Artificial Intelligence

Module name	Artificial Intelligence	
Module level	Undergraduate	
Code	IF221118	
Courses (if applicable)	Artificial Intelligence	
Semester	4	
Lecturer	Budi Nugroho, S.Kom, M.Kom (PIC) Dr. Rr. Ani Dijah Rahajoe, S.T, M.Cs Dr. Eng. Ir. Anggraini Puspita Sari, MT Dr. Basuki Rahmat, S.Si, M.T Yisti Vita Via, S.ST, M.Kom	
Language	Bahasa Indonesia and English	
Relation to curriculum	Undergraduate degree program; compulsory; 4th semester	
Type of teaching, contact hours	Lectures, < 60 students	
Teaching Methods	Simulation, case study, collaborative learning, cooperative learning, project-based learning, problem-based learning	
Workload	1. Lectures: 3 sks x 50 = 150 minutes (2 hours 30 minutes) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week	
Credit points	3 credit points (sks)	
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.	
Mandatory prerequisites	Advanced Programming	
Courses description	This course studies the scientific aspects of artificial intelligence, problem domains, various searching methods, diverse knowledge representations, matching, inference methods (statistical, Bayesian, and fuzzy), and discussions on soft computing with primary topics including fuzzy systems, Artificial Neural Networks (ANN), Deep Learning (DL), and Natural Language Processing (NLP).	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO1 Students are able to correctly explain the concepts and terminology within artificial intelligence, and discuss examples of the application of artificial intelligence methods both from published journals and from applications that have been implemented in everyday life.	PLO4, PLO5, PLO6, PLO7, PLO8
	CO2 Students are able to apply and construct each step of artificial intelligence methods, both in theoretical concepts and in practice using programming languages correctly.	PLO4, PLO5, PLO6, PLO7, PLO8
	CO3 Students are able to evaluate and present the performance of searching methods, fuzzy systems, Artificial Neural Networks (ANN), Deep Learning (DL), and Natural Language Processing (NLP) using performance measurement evaluation methods correctly.	PLO4, PLO5, PLO6, PLO7, PLO8

Content	Searching methods, reasoning systems, and fuzzy logic, the concept of learning in Artificial Intelligence, the concept of Artificial Neural Networks (ANN), Deep Learning (DL), and Natural Language Processing (NLP) to solve problems, and their implementation using the Python programming language in Jupyter Notebook.
Media employed	LCD, whiteboard, websites, books (as references), online meeting, etc.
Assessments and Evaluation	One written Midterm assessment (60 minutes) and one final oral exam (30 minutes), two short computer-based quizzes, take home written assignments
Study and examination requirements and forms of examination	The final grade in the module is composed of: • Two short computer-based quizzes: 15% x 2 = 30% • Take-home written assignments: 15% • Written Midterm assessment: 25% • Final oral exam: 30% Students must have a final grade of 55.6% or higher to pass.
Reading List	● R. S. Jonathan, P. Norvig, Artificial Intelligence: A Modern Approach, 4rd Edition. Prentice Hall, New Jersey, 2021. ● R. Basuki, B. Nugroho, Pemrograman Deep Learning dengan Python. Indomedia Pustaka, 2021. ● Chella, Antonio, Computational approaches to conscious artificial intelligence. World Scientific, 2023. ISBN: 9789811276668. [Online]. Available: https://portal.igpublish.com/iglibrary/obj/WSPCB0011371?searchid=1754977554258M4DlyxQLkw_3fPobYn5ne ● Saitoh, Koki, Deep learning from the basics: python and deep learning: theory and implementation. Packt Publishing, 2021. ISBN: 9781800206137. [Online]. Available: https://portal.igpublish.com/iglibrary/obj/PACKT0005907?searchid=1754977732069OfrJANo2x124Jfzv0NYOf