	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Doctoral Study Program in Mathematics Education	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Mathematics Digital Learning (Mathematics Digital Learning)	8400202050		T=2	P=0	ECTS=5.04	2	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Prof. Dr. Tatag Yuli Eko Siswono, S.Pd., M.Pd.

Learning model	**Case Studies**
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PLO-PO Matrix

	P.O

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

Short Course Description	Study of the concept and application of digital mathematics learning, as well as digital resources in Mathematics Education, use of technology, cognitive, didactic and epistemological aspects of technology integration in mathematics education, technological knowledge and research on ICT in the field of up-to-date education, interrelation of technology and mathematics, learning and technology-based evaluation, and technology-based professional development of educators. The lecture begins with an explanation of the latest developments in information and communication technology in the world of education, especially Mathematics Education, discussion and review of the latest primary literature to find the state of the art of information and communication technology in Mathematics Education, implementation/research in a small scope that implements ICT in Mathematics Education. The assessment system includes assignments (30%), participation in the form of activity in discussion forums (20%), mid-semester assessments (20%) and final course projects (30%).
References	**Main :**

1.

[1] Carol M. Huttar & Karlynn BrintzenhofeSzoc (2020) Virtual Reality and Computer Simulation in Social Work Education: A Systematic Review, Journal of Social Work Education, 56:1, 131-141, DOI: 10.1080/10437797.2019.1648221
[2] Rosa M., Pinheiro R.P. (2020) Cybereducation with Mathematics Teachers: Working with Virtual Reality in Mathematics Activities. In: Viggiani Bicudo M. (eds) Constitution and Production of Mathematics in the Cyberspace. Springer, Cham.
[3] Albano, G. (2012). Mathematics education: teaching and learning opportunities in blended learning. In *Teaching mathematics online: Emergent technologies and methodologies* (pp. 60-89). IGI Global.
[4] Bowers, J., Brandt, J., Stovall, K., & Vargas, M. (2009). Searching for the Most Amazing Thing over the Last 20 Years: A Review of" Research on Technology and the Teaching and Learning of Mathematics, Volume 1 and Volume 2".
[5] Calder, N., Larkin, K., & Sinclair, N. (Eds.). (2018). *Using Mobile Technologies in the Teaching and Learning of Mathematics* (Vol. 12). Springer.
[6] Dick, T. P., & Hollebrands, K. F. (2011). *Focus in high school mathematics: Technology to support reasoning and sense making* (pp. xi-xvii). Reston, VA: National Council of Teachers of Mathematics.
[7] Gary B. S., Thomas J. C., Glenda A. G., & Randolph E. G. 2010.*Teachers discovering computers: Integrating technology and digital media in the clasroom*. Shelly Cashman Series
[8] Laborde, C., Kynigos, C., Hollebrands, K., & Strässer, R. (2006). Teaching and learning geometry with technology. In *Handbook of research on the psychology of mathematics education* (pp. 275-304). Brill Sense.
[9] Silas Formunyuy, VerkijikaLizetteDe Wet, Using a brain-computer interface (BCI) in reducing math anxiety: Evidence from South Africa, Computers & Education, Elsevier 2015
[10] Jurnal Cpmputer and Education, Elsevier semua edisi 3 tahun terakhir.
[11] Sanders, M. E. (2012). Integrative STEM education as “best practice”. Griffith Institute for Educational Research, Queensland, Australia.
[12] Editors: Liu, D., Dede, C., Huang, R., Richards, J. (Eds.) (2017), Virtual, Augmented, and Mixed Realities in Education, Springer.

Supporters:	

Supporting lecturer	Dr. Atik Wintarti, M.Kom. Dr. Elly Matul Imah, 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							0%
2							0%
3							0%
4							0%
5							0%
6							0%
7							0%
8							0%
9							0%
10							0%
11							0%

12							0%
13							0%
14							0%
15							0%
16							0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
		0%

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** ability in the process and student learning outcomes are specific and measurable statements that identify the ability 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.