



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

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Doctoral Programme of Computer Science

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Module name : **ARTIFICIAL INTELLIGENCE**

Module level, if applicable : **DOCTORAL**

Code, if applicable : MII7425

Semester(s) in which the module is taught : 1 (Odd)

Person responsible for the module : Afiahayati, S.Kom., M.Cs., Ph.D.

Lecturer(s) : Afiahayati, S.Kom., M.Cs., Ph.D.

Language : Indonesia

Relation to curriculum : Doctorate; Elective; 1st or 3rd semester.

Credit points : 3 credits

Type of teaching, contact hours : Doctorate: lectures for < 5 students. Contact hours are lecture hours.

Workload

- 1) Lectures and discussion: 3 x 50 = 150 minutes (2.5 hours) per week.
- 2) Exercises and assignments: 3 x 60 = 180 minutes (3 hours) per week.
- 3) Independent study: 3 x 60 = 180 minutes (3 hours) per week.

Requirements according to the examination regulations : -

Recommended prerequisite : -

Module objectives/ intended learning outcomes : This course is a postgraduate level course that contains advanced knowledge of artificial intelligence. This course discusses principal and application of AI. After completing this course, students are expected to be able to:

CO1: analyse problem solving using searching solutions and intelligent agents

CO2: analyse knowledge representation, knowledge base system and inference machine

CO3: analyse methods in AI branches : NLP, Computer Vision, Pattern Recognition and Machine learning.

	CO4: implement AI to solve real problems. CO5: identify research opportunities regarding artificial intelligence and its handling.
Content	: Topics covered in this course include: introduction to AI, Intelligent Agent, Searching solution, Knowledge Representation, knowledge base system, inference machine, NLP, Pattern Recognition, Computer Vision, Machine Learning, Research Trend in AI.
Study and examination requirements and forms of examination	: Evaluation is done in 2 forms, namely: <ol style="list-style-type: none"> 1. Literature review of uncertainty. 2. A short review paper on state-of-the-art methods in formal methods. 3. A project assignment <p>Assessment is done using benchmark assessment, with the aim of measuring the level of students' understanding related to the target.</p>
Media employed	: Whiteboard, LCD, online meeting
Reading List	<ol style="list-style-type: none"> 1. Russell, S. and Novig, P., 2020, Artificial Intelligence: A Modern Approach, 4th Edition, Prentice Hall. 2. George F. L., 2008, Artificial Intelligence: Structures and Strategies for Complex Problem Solving, 6th Edition, Addison-Wesley. 3. Negnivitsky, M., 2004, Artificial Intelligence: A Guide to Expert Systems, 2nd Edition, Addison Wesley. 4. Firebaugh W., 2009, Artificial Intelligence: A Knowledge-Based Approach, W. Firebaugh PWS-Kent Publishing Company.

The Mapping of COs to PLOs

COs	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1								
CO2								
CO3								
CO4								
CO5								

The PLO of DP-CS

PLO	Knowledge Area	PLO Description
PLO1	[Values and principles]	A graduate should be devoted to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working around expertise independently.
Managerial Capability		
PLO2	[Professional attitudes]	A graduate should have good interpersonal skills; able to work together within the organization, both as a leader and a member; able to be the initiator; able to manage and delegate tasks; and have a sense of responsibility for their own work as well as take responsibility for the achievement of the organization's work.
PLO3	[Communication skills]	A graduate should be able to communicate effectively and efficiently with stakeholders from various backgrounds; use English well; and able to write and present scientific papers correctly and well.
PLO4	[Life-long learning]	A graduate should be up to date with the state-of-the-art especially in computer science field, able to take parts in the development of computer science field that is engaged in and relate it to other fields throughout life.
Working Capability		
PLO5	[Problem-solving and Scientific skills]	A graduate should be able to analyse science and technology problems in the computer science field, develop alternative solutions through intra disciplinary, interdisciplinary, and trans disciplinary approaches to produce innovative, original, and tested works.
PLO6	[Ability to formulate and do research]	A graduate should be able to formulate research problems through critical, exploratory, and innovative studies both independently and in groups of computer science field that is engaged in and present research results in a scientific paper at regional or international level.
Mastering Knowledge		
PLO7	[Fundamental knowledge]	A graduate should be able to develop knowledge in the field of computer science that is engaged, which includes abstraction, complexity, evolution and philosophy of changes or developments in the field of science.
PLO8	[Applied knowledge]	A graduate should be able to develop theoretical, philosophical, and applied concepts in the field of computer science that is engaged in, and to represent them in a structured and systematic manner.