Module Description

Module name	Hybrid Artificial Intelligence
Module level, if applicable	Bachelor of Informatics
Code, if applicable	21D12141403
Subtitle, if applicable	-
Course, if applicable	
Semester(s) in which the module is taught	7th
Person responsible for the module	**Dr. Ir. Ingrid Nurtanio, MT.**
Lecturer	1. Dr. Ir. Ingrid Nurtanio, MT. 2. Anugrayani Bustamin, ST, MT.
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	This course is an elective course and is offered in the 7th semester.
Type of teaching, contact hours	Teaching methods: [case study], [collaborative learning], [problem-based learning]. Teaching forms: [lecture], [tutorial], [practicum] CH : 8.00 - 16.00
Workload	For this course, students are required to meet a minimum of 136.00 hours in one semester, which consist of: - 40.00 hours for lecture, - 48.00 hours for structured assignments, - 48.00 hours for private study
Credit points	3 credit points (equivalent with 5.1 ECTS)
Requirements	Students must have attended all minimum 80% of classes and submitted

according to the examination regulations	all class assignments that are scheduled before the final tests.
Recommended prerequisites	Artificial Intelligence, Algorithm and Data Structure
Module objectives/intended learning outcomes	After completing the course, Students are able: **Intended Learning Outcomes (ILO):** **ILO 1:** Have the knowledge of fundamental in Computing Science that includes basic theory and concepts of computer science, Mathematics and Statistics, Programming Algorithm, Software Engineering, Information Management and Digital Resilience, also the advance topics of either Artificial Intelligence, Data Science, Computer Network, Cloud Computing or Internet of Things. **ILO 3:** Apply the knowledge of computing and other related disciplines to analyze and identify solutions for any computing-based problem. **Course Learning Objective (CLO):** After completing this course, students should implement two or more artificial intelligence methods, namely combining fuzzy logic methods, neural networks, and genetic algorithms. ILO 1 → CLO 1: Students can explain fuzzy logic algorithms in artificial intelligence topics. ILO 3→ CLO 2: Students can implement the concept of the Adaptive Neuro-Fuzzy Inference System (ANFIS). ILO 1 → CLO 3: Students can understand the concept of Artificial Neural networks and some of their architecture in Artificial Intelligence. ILO 3 → CLO 4: Students can apply the concept of the Genetic Algorithm and its combination with NN
Content	Students will learn about : 1. Fuzzy Logic 2. Artificial Neural Networks 3. ANFIS (Adaptive Neuro-Fuzzy Inference System) 4. FNN (Feedforward Neural Network) 5. Genetics Algorithm

	6. GANN (Genetic Algoritm Neural Network)
Forms of Assessment	Assessment techniques: [observation], [participation], [written-test] Assessment forms: [midterm exam], [assignment] CLO 1 => ILO 1: 20% (Midterm Exam: written test) and 5% (Assigment1: participation) CLO 2 => ILO 3: 15% (Midterm Exam: observation), 5% (Assignment2: participation) and 5% (Assignment3: participation) CLO 3 => ILO 1: 25% (Assignment: participation) CLO 4 => ILO 3: 35% (Assignment: observation)
Study and examination requirements and forms of examination	**Study and examination requirements:** - Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the class due to sickness, etc. - Students must submit all class assignments before the deadline. - Students must attend the exam to get final grade. **Form of examination:** Written exam: Essay and Practicum
Media employed	Video conference, slide presentation, Learning Management System (LMS).
Reading list	**Main :** Fausset, L. 1994. "Fundamentals of Neural Networks: Architectures, Algorithm and Applications". Pearson Suyanto. 2005. "Algoritma Genetika dalam Matlab". Yogayakarta: Andi Publisher **Support :** https://paperswithcode.com