	Universitas Negeri Surabaya Faculty of Engineering, Undergraduate Study Program in Informatics Engineering	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Augmentation and Virtual Reality	5520203007		T=3	P=0	ECTS=4.77	5	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Aditya Prapanca, S.T., M.Kom.

Learning model	**Project Based Learning**
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PO - 1 Students are able to implement AR and VR in everyday life
	PLO-PO Matrix

P.O
PO-1

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																

Short Course Description	Study of theory and mastery of skills regarding aspects related to the development of virtual reality and augmented reality applications, input and output elements used in virtual reality, optical modeling to produce stereoscopic displays, and virtual reality programming. The application used in this lecture is Unity but it does not rule out the possibility of using other software such as Assemblr and others.
References	**Main :**

1. Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing
2. Patmore, C., 2003, The Complete Animation Cource: the Principles, Practice and Techniques of Successful Animation, Barrons Educational Series Inc
3. Whitaker, H., 2006, Timing For Animation (Pengaturan Waktu Untuk Film Animasi), Bayumedia
4. Milic, L., & McConville, Y., 2006, The Animation Producers Handbook, Open University Press
5. Grigore, C Burdea & Philippe, Coiffet, 2003, Virtual Reality Technology, Wilye Interscience
6. William R. Sherman, Alan B.Craig, 2003, Understanding Virtual Reality, Morgan-Kaufmann Inc.
7. Wibawa, 2021. Membuat Aplikasi Berbasis Augmented Reality dengan Assemblr.

Supporters:

1. William R. Sherman, Alan B.Craig, 2003, Understanding Virtual Reality, Morgan-Kaufmann Inc.

Supporting lecturer	Ronggo Alit, M.M., M.T. Ghea Sekar Palupi, S.Kom., M.I.M. Ramadhan Cakra Wibawa, S.Pd., M.Kom.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	understand the concept of virtual reality history	1. able to explain the concept of virtual reality history2. able to explain the meaning of virtual reality 3. able to explain examples of virtual reality	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Participatory Activities	lectures and discussions 3 X 50		**Material:** historical concept of virtual reality **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	20%
2	outputs and inputs	1. able to explain the meaning of output and input2. able to explain examples of output and input	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Participatory Activities	lecture, discussion 3 X 50		**Material:** understanding output and input2 **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	20%
3	stereoscopic view	1. Be able to explain the meaning of stereoscopic view2. able to practice stereoscopic view	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values‘	lecture, discussion 3 X 50		**Material:** stereoscopic view **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%
4	force feedback simulation and haptic device	1. Be able to explain the meaning of force feedback simulation and haptic device2. able to explain the difference between force feedback simulation and haptic device	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values	lecture, discussion 3 X 50		**Material:** understanding force feedback simulation and haptic devices **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%
5	viewer and object tracking	able to explain aspects of viewer and object tracking	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Practice / Performance	lectures and discussions 3 X 50		**Material:** viewer and object tracking aspects **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%
6	poses and movements	1. able to explain the meaning of poses and movements2. able to explain the influence of poses and movements	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values	3 X 50		**Material:** understanding poses and movements **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%

7	accelerator	able to explain the basics and meaning of accelerator	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values	3 X 50		**Material:** basics and understanding of accelerators **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%
8	able to complete questions and case studies related to pre-UTS material	accuracy in solving quiz questions	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values	3 X 50			0%
9	Know the theory and implementation of face tracking	a. Theory and implementation of face tracking b. Introduction to 3D animation production	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Participatory Activities	Presentation, group discussion and reflection 3 X 50		**Material:** basics and understanding of accelerators **References:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	20%
10	Implementing Develop 3D object using Unity	Introduction to 3D animation production	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values	Presentation, group discussion and reflection 3 X 50		**Material:** 3D animation **Readers:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%
11	Know user interface problems	a. Definition of Problem b. user interface c. User interface Problem Concept	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Participatory Activities	Presentation, group discussion and reflection 3 X 50		**Material:** user interface **Readers:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	20%
12	Students are able to render and physical model	Understand the concepts of rendering and physical modeling	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values			**Material:** user interface **Readers:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%
13	Students are able to create physical simulations, computing visibility, level of detail	Able to apply and understand physical, computational and level of detail simulations	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Practice / Performance	Students know the meaning of physical simulation, computational visibility, level of detail		**Material:** user interface **Readers:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%

14	1.Students are able to program Mobile Game Engines 2.Able to create augmented reality	1.Students know and are able to create augmented reality applications 2.Students know and are able to create with mobile game engines	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Practice / Performance			**Material:** user interface **Readers:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	15%
15	1.Students are able to program Mobile Game Engines 2.Able to create augmented reality	1.Students know and are able to create augmented reality applications 2.Students know and are able to create with mobile game engines	**Criteria:** Cognitive Values, Character Values, and Psychomotor Values **Form of Assessment** : Practice / Performance			**Material:** user interface **Readers:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	5%
16	Final exams		**Criteria:** Cognitive Values, Character Values, and Psychomotor Values			**Material:** user interface **Readers:** *Linowes, Jonathan. 2015. Unity Virtual Reality Projects, BIRMINGHAM – MUMBAI, PACKT Publishing*	0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	80%
2.	Practice / Performance	20%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.