	Universitas Negeri Surabaya Faculty of Engineering, Electrical Engineering Masters Study Program					Document Code

SEMESTER LEARNING PLAN

Courses		CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Artificial Intelligence		2010103006	Compulsory Study Program Subjects	T=3	P=0	ECTS=6.72	2	April 12, 2023

AUTHORIZATION		SP Developer		Course Cluster Coordinator		Study Program Coordinator	
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Learning model	Case Studies

Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PO - 1 — Students are able to recognize and understand Artificial Intelligence (Artificial Intelligence)
	PO - 2 — Students are able to understand the most common problem solving mechanisms in Artificial Intelligence.
	PO - 3 — Students are able to represent problems into a knowledge base using logic or formal language
	PO - 4 — Students are able to explain case studies: changing the problem into the problem space of the operators used
	PO - 5 — Students are able to explain search methods
	PO - 6 — Students are able to understand Blind Search/Uninformed Search and Informed Search
	PO - 7 — Students are able to understand Reasoning (reasoning) Propositional Logic and First Order Logic
	PO - 8 — Students are able to understand fuzzy systems
	PO - 9 — Students are able to understand Artificial Intelligence learning (reasoning) with Bayes decision trees and artificial neural networks
	PO - 10 — Students are able to understand Artificial Intelligence (AI) modeling using optimization methods using machine learning, data mining, and artificial neural networks
	PO - 11 — Students are able to apply AI
	PLO-PO Matrix

P.O
PO-1
PO-2
PO-3
PO-4
PO-5
PO-6
PO-7
PO-8
PO-9
PO-10
PO-11

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																
PO-2																
PO-3																
PO-4																
PO-5																
PO-6																
PO-7																
PO-8																
PO-9																
PO-10																
PO-11																

Short Course Description	The Artificial Intelligence course discusses the problem solving process in artificial machine intelligence, namely searching, reasoning, planning, learning, and method application. This content includes an introduction to Artificial Intelligence, expert systems, machine learning methods, data mining methods, Fuzzy Logic, and Neural Network optimization methods. This learning also discusses the advantages and disadvantages of each method for solving a problem, evolutionary computation, hybrid intelligent systems and how to implement AI and choose the most appropriate techniques and methods for various problems. Lectures are carried out proportionally between theory and practice (assignments), discussions of theory are carried out in general, philosophical motivation, differences between existing techniques, methods, modeling and applications.

References	**Main :**	
	1. 1. Russel, Stuart and Norvig, Peter. 1995. "Artificial Intelligence: A Modern Approach". Prentice Hall International, Inc. 2. 2. Mitchell M. Tom. 1997. "Machine Learning". McGraw-Hill International Editions. Printed in Singapore	
	Supporters:	
	1. 1. Dan E. Tamir, David Rishe, A. Kandel. 1965. "Fifty Years of Fuzzy Logic and its Applications". Springer 2. 2. Wolfgang Ertel. 2011 " Introduction to Artificial Intelligence". Springer	

Supporting lecturer	Unit Three Kartini, S.T., M.T., Ph.D.

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	Students can and are capable of understanding, explaining and being able to provide a general overview or provide a general introduction to Artificial Intelligence (AI) and Artificial Intelligence techniques and methods	1.1. Accuracy in explaining the definition of artificial machine intelligence (AI) 2.2. Suitability explains the applications of AI 3.3. Conformity explains the types of mathematical methods of artificial intelligence	**Criteria:** Lecture/discussion **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment		Self-directed learning 2	2 x 50 2		5%
2								0%
3								0%
4								0%
5								0%

6							0%
7							0%
8				offline 1			20%
9							0%
10							0%
11							0%
12							0%
13							0%
14							0%
15							0%
16							0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	2.5%
2.	Project Results Assessment / Product Assessment	2.5%
		5%

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.