reality
Examination forms	Assessment Techniques: Exam, Presentation, Case Based Learning Assessment Forms: Assignment, Presentation Assessment
Study and examination requirements	● Students have to inform the lecturer when they are not able to attend the class due to sickness etc ● Active in making projects by showing participation in making projects in class ● Able to present and answer questions that exist during project presentations
Reading List	● Virtual and Augmented Reality: Concepts, Methodologies, Tools, and Applications. (2018). United States: IGI Global. ● Dix, A., & Finlay, J. E. (2003). Human-Computer Interaction (3rd Edition). Pearson. A-Frame – Make WebVR. https://aframe.io/docs/1.4.0/introduction/ ● ARToolkit Documentation. http://www.hitl.washington.edu/artoolkit/documentation/index.html ● Vuforia Library. https://library.vuforia.com/